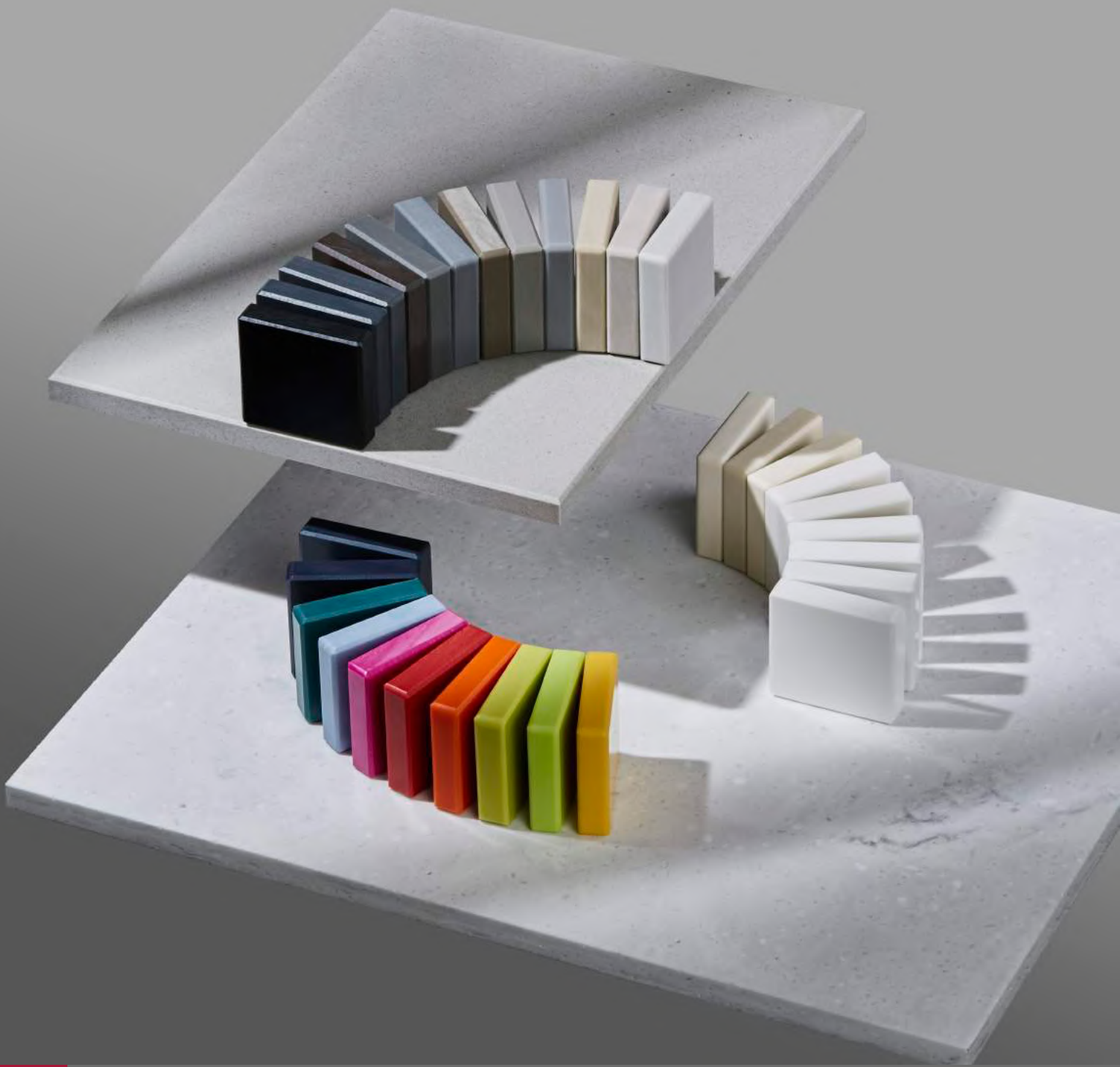


■ HIMACS Fabrication Manual



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TECHNICAL DATA SHEET SAFETY RULES



© Dominik Obertreis

HI·MACS

For your own safety, read the HIMACS Fabrication Guideline Manual before operating different tool and different equipment.
Be aware that each individual HIMACS Sheet Color Family eventually needs a special different care and different fabrication techniques.

In general: It assumes a common sense!

Safety Checklist

Always respect national and local safety instructions of tool and equipment you may using and follow the legal requirements, like:

- Employee protection:
- Adequate first aid supplies
- Protective dust masks, eye and ear protection provided or required
- Safety shoes required
- Protective work and/or latex gloves provided or required
- Policy on “no” jewelry, bracelets or chains while fabricating
- No smoking in work areas
- Policy on limited bare skin exposure to adhesive materials
- M.S.D.S. sheets reviewed and understood by all employees

Exits and passage:

- Entrance and Exit passage ways are not obstructed and are visibly displayed
- Fire doors are clear from blockage. i.e. Security chains, etc.

Fire plan:

- Explosion proof cabinets for solvents and chemicals
- Adequate cold storage for seaming materials (refrigerator)
- Limited smoking areas and strict enforcement policy
- Properly specified fire suppression or extinguisher system including sprinklers
- Inspection of fire equipment on a regular basis
- Fire evacuation plan and responsibility assignments

General & housekeeping:

- Designate and clearly mark smoking as well as non-smoking areas
- Maintenance of ventilation and dust extraction equipment including routinely cleaning/ replacing filters, keep work tables and floors clean, swept and orderly
- Designate a tool crib for hand tools, bits and supplies to maintain production efficiency

Environmental standards:

- Remove or contain dust by all means possible on equipment accessories and systems
- Designate a special place for disposal of hazardous chemicals, waste seam adhesive, etc.
- Establish a policy of not disposing liquids, adhesives or chemicals in common trash unless catalyzed. Rags with chemicals should be cared for so as not to create fire hazard.
- Sweepings of dust and extractions of dust and particles should be placed in a covered Receptacle
- If you vent your dust collectors outside, seek permission necessary to do so.

Mechanical care and hazard containment:

- Minimize obstructions on floor
- Clearly mark or label movable equipment and accessories
- Avoid operating equipment with dull blades and bits
- Purchase proper equipment for the job and routine production of HIMACS
- Mark moving or rotating parts of shop equipment
- Make certain to eliminate slip factors on the floor surfaces, and thoroughly wipe up spills to eliminate accidental slips and falls.
- Install safety mechanisms on power equipment for emergency shut offs
- Make certain proper lighting is installed in the shop environment and maintain bulbs to maximize performance of the fixtures and shop visibility during operation.

Electrical matters:

- Install proper electrical service requirements for specified shop equipment
- Clearly mark and identify shop circuits on electrical panel
- Maintain electrical breakers and panels
- Make certain all equipment cords and electrical extension cords are in perfect working order and are free from defects, frays, and bare wiring that could result in a shock or short. Make certain electrical cords are rolled and outlets are clean and operational. Any defect should be serviced and replaced immediately upon notice of deficiency.
- Portable electrical hand tools are double-grounded, ground fault equipped, and/or double- insulated
- Make sure junction boxes and wiring are to code and are covered and closed
- Lighting is adequate for working conditions and maintained
- Emergency shutdown switch is installed and operational (master and individual)

Hint:

For shops also fabricating a stone, water must be isolated to keep from encroaching on the solid surfacing operation. Water barriers must be installed and visibly marked for worker awareness.

ALWAYS KEEP IN MIND:

Safety first! - Think twice before you do ones!

Safety Sign Samples





Source:

<https://www.safetysign.com/social-distancing-signs>
<https://www.safetysign.com/>

TECHNICAL DATA SHEET PRODUCT SHEET



HIMACS - Photographed by Dominik Obertreis

HIMACS combines the best of two great raw materials!

One idea lay behind the development of HIMACS: what would it be like to make a material similar to stone available to carpenters? A material that can easily be worked using existing and traditional wood-working tools. A material that enables craftsmen to translate the most exciting visions of designers and architects into reality.

As a Premium Solid Surface material, HIMACS is a perfect mix of the natural mineral aluminum hydroxide and high-quality acrylic; a small proportion of coloured pigments is added, depending on the shade.

Aluminum hydroxide is produced during aluminum extraction and, as the natural base of the material, creates its high-grade stone-like feel and elegant appearance. Acrylic gives the material its flexibility and the ability to be joined seamlessly.

HIMACS exclusively uses Thermal-cure-Technology, a special thermal treatment of the sheets as one of the production steps. Consequently, HIMACS offers some of the best features in the market-place: Easy sanding, better heat resistance etc.



© Rafael Krötz

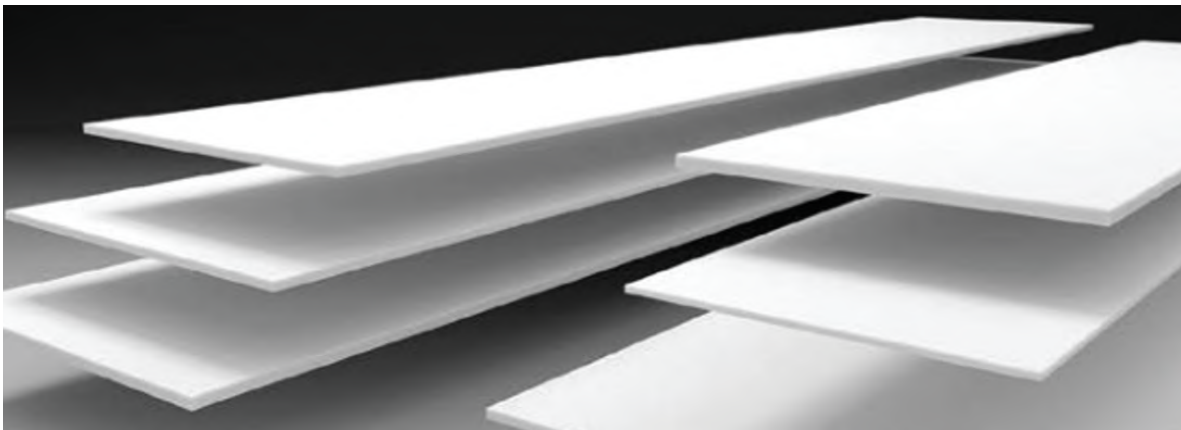
HIMACS opens a new world to you and your business opportunities.

Anyone understands that it is so much more than a simple material. That's why many who have experienced HIMACS call it "the material of possibilities".

HIMACS introduces the possibility of working with "stone" into the carpentry workshop, enabling high-quality kitchens, bathrooms, healthcare fixtures and fittings, etc. to be produced and, in doing so, creates a completely new business model.

HIMACS is a strong brand produced by the premium manufacture. The HIMACS team receives countless enquiries for projects using the material, which we pass on to the members of our HIMACS Quality Club - our organization for our closest partners.

We support Europe: PR, traditional advertising, online communication, social media, as well as involvement in all the relevant industry events. There is a wealth of opportunity to get involved with some of these initiatives.



Product availability:

Standard Formats

760 x 2490 mm

910 x 2490 mm

760 x 3000 mm

930 x 3000 mm

1350 x 3000 mm

1350 x 3050 mm

760 x 3680 mm

910 x 3680 mm

1350 x 3680 mm

1520 x 3680 mm

1. Sheet Material

HIMACS is available in different thicknesses, formats and sizes. Perfect for maximum cutting and minimal costs. However, not all colours are available in every thickness. See the table for availability below.

HIMACS sheet material is available in thicknesses of 4.5 mm, 6 mm, 9 mm, 12 mm and 20 mm as well as the corresponding sheet formats.

HIMACS is also available in special formulations:

- HIMACS FR – Low flammability, ETA Certified, IMO Certified.
- HIMACS – Advanced UV resistance, CSTB Certified.
- HIMACS Ultra-Thermoforming: Advanced Thermoforming, up to 6 mm internal radius.
- HIMACS Intense-Ultra: The best of two worlds – Ultra-Thermoforming and Intense Colour Technology.
- HIMACS Exteria

2. Dimensions – Sheet material

Standard Format Standard formats are available on stock, for specific thicknesses per colour:

SHEET THICKNESS IN MM	SHEET WIDTH IN MM	SHEET LENGTH IN MM
4.5	930	3000 *
6	760	2490
	910	2490 *
9	1350	3680*
	760	3680
	910	3680 *
12	1350	3680 *
	760	3680
	910	3680 *
	1520	3680 *
20	760	3000

* Only available in S028 Alpine White.

Ultra-Thermoforming Format

SHEET THICKNESS IN MM	SHEET WIDTH IN MM	SHEET LENGTH IN MM
12	760	3680 **
	930	
	1520	

** Only available in S928 Alpine White.

Some of the dark, heavily pigmented colors of HIMACS may require special care and may show scratches, dust and ordinary wear and tear more readily than lighter, textured colors. For information on selecting the ideal colour for your application, please consult your HIMACS-Representative. Printed representation of colors may vary from actual samples.

3. Special Format

Special format available on special request, minimum quantities apply, please contact your sales representative.

SHEET THICKNESS IN MM	SHEET WIDTH IN MM	SHEET LENGTH IN MM	COLOURS AVAILABLE
4.5mm	930	3000	Solid
6mm 9mm 12mm	910	2200-3680 Flexible length	Solid, Granite, Lucent and Ultra-Thermoforming
	1220	2200-3680 Flexible length	Solid, Granite, Lucent 6 and 12mm
	1350	2200-3680 Flexible length	Solid, Granite
	1520	2200-3680 Flexible length	Solid, Granite, Lucent
20mm	760	2200-3680 Flexible length	Solid, Granite, Lucia

HIMACS can be supplied in custom colours based as follows

- If a colour is to be matched, we need a target sample of min. 20 cm x 30 cm and preferably an A4 size sample.
- An HIMACS sample will be made and returned for approval to the customer.

During the manufacturing of custom colours, we can incur an overrun of up to 10%.

- Therefore, a production order for 32 sheets may produce a total 35 sheets or in the case of an order for 200 sheets, we may produce a total of 220 sheets. In each case, the additional sheets within the overrun will be delivered and will be invoiced to the originator of the order to HIMACS. The basic HIMACS material is identical for every colour but it is important to note that darker and more heavily pigmented colours will show dust, scratches, haziness, marks left by hard water and other ordinary wear and tear more noticeably than lighter texture colours.
- Therefore colours marked with a * are less suitable for applications that are exposed to extensive surface contact such as worktops located in heavy traffic area as an example.

Note:

To warranty the same identical colour combination it is mandatory to follow sequential sheet production numbers during the fabrication as only the continuous mass production of each single thickness must be taken into consideration.

That means: by mixing same colour with different thicknesses is not recommended and can cause a slightly colour change in view.

4. Product Availability

Note:

Due to specific characteristics and properties of the Marmo colours, which have a specially veined effect a very special consideration has to be taken into account with jointing and the use of covered up-stands. Veining may vary from sheet to sheet. There may be deviations between the illustrated and actual colours owing to printing techniques. To receive the detailed availability, please contact us at www.himacs.eu

► For further Information's and details about sheets see under: TDS General Sheet Fabrication details.

Product availability / Stock Items:

NO	COLOUR	NAME	NOTICE COLOURS	RANGE	ADHESIVE	12 MM 760 X 3680	9 MM 760 X 3680	6 MM 760 X 2490
1	G001	Desert Sand		S & P	H04 Peanut	●		
2	G002	Grey Sand		S & P	H03 Grey	●		●
3	G004	White Quartz		Quartz	H36 Silver	●	●	●
4	G005	White Granite		Granite	H03 Grey	●		
5	G007	Platinum Granite		Granite	H03 Grey	●		
6	G009	Black Sand		S & P	H42 Merapi	●		
7	G010	Black Pearl	●	S & P	H07 Black	●		●
8	G015	Midnight Pearl	●	S & P	H10 Blue	●		
9	G031	Black Granite	●	Granite	H07 Black	●	●	
10	G034	Arctic Granite		Granite	H36 Silver	●	●	●
11	G038	Sea Oat Quartz		Quartz	H04 Peanut	●		
12	G048	Beach Sand		S & P	H04 Peanut	●	●	
13	G050	Tapioca Pearl		S & P	H36 Silver	●		
14	G058	Moonscape Quartz		Quartz	H04 Peanut	●		
15	G063	Allspice Quartz		Quartz	H14 Sephia	●		
16	G074	Mocha Granite		Granite	H37 Mocca	●		
17	G100	Peanut Butter		Granite	H04 Peanut	●		
18	G101	Crystal Beige		Quartz	H01 Satin White	●		
19	G102	Grey Crystal		Granite	H03 Grey	●		
20	G105	Brown Pearl	●	S & P	H35 Dark	●		
21	G106	Riviera Sand		S & P	H04 Peanut	●	●	
22	G107	Pebble Pearl		S&P	H03 Grey	●		
23	G108	Lunar Sand		S & P	H36 Silver	●	●	
24	G554	Urban Concrete		Concrete	H22 Perna Grey	●	●	●
25	G555	Steel Concrete	●	Concrete	H114 Pantheon	●	●	●
26	M551	Chic Concrete		Concrete	H114 Pantheon	●		
27	M552	Shadow Concrete	●	Concrete	H114 Pantheon	●		
28	M553	Ebony Concrete	●	Concrete	H115 Colosseum	●		
29	M201	Terni		Marmo	H68 Terni	●		
30	M206	Monza	●	Marmo	H07 Black	●		
31	M303	Capri	●	Marmo	H62 Clay	●		
32	M306	Breeze White		Marmo	H02 Arctic White	●		
33	M422	Cremona		Marmo	H36 Silver	●		
34	M426	Laviano		Marmo	H03 Grey	●		
35	M427	Bellizzi		Marmo	H36 Silver	●		

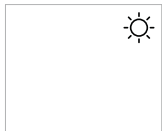
Product availability / Stock Items:

NO	COLOUR	NAME	NOTICE COLOURS	RANGE	ADHESIVE	12 MM 760 X 3680	9 MM 760 X 3680	6 MM 760 X 2490
36	M428	Ispani		Marmo	H36 Silver	•		
37	M501	Edessa		Marmo	H02 Arctic White	•		
38	M904	Naples	•	Marmo	H107 Marta Grey	•		
39	S001	Satin White		Solid	H01 Satin White	•	•	•
40	S002	Almond		Solid	H04 Peanut	•		
41	S005	Grey		Solid	H03 Grey	•		
42	S006	Arctic White		Solid	H02 Arctic White	•	•	•
43	S009	Cream		Solid	H20 Cream	•		•
44	S022	Black	•	Solid	H07 Black	•	•	
45	S025	Fiery Red	•	Solid	H18 Red	•		
46	S026	Banana	•	Solid	H17 Banana	•		
47	S027	Orange	•	Solid	H19 Orange	•		
48	S028	Alpine White		Solid	H16 Alpine White	•	•	•
49	S029	Ivory White		Solid	H32 Ivory	•	•	•
50	S033	Nordic White		Solid	H16 Alpine White	•		
51	S034	Diamond White		Solid	H113 Diamond White	•		
52	S100	Coffee Brown	•	Solid	H37 Mocca	•		
53	S102	Babylon Beige	•	Solid	H52 Babylon Beige	•		
54	S103	Concrete Grey	•	Solid	H53 Concrete Grey	•		
55	S104	Toffee Brown	•	Solid	H54 Toffee Brown	•		
56	S106	Lemon Squash	•	Solid	H104 Lemon Squash	•		
57	S108	Marta Grey	•	Solid	H107 Marta Grey	•		
58	S109	Steel Grey	•	Solid	H101 Steel Grey	•		
59	S111	Dark Night	•	Solid	T09 Dark Night	•		
60	S115	Deep Indigo	•	Solid	T08 Deep Indigo	•		
61	S116	Festival Pink	•	Solid	H106 Festival Pink	•		
62	S117	Midnight Grey	•	Solid	H35 Dark	•		
63	S118	Mink	•	Solid	H128 Grey	•		
64	S119	Evergreen	•	Solid	H125 Green	•		
65	S120	Cosmic Blue	•	Solid	H127 Navy	•		
66	S121	Suede		Solid	H126 Beige	•		
67	S201	Nougat Cream		Solid	H04 Peanut	•		
68	S203	Sky Blue		Solid	H30 Dawn Misty	•		
69	S212	Light Green	•	Solid	H56 Light Green	•		
70	S302	Opal		Lucent	T02 Opal	•		•

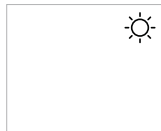
NO	COLOUR	NAME	NOTICE COLOURS	RANGE	ADHESIVE	12 MM 760 X 3680	9 MM 760 X 3680	6 MM 760 X 2490
71	S303	Sapphire		Lucent	T03 Sapphire	•		
72	S304	Ruby		Lucent	T04 Ruby	•		
73	S305	Emerald		Lucent	T05 Emerald	•		
74	VA01	Santa Ana		Volcanics	H03 Grey	•		
75	VE01	Tambora		Volcanics	H20 Cream	•		
76	VB02	Cima	•	Volcanics	H45 V/Black	•		
77	VA22	Frosty		Volcanics	H03 Grey	•		
78	VG21	Maui		Volcanics	H49 Maui	•		
79	VW01	Gemini		Volcanics	H36 Silver	•		
80	T010	Nebula		Aster	H02 Arctic White	•		
81	T011	Venus		Aster	H01 Satin White	•		
82	T017	Andromeda		Aster	H16 Alpine White	•		
83	T018	Carina		Aster	H02 Arctic White	•		
84	T019	New Moon		Aster	H01 Satin White	•		
85	T020	Hercules	•	Aster	H22 Perna Grey	•		
86	P102	Kold Silver		Sparkle	H111 Kold Silver	•		
87	W001	Ice Queen		Lucia	H16 AL/White	•		
88	W003	Shadow Queen		Lucia	H58 Pebble Pearl	•		
89	W004	Star Queen	•	Lucia	H42 Merapi	•		
90	W007	Lentil		Lucia	H20 Cream	•		
91	W010	Red Quinoa	•	Lucia	H39 Latte	•		

5. Sheet Colours

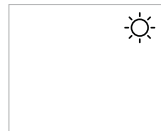
5.1 Solids



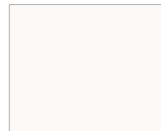
Alpine White
S028 [20/12/9/6/4/
3 mm] Δ E5



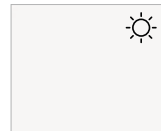
Nordic White
S033 [20/12 mm]
Δ E5



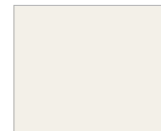
Diamond White
S034 [20/12 mm]
Δ E5



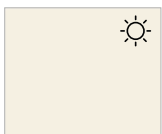
Arctic White
S006 [20/12/9/
6 mm]



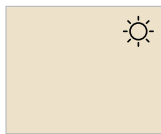
Ivory White
S029 [20/12/9/
6 mm] Δ E5



Satin White
S001 [20/12/9/
6 mm]



Cream
S009 [20/12/6 mm]
Δ E5



Almond
S002 [20/12 mm]
Δ E5



Babylon Beige
S102 [20/12 mm]



Steel Grey
S109 [20/12 mm]



Marta Grey
S108 [20/12 mm]



Concrete Grey
S103 [20/12 mm]



Grey
S005 [20/12/9/
6 mm]



Sky Blue
S203 [20/12 mm]



Light Green
S212 [20/12 mm]



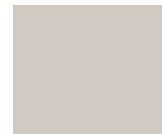
Banana
S026 [20/12 mm]



Orange
S027 [20/12 mm]



Fiery Red
S025 [20/12 mm]



Suede
S121 [20/12 mm]



Midnight Grey
S117 [20/12 mm]



Coffee Brown
S100 [20/12 mm]

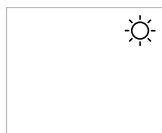


Dark Night
S111 [20/12 mm]



Black
S022 [20/12/9 mm]

5.2 HIMACS Ultra-Thermoforming (UTS)

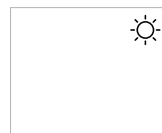


Ultra-Thermoforming
Alpine White
S928 [12 mm]



Opal
S302U [12 mm]

5.3 HIMACS FR – Low Flammability

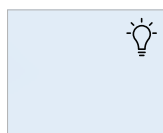


Alpine White
S728 - Δ E5 [20/12 mm]

5.4 Lucent



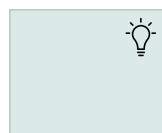
Opal
S302 [20/12/6 mm]
Δ E5



Sapphire
S303 [20/12 mm]



Ruby
S304 [20/12 mm]



Emerald
S305 [20/12 mm]

5.5 Concrete



Urban Concrete
G554 [20/12/9/
6 mm]



Steel Concrete
G555 [20/12/9/
6 mm]



Chic Concrete
M551 [12 mm]



Shadow Concrete
M552 [12 mm]



Ebony Concrete
M553 [12 mm]

5.6 Marmo



Pavia
M603 [12 mm]



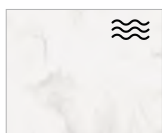
Aurora Bianco
M606 [12 mm]



Aurora Grey
M608 [12 mm]



San Remo
M605 [12 mm]



Aurora Blanc
M617 [12 mm]



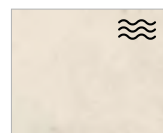
Aurora Cotton
M615 [12 mm]



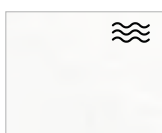
Aurora Umber
M614 [12 mm]



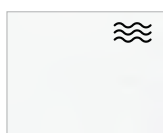
Aurora Torano
M601 [12 mm]



Aurora Bisque
M612 [12 mm]



Breeze White
M306 [12 mm]



Ispani
M428 [12 mm]



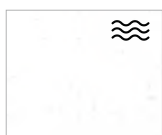
Bellizzi
M427 [12 mm]



Cremona
M422 [12 mm]



Terni
M201 [12 mm]



Edessa
M501 [12 mm]



Laviano
M426 [12 mm]



Naples
M904 [12 mm]



Capri
M303 [12 mm]



Monza
M206 [12 mm]

★ The basic HIMACS material is identical for every colour but it is important to note that darker and more heavily pigmented colours will show dust, scratches, haziness, marks left by hard water and other ordinary wear and tear more noticeably than lighter textured colours. Therefore colours marked with a ★ are less suitable for applications that are exposed to extensive surface contact such as worktops located in heavy traffic area. There may be deviations between the illustrated and actual colours owing to printing techniques. To receive the detailed colour range, please contact us at himacs.eu.

≡ Marmo is a randomly veined product, specific fabrication guidelines need to be followed. Ask your sales partner for more information or visit himacs.eu.

💡 Colours with this mark have a semi-translucent effect, evident when combined with light sources.

5.7 Lucia



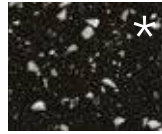
Red Quinoa
W010 [20/12 mm]



Ice Queen
W001 [20/12 mm]



Shadow Queen
W003 [20/12 mm]



Star Queen
W004 [20/12 mm]

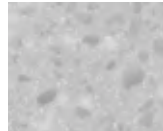
5.8 Volcanics



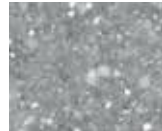
Gemini
VW01 [20/12 mm]



Tambora
VE01 [20/12 mm]



Santa Ana
VA01 [20/12 mm]



Frosty
VA22 [20/12 mm]



Maui
VG21 [20/12 mm]



Cima
VB02 [20/12 mm]

5.9 Aster



Nebula
T010 [20/12 mm]



Andromeda
T017 [20/12 mm]



Venus
T011 [20/12 mm]

5.10 Granite



Arctic Granite
G034 [20/12/9/6 mm], Δ E5



White Granite
G005 [20/12 mm] Δ E5



Platinum Granite
G007 [20/12 mm]



Peanut Butter
G100 [20/12 mm]



Black Granite
G031 [20/12/9 mm]

5.11 Quartz



White Quartz
G004 [20/12/9/6 mm], Δ E5



Sea Oat Quartz
G038 [20/12 mm] Δ E5



Allspice Quartz
G063 [20/12 mm]

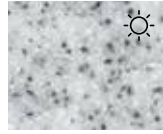
5.12 Sand



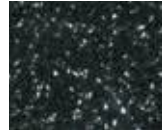
Lunar Sand
G108 [20/12/9 mm]



Beach Sand
G048 [20/12/9 mm]
Δ E5



Grey Sand
G002 [20/12/6 mm]
Δ E5



Black Sand
G009 [20/12 mm]

5.13 Pearl



Tapioca Pearl
G050 [20/12 mm]



Pebble Pearl
G107 [20/12 mm]



Black Pearl
G010 [20/12/6 mm]

5.14 Eden



Pause
R009 [12 mm]

6% Recycled Content



Ripe Cotton
G518R [12 mm]

10% Recycled Content



Simplicity
R943 [12 mm]

6% Recycled Content



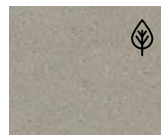
Lemongrass
G503R [12 mm]

10% Recycled Content



Honeysuckle
G504R [12 mm]

10% Recycled Content



Portland
GT945 [12 mm]

6% Recycled Content

Scoring eco-credits across the board.

The LEED (Leadership in Energy and Environmental Design) seal is a proven classification system for ecological, resource-saving and sustainable construction. The credit-based certification process rates buildings according to different criteria.

Opting for HIMACS Eden in new construction and renovation projects may provide up to 2 credits in the following LEED categories

Indoor Environmental Quality (IEQ)

LEED IEQ 4.1: low-emission materials, adhesives and sealants (1 credit)

Materials & Resources (MR)

LEED MR 4.1: materials with more than 10% recycled content (1 credit)

LEED MR 4.2: materials with more than 20% recycled content (2 credits)

6. Product Sheet: Quality Specification's: - as delivered

Quality Specification 2021 (Sheet)

PRODUCT	PROPERTY	AIM VALUE	TOLERANCE
Sheet	Incorrect labeling	None	-
	Breakage - Cracks	No Cracks	Edge chips, but usable length \geq nominal - 10mm and/or usable width \geq nominal - 3.0mm
	Length	Standard: 2490; 3000 and 3680 mm flex: 2200 - 3680mm custom request	-6.5 +12.5mm
	Width	760 or over 910 mm (930; 1220; 1350 and 1520mm)	± 1.5 mm
	Thickness	4,5; 6; 9; 12 and 20mm	1) 760mm width product: -0,15mm and + 0.45mm 2) Over 910mm width product: ± 0.7 mm 3) 930mm width product: ± 0.2 mm
	Flatness Warping convex/ concave	4,5; 6; 9; 12 and 20mm	± 0 mm ± 0.5 mm ± 0.5 mm ± 0.5 mm ± 0.5 mm
	width 760mm	$\pm 1,5$ mm	
	width 910 / 930mm	$\pm 2,5$ mm	
	width 1220mm	$\pm 3,5$ mm	
	width 1350mm	$\pm 4,5$ mm	
	width 1550mm	$\pm 5,5$ mm	

Quality Specification 2021 (SHEET)

PRODUCT	PROPERTY	AIM VALUE	TOLERANCE
Face side	Gloss level	5	Variations from 3 to 6
	Chatter marks		
	Colour / pattern consistency within one sheet	No difference	-
	Colour / pattern consistency within 50 production sequential number of same lot	Any pieces seamed together should not show a difference	The seam may be inconspicuous $\Delta E \leq 0.5$
	Dark spots	None or $\leq 0.13 \text{ mm}^2$ size	Less than 5 spots ($\leq 0.13 \text{ mm}^2$ size) Observation Radius 1.000mm Observation Distance 600mm
	Light spots	None or $\leq 0.2 \text{ mm}^2$ size	Less than 5 spots ($\leq 0.13 \text{ mm}^2$ size) Observation Radius 1.000mm Observation Distance 600mm
	Pin holes, voids	None	Less than 5 voids ($\leq 0.1 \text{ mm}^2$ / sheet)
Back side	Gloss level	None	-
	Sanding level	Grit 100	± 20 grit
	Pin holes, voids	None	$\leq 3 \text{ mm}$ deep Less than 6mm in diameter And less than 10 holes within a circle of 100mm diameter

HIMACS Colour

An essential element to sheet inspection is checking the colour matching. The composition of HIMACS produces slight colour variations between production cycles due to the complex blending of natural minerals and man-made acrylics. Colour variations are therefore inherent in the products (within 1 sheet or sheet to sheet of the same colour). The strict guidelines hereunder should therefore be followed to ensure the best possible colour matching for HIMACS.



- Step 1:
Using sheets within 50 production sequential numbers from the same lot (same production date).
- Step 2:
Checking the code printed on each sheet and fabricating the sheets with closest numbers when possible.
- Step 3:
Conducting a rapid check by gluing 2 small pieces together and visually checking the colour matching result.

In case where a significant colour matching difference is found to be unsatisfactory after following the 3 steps from the guidelines above, please contact your HIMACS representative. Sensitive colours (saturated and dark colours) will show dust, scratches and other wear and tear more visibly than lighter and less saturated ones. Therefore, we recommend that the "Notice" colours (provided in the "colour list") should not be used in applications where the surface is exposed to heavy traffic and contact (e.g. kitchen worktops).

HIMACS Sheets ./ Sheet Number ID

Sheet Number ID

Sheet of Origin

Sheet Colour Code:
S 005

Sheet Thickness & Size:
12=12mm thickness
76=76cm width
368= 368cm length

Sheet Colour Name: GRAY

Sequential No.: 0247

Bar Code

Note:
The 15 Year Limited Warranty does not cover scratches of ordinary wear and tear.

8. Certification

HIMACS is manufactured under the best existing conditions followed the standards of ISO 9001, ISO 14001 and OHSAS 18001 and special environmental certifications.

<p>ISO 9001</p>	<p>ISO 14001</p>	<p>OHSAS 18001</p>
<p>Environmental friendly company certificate of Korean ministry of environment</p>	<p>► For further Information please see FM21EU section 7.5.9 Eden Appendix</p>	

The most important product verifications, classifications and certificates.



German Sustainable Building Council (DGNB)

HIMACS has achieved quality level 4 of 4 – the best rating – for the local environmental impact of the overall product (2018). The DGNB system is a holistic and unique certification system for sustainable construction.



Building Research Establishment Environmental Assessment Method (BREEAM)

Among other ratings, the material complies with “Hea 02 Indoor Air Quality” for particularly good air quality. BREEAM is one of the world’s most important global rating methods for sustainable Architecture.



Leadership in Energy and Environmental Design (LEED)

Is a standard voluntary system to certify high performance of buildings, from the US Green Building Council (USGBC). LEED certifies buildings using a credit system. Architects and planners using HIMACS for their project can claim EQ Credit for Low-Emitting Materials with the category Indoor Environmental Quality (EQ).



Environmental Building Certificate – Grade “outstanding”

The Korean Air Cleaning Association certifies that HIMACS complies with the Korean regulations for environmental building materials.

For further guidelines of fabrication see specific descriptions of sheet and shape fabrication and installation recommendation in other sections according to application and subject.

Disclaimer

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This Technical Document is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since we cannot anticipate all variations in actual end-use conditions, We make no warranties and assumes no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

TECHNICAL DATA SHEET **PRODUCT - SHOWER TRAYS &** **BATH TUBS INSTALLATION**



Alongside washbasins, baths and shower trays are the central element of a beautifully designed bathroom. And now all three components are available in the same material: HIMACS. Sleek, but also functional in a useful, aesthetic design.

The three new baths are designed for integrated installation. The bath is enclosed flush-mounted within the panel, so that visually the product is seamless: no visible joins and therefore easy to maintain with hygienic surfaces. The new baths from HIMACS. are the perfect way to complete the range and make it more than just a bathroom - they transform it into an all-round feel-good experience.

1. Products

1.1. Shower trays

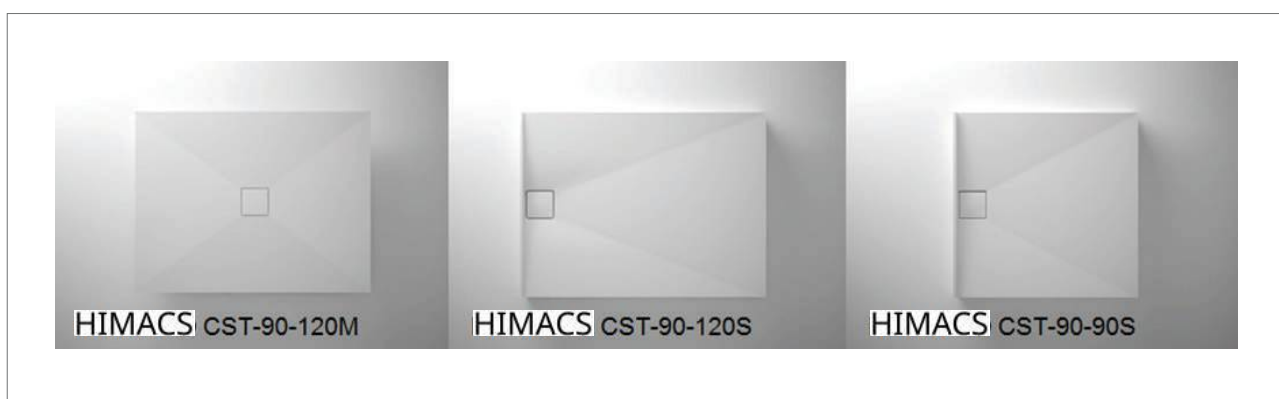


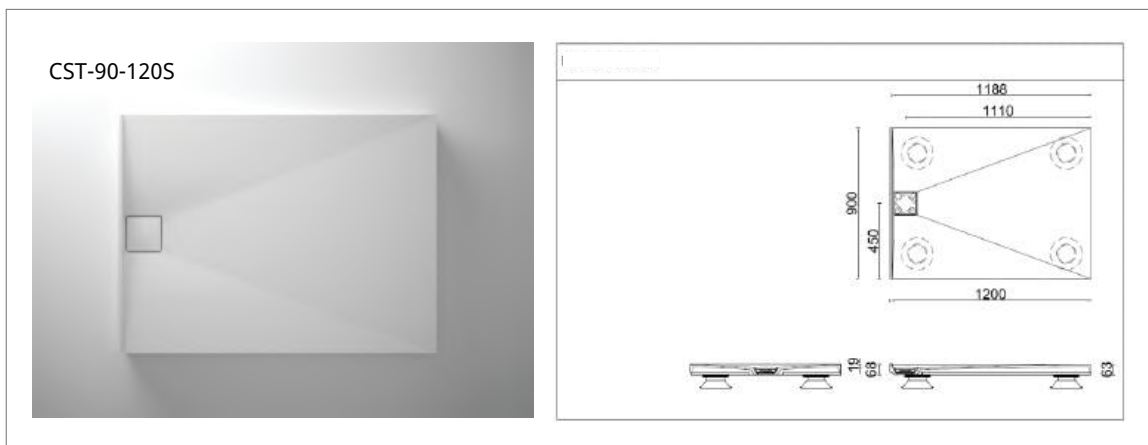
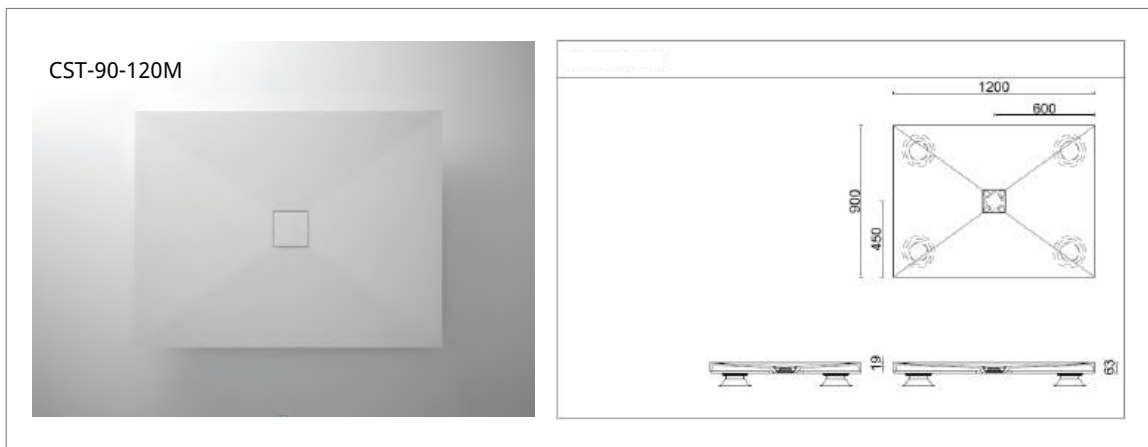
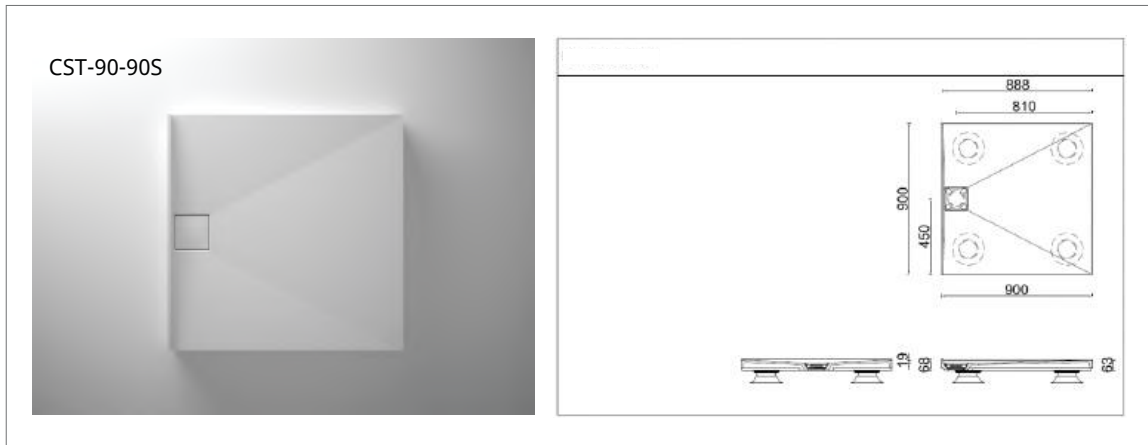
Fig.1



Fig.2

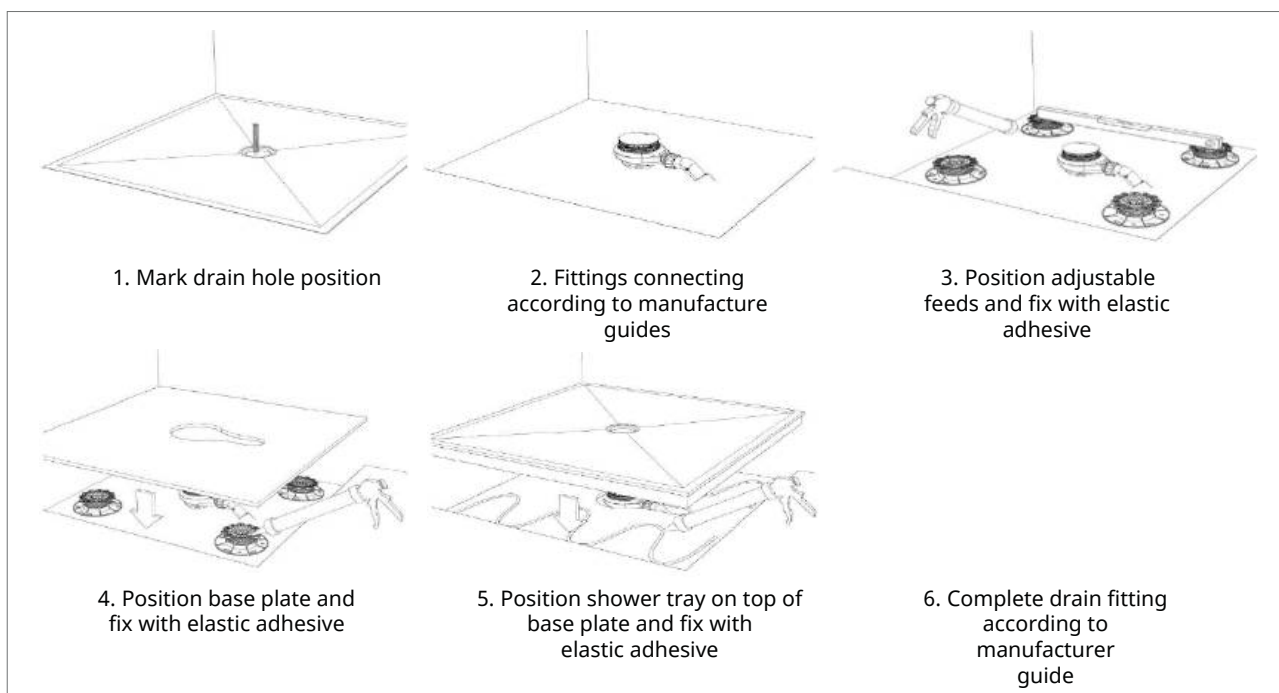
4. Shower Tray

4.1 Measures of shower trays

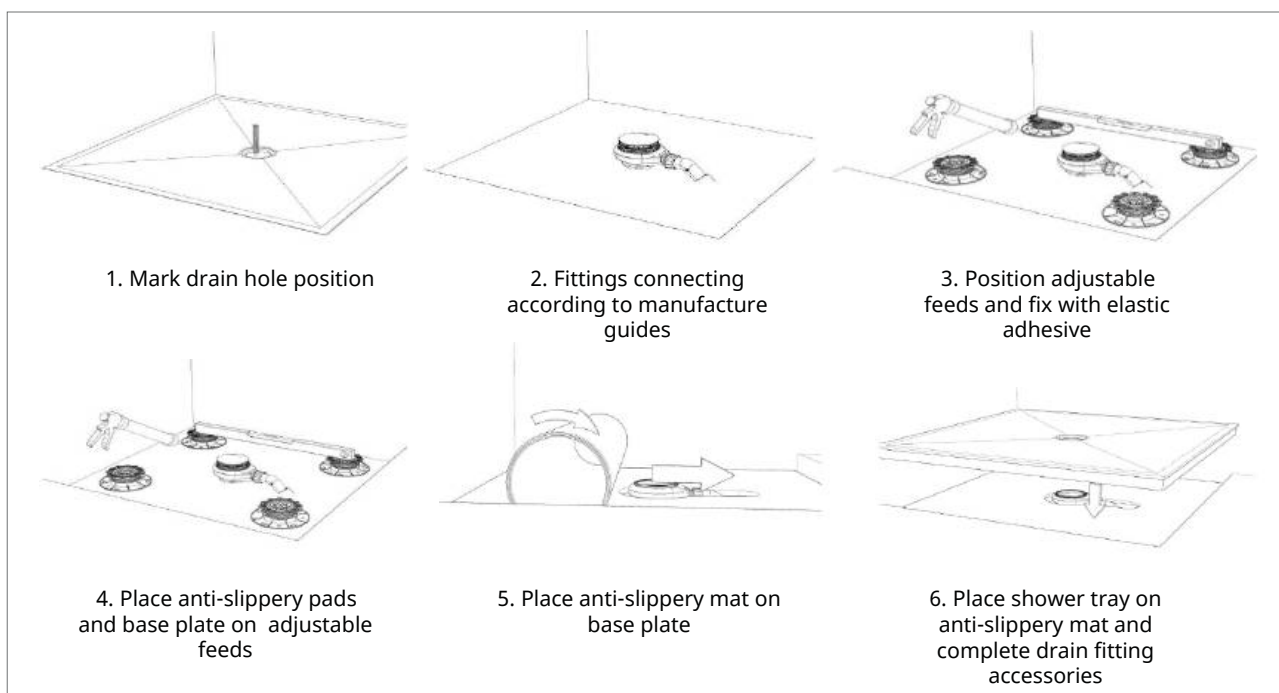


4.2 Shower tray installation guides

Shower Tray with foam backside



Shower Tray pure solid



5. Bathtub

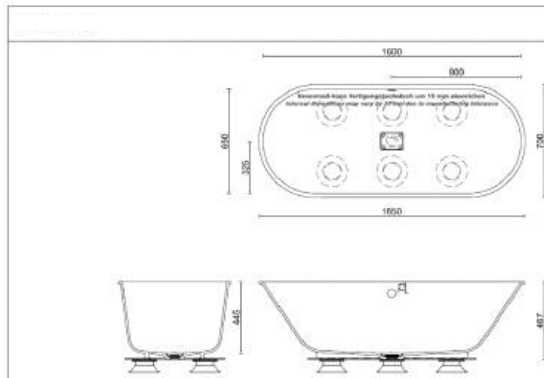
5.1 Measures of bath tubs

CBT-160-65



Hint

Bath Tubes are delivered without any surrounding neither with any cover sheet.

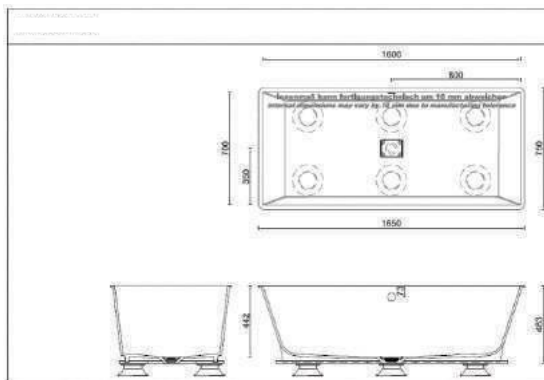


CBT-160-70



Hint

Bath Tubes are delivered without any surrounding neither with any cover sheet.

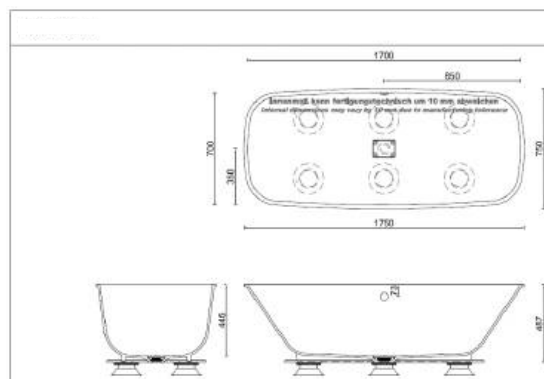


CBT-170-70



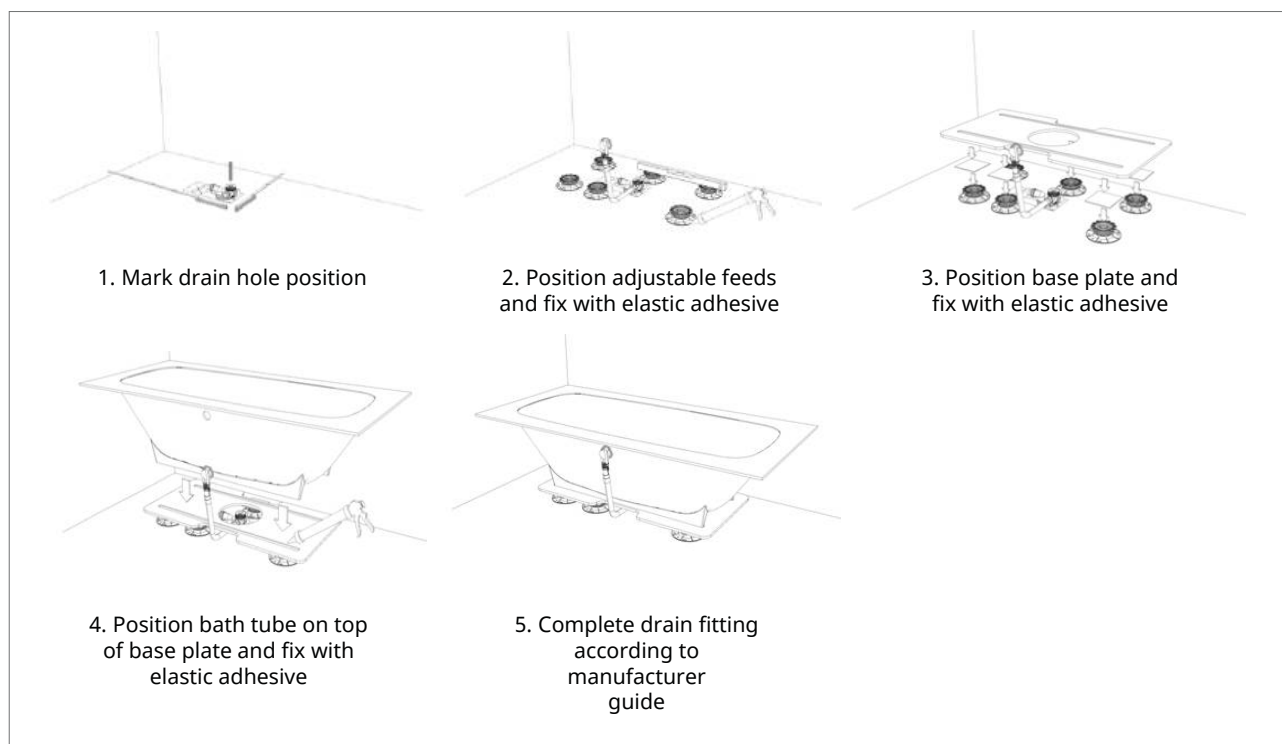
Hint

Bath Tubes are delivered without any surrounding neither with any cover sheet.



5.2 Bath tube installation guides

Bath Tube pure solid



Shower Tray pure solid

INSTALLATION

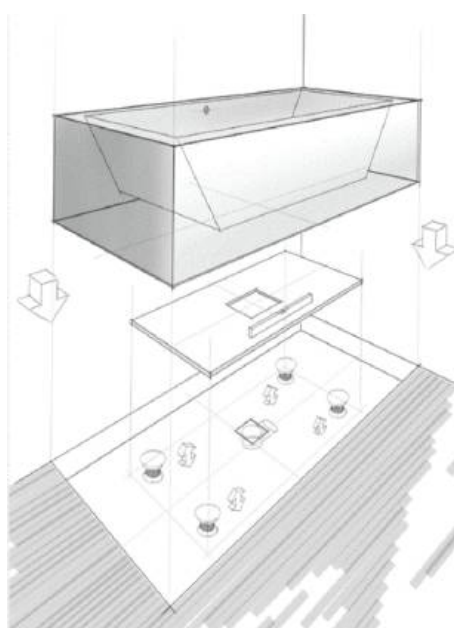
Using Installation-kit

- 1) Position the stilt bearing on the ground and adjust the height accordingly
- 2) Place anti-slip pads on stilt bearings
- 3) Place formwork plate on stilt bearings
- 4) Place the bathtub on formwork plate, check position or position

Content Assembly Kit

Article. NR.: BW-MONTAGE

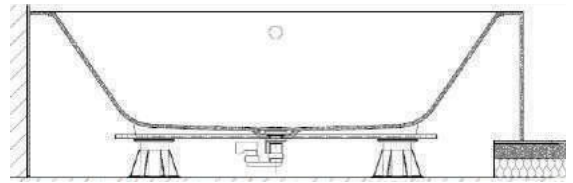
- 1) Waterproof formwork plate thickness 15 mm
- 2) Stilt bearing: setting range 30 to 123 mm, depending on the bath size 4 or 6 pieces (specify construction height when ordering)
- 3) Anti-slip pads and anti-slip mats with acoustic decoupling
- 4) Detailed installation instructions
- 5) Optional: Viega Multiplex drain set is available



SPECIAL FEATURES

Simple And Fast Set-up

- 1) Fast installation thanks to the appropriately supplied mounting kit
- 2) High stability
- 3) Easy alignment of the bathtub by using stilt bearings



INSTALLATION

- 1) Space-saving installation
- 2) Adjustment range of stilt bearings: 30 mm to 123 mm

Hint:

Sealing according to DIN 18534 to the building must be carried out on the side of the building and must be suitable as standard for viega multiplex drain sets

6. Use & Care

6.1 Cleaning recommendations



1. Moisten a soft cloth or soft sponge. Important: do not use a scouring pad!



2. Apply grease-dissolving all-purpose cleaner to a cloth / sponge. Use mild scouring milk only on white ones. Surfaces and heavy pollution. Be sure to, that the cleaner is suitable for acrylic surfaces.



3. In even, circular movements towards the Apply cleaning surface.



4. Rinse the cloth / sponge well with clean water



5. Wipe the detergent several times with warm water.



6. Wipe dry with a clean, soft cloth.

Care instructions for daily cleaning and removal of normal household stains such as vinegar, coffee / tea, grease / Oil residues, limescale / soap deposits.

■ 7. Storage

7.1 Storage of HIMACS bath tubs

- Do not pack several bath tubs on top of each other.
- Use one shelf for one both tub.
- Ensure the strength of shelf will be strong enough to take the weight of bath tub.



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This Technical Document is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since we cannot anticipate all variations in actual end-use conditions, We make no warranties and assume no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

Interior Solid Surface Material

HI·MACS

TECHNICAL DATA SHEET TECH SPEC DATA SHEET



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HI·MACS

01 |

Last Revision Year: 2022
HIMACS Technical Data Sheet

 LX Hausys

Interior Solid Surface Material

HIMACS

HIMACS is extremely resistant to dirt and wear and tear, so that you can enjoy many years', peace of mind with the outstanding quality of your new product.

SPECIFICATION	UNIT	RESULT SOLIDS	RESULT GRANITE	TEST METHODS
Flexural-E-modulus	MPa	8900	7730	DIN EN ISO 178
Flexural strength	MPa	70.1	64.3	ASTM D638
Breaking elongation	%	1	1.1	DIN EN ISO 178
Tensile strength	MPa	69.5	56.3	DIN EN ISO 527
Density	g/cm ³ kg/m ³	1.75 1750	1.65 1650	ISO 1183 ISO 1183
Ball indentation hardness	N/mm ²	257	239	DIN EN ISO 2039-1
Mohs hardness		2 to 3	2 to 3	EN 101
Pencil hardness		>9H	>9H	ISO 15184
Water absorption weight strength/thickness		<0,1% <0,1%	<0,1% <0,1%	DIN EN 438 Part 12
Impact resistance impactor drop ball test (fall height)	N mm	≥25 ≥1500	≥25 ≥1500	E DIN EN 438, 02/02 Part 2/20 E DIN EN 438, 02/02 Part 2/21
Slip resistance		>0,32 - 0,9		GMG100 (replaces R9)
Slip resistance		angle of acceptance of more than 10° to 19° = R10		DIN 51130
Climate change resistance	°C	≥0,05	≥0,05	AMK
Dry heat (pan base)	°C	≥100 (7C)		DIN 68 861, Part 7, 04-'85
Damp heat (pan base)	°C	≥100 (7C)		DIN 68 861, Part 8, 04-'85
Temperature change resistance	°C	no change		UNI 9429
Resistance to cigarette burns		6C	6B	DIN 68 861, Part 6, 11-'82
Scratch resistance		4D	4B	DIN 68 861, Part 4, 11-'81
Electrostatics Conductivity	>×1012Ω	insulating non-conductive		DIN IEC 1340-4-1, 04-'92 EN 61340-5-1
Thermal conductivity	W/mK	0.636	0.55	DIN EN 12664
Thermal resistance	m ² K/W	0.038	0.045	DIN EN 12664
Thermal Expansion Coefficient for Standard HIMACS Products	mm/mK m/m/°C	0.048 48 x 10 ⁻⁶	0.055	DIN EN 14581
Water vapor transmission properties - diffusion resistance factor	μ	18607	16150	DIN EN ISO 12572
Dimensional change by change in relative humidity length thickness mass	% % %	-0.03 0.06 0.05	-0.02 0.03 0.05	DIN EN 318, edit. 5, 1998
Resistance to boiling water increase in weight increase in thickness	% %	<0,1 <0,1	>0,1 <0,1	E DIN EN 438, 02/02 Part 2/12
Light fastness (Xenon)	scale 0 - 10	better than 6	better than 6	DIN 53 387, 04-'89
Food tolerance		suitable for all colours		LMBG § 31
Hygiene		suitable	suitable	LGA Hygiene Certificate

SPECIFICATION / SUBJECT	MATERIAL THICKNESS	RESULT	PRODUCT TESTED	TEST METHOD
Fire Classification	12 mm	B1	HIMACS colour range** S928, M551, G554	DIN 4102
		B1	S028 (standard)	DIN 4102 / ABP
		M1	S728, S828, S028, T017, VW01, W001	NF P92-501
		B - s1 - d0	HIMACS colour range** (2007)	EN 13501-1
	12 mm plus fibre cement board	B - s1 - d0	HIMACS colour range** (2014)	EN 13501-1
	12 mm	B - s1 - d0	S728 CE MED	EN 13501-1 / SBI
		C - s1 - d0	S928	EN 13501-1
		passed	S028 (standard)	DIN 5510
		passed R1/HZ3	S728 CE MED	EN 45545
		IMO certified	S728 CE MED	Module B & Module D
HIMACS Exteria	12 mm	ETA	S728	DIBT
		Avis Technique	S828	CSTB

* Not currently applicable to Strato, Ultra Thermoforming and Intense Ultra.
** Products tested in the year 2007 and 2014: Alpine White, Fiery Red & Black.

■ Technical Specification Data Sheet : 3 / 4,5 mm

NO	SPECIFICATION	ABBREVIATION	UNIT	3 / 4mm	TEST METHOD
		Kürzel	Einheit	S028	NORM
1	Density	P	g/cm ³	1,72	DIN EN ISO 1183
			kg/m ³	1720	
2	Flexural E-modulus	Ef	Mpa	7800	DIN EN ISO 178
3	Flexural strength	σ fm	Mpa	48.4	DIN EN ISO 12372
4	Ultimate elongation	εfm	%	0.89	DIN EN ISO 178
5	Tensile Strength	σ fm	Mpa	23.1(%0.98)	DIN EN ISO 527
6	Thermal expansion coefficient	α	mm/mk		DIN EN 12664
			mm/°C	42.1x10 ⁻⁶	DIN EN 14581
7	Thermal conductivity	λ 10try	W/mK	0.671	DIN EN 12664
8	Resistance to thermal insulation	R	m ² K/W	0.0046	DIN EN 12664
9	Electrostatic Contact resistance	Ω	> 1x10 ⁹	205x10 ⁹	DIN IEC 1340-4-1, 04-`92 EN 61340-5-1
			> 1x10 ¹²	0.205x10 ¹²	
10	Water vapour permeability efficient of diffusion resistance	μ	μ	81346	DIN EN ISO 12572
11	Water absorption				
12	Increase of weight Increase of thickness	sp. G d	%	0.4	DIN EN 438-12
			%	2.5	
13	Measure variation at humidity change Length Thickness Mass		%		DIN EN ISO 318_5-`98
			%		
			%		
			%		
14	Slippery resistance Angle of acceptance 10° to 19°	R			GMG 100 (±R9)
					DIN 51130
15	Scratch fastness				DIN 68861_4,11-`81
16	Ball indentation hardness HB Mohs-hardnesst Pin-hardness		N/mm ²	270	EN ISO 19712-2-15
17	Barcol hardness			65	EN ISO 19712-2-15
18	Rockwell hardness		HR	119	EN ISO 19712-2-15
19	Impact resistance ball impact by large-diameter		mm	260	EN ISO 19712-2-8
20	Resistance to dry heat	5=best	rating ³⁾	3 - 4	EN ISO 19712-2-12
21	Resistance to wet heat	5=best	rating	5	EN ISO 19712-2-13
22	Resistance to temperatur change		rating	No change	EN ISO 19712-2-14
23	Resistance to cigarett burns	5=best	rating ²⁾	2	EN ISO 19712-2-11
24	Light resistance	5=best	Bl.w.ref6	3 - 4	EN ISO 19712-2-9
25	Food resistance				LMBG §31
26	Hygiene				LGA hygiene certificate
27	Emission				EN ISO 16000-9

¹⁾ relevant for Sheet and cured adhesive

¹⁾ relevant for Sheet and cured adhesive

²⁾ ISO 19712-2, Abs.11

Rating scale:

Rating 5: No visible change

Rating 4: Slight change in gloss, only visible at certain viewing angles and/or slight brown stain

Rating 3: Moderate change in gloss and/or moderate brown stain

Rating 2: stain Severe brown mark, but no destruction of the surface

Rating 1: surface Blistering and/or cracks

³⁾ ISO 19712-2, Abs.12

Rating scale:

Rating 5: No visible change (No damage)

Rating 4: Slight change in gloss visible only when the light source is moved in the test area and the light is reflected towards the observer's eye, or a few isolated imperfections just visible

Rating 3: Slight mark (s) visible when viewed from several directions, for example an almost complete disc

Rating 2: Distinct mark(s) or region(s) of slight discolorations or region(s) of slight disturbance of the surface visible

Rating 1: Distinct mark(s) or region(s) of slight discolorations or region(s) of distinct disturbance of the surface visible

■ Fire Classification

NO	SPECIFICATION	ABBREVIATION	UNIT	3 mm	TEST METHOD NORM
		Kürzel	Einheit		
	fire classification				
30	Sheet material			B2	DIN 4102-1
31	Sheet material + backup w-board				DIN 4102-1
32	Sheet material			D-s1-d0	EN 13501
33	Sheet material				NF 92-512
34	Sheet material				EN 13501
35	Sheet material + backup f-board				EN 13501
36	Sheet material + backup w-board				EN 13501
37	Sheet material				IMO - modul B & modul D

■ Technical Specification Data Sheet: 6mm

NO	SPECIFICATION	ABBREVIATION	UNIT	6mm	TEST METHOD
		Kürzel	Einheit	S028	NORM
1	Density	P	g/cm ³	1,70	DIN EN ISO 1183
			kg/m ³	1700	
2	Flexural E-modulus	Ef	Mpa	7900	DIN EN ISO 178
3	Flexural strength	σ fm	Mpa	69.6	DIN EN ISO 12372
4	Ultimate elongation	εfm	%	0.84	DIN EN ISO 178
5	Tensile Strength	σ fm	Mpa	52.9(%0.97)	DIN EN ISO 527
6	Thermal expansion coefficient	α	mm/mk		DIN EN 12664
			mm/°C	41.3x10 ⁻⁶	DIN EN 14581
7	Thermal conductivity	λ 10try	W/mK	0.881	DIN EN 12664
8	Resistance to thermal insulation	R	m ² K/W	0.0063	DIN EN 12664
9	Electrostatic Contact resistance	Ω	> 1x10 ⁹	254x10 ⁹	DIN IEC 1340-4-1, 04-`92
			> 1x10 ¹²	0.254x10 ¹²	EN 61340-5-1
10	Water vapour permeability efficient of diffusion resistance	μ	μ	44805	DIN EN ISO 12572
12	Water absorption Increase of weight Increase of thickness	sp. G d	%	0.2	DIN EN 438-12
			%	0.2	
13	Measure variation at humidity change Length Thickness Mass		%		DIN EN ISO 318_5-`98
			%		
			%		
			%		
14	Slippery resistance Angle of acceptance 10° to 19°	R			GMG 100 (±R9)
					DIN 51130
15	Scratch fastness				DIN 68861_4,11-`81
16	Ball indentation hardness HB Mohs-hardnesst Pin-hardness		N/mm ²	270	EN ISO 19712-2-15
17	Barcol hardness			65	EN ISO 19712-2-15
18	Rockwell hardness		HR	119	EN ISO 19712-2-15
19	Impact resistance ball impact by large-diameter		mm	1000	EN ISO 19712-2-8
20	Resistance to dry heat	5=best	rating ³⁾	4	EN ISO 19712-2-12
21	Resistance to wet heat	5=best	rating	5	EN ISO 19712-2-13
22	Resistance to temperatur change		rating	No change	EN ISO 19712-2-14
23	Resistance to cigarett burns	5=best	rating ²⁾	3	EN ISO 19712-2-11
24	Light resistance	5=best	Bl.w.ref6	3 - 4	EN ISO 19712-2-9
25	Food resistance				LMBG §31
26	Hygiene				LGA hygiene certificate
27	Emission				EN ISO 16000-9

¹⁾ relevant for Sheet and cured adhesive

²⁾ ISO 19712-2, Abs.11

Rating scale:

Rating 5: No visible change

Rating 4: Slight change in gloss, only visible at certain viewing angles and/or slight brown stain

Rating 3: Moderate change in gloss and/or moderate brown stain

Rating 2: Severe brown mark, but no destruction of the surface

Rating 1: surface Blistering and/or cracks

³⁾ ISO 19712-2, Abs.12

Rating scale:

Rating 5: No visible change (No damage)

Rating 4: Slight change in gloss visible only when the light source is moved in the test area and the light is reflected towards the observer's eye, or a few isolated imperfections just visible

Rating 3: Slight mark (s) visible when viewed from several directions, for example an almost complete disc

Rating 2: Distinct mark(s) or region(s) of slight discolorations or region(s) of slight disturbance of the surface visible

Rating 1: Distinct mark(s) or region(s) of slight discolorations or region(s) of distinct disturbance of the surface visible

■ Fire Classification

NO	SPECIFICATION	ABBREVIATION	UNIT	6 mm	TEST METHOD
		Kürzel	Einheit		
	Fire resistance performance fire classification				
30	Sheet material			B1	DIN 4102-1
31	Sheet material + backup w-board				DIN 4102-1
32	Sheet material			C-s1-d0	EN 13501
33	Sheet material				NF 92-512
34	Sheet material				EN 13501
35	Sheet material + backup f-board				EN 13501
36	Sheet material + backup w-board				EN 13501
37	Sheet material				IMO - modul B & modul D

■ Technical Spec Data Sheet: 9mm

NO	SPECIFICATION	ABBREVIATION	UNIT	9mm	TEST METHOD
		Kürzel	Einheit	S028	NORM
1	Density	P	g/cm ³	1,72	DIN EN ISO 1183
			kg/m ³	1720	
2	Flexural E-modulus	Ef	Mpa	8800	DIN EN ISO 178
3	Flexural strength	σ fm	Mpa	74.7	DIN EN ISO 12372
4	Ultimate elongation	εfm	%	0.83	DIN EN ISO 178
5	Tensile Strength	σ fm	Mpa	54.5(%1.07)	DIN EN ISO 527
6	Thermal expansion coefficient	α	mm/mk		DIN EN 12664
			mm/°C	41.3x10 ⁻⁶	DIN EN 14581
7	Thermal conductivity	λ 10try	W/mK	0.884	DIN EN 12664
8	Resistance to thermal insulation	R	m ² K/W	0.01	DIN EN 12664
9	Electrostatic Contact resistance	Ω	> 1x10 ⁹	308x10 ⁹	DIN IEC 1340-4-1, 04-`92
			> 1x10 ¹²	0.308x10 ¹²	EN 61340-5-1
10	Water vapour permeability efficient of diffusion resistance	μ	μ	23022	DIN EN ISO 12572
11	Water absorption Increase of weight Increase of thickness	sp. G	%	0.1	DIN EN 438-12
			%	0.2	
13	Measure variation at humidity change Length Thickness Mass		%		DIN EN ISO 318_5-`98
			%		
			%		
			%		
14	Slippery resistance Angle of acceptance 10° to 19°	R			GMG 100 (±R9)
					DIN 51130
15	Scratch fastness				DIN 68861_4,11-`81
16	Ball indentation hardness HB Mohs-hardnesst Pin-hardness		N/mm ²	270	EN ISO 19712-2-15
17	Barcol hardness			65	EN ISO 19712-2-15
18	Rockwell hardness		HR	119	EN ISO 19712-2-15
19	Impact resistance ball impact by large-diameter				EN ISO 19712-2-8
			mm	1750	
20	Resistance to dry heat	5=best	rating ³⁾	4	EN ISO 19712-2-12
21	Resistance to wet heat	5=best	rating	5	EN ISO 19712-2-13
22	Resistance to temperatur change		rating	No change	EN ISO 19712-2-14
23	Resistance to cigarett burns	5=best	rating ²⁾	3	EN ISO 19712-2-11
24	Light resistance	5=best	Bl.w.ref6	3 - 4	EN ISO 19712-2-9
25	Food resistance				LMBG §31
26	Hygiene				LGA hygiene certificate
27	Emission				EN ISO 16000-9

¹⁾ relevant for Sheet and cured adhesive

²⁾ ISO 19712-2, Abs.11

Rating scale:

Rating 5: No visible change

Rating 4: Slight change in gloss, only visible at certain viewing angles and/or slight brown stain

Rating 3: Moderate change in gloss and/or moderate brown stain

Rating 2: Severe brown mark, but no destruction of the surface

Rating 1: surface Blistering and/or cracks

³⁾ ISO 19712-2, Abs.12

Rating scale:

Rating 5: No visible change (No damage)

Rating 4: Slight change in gloss visible only when the light source is moved in the test area and the light is reflected towards the observer's eye, or a few isolated imperfections just visible

Rating 3: Slight mark (s) visible when viewed from several directions, for example an almost complete disc

Rating 2: Distinct mark(s) or region(s) of slight discolorations or region(s) of slight disturbance of the surface visible

Rating 1: Distinct mark(s) or region(s) of slight discolorations or region(s) of distinct disturbance of the surface visible

■ Fire Classification

NO	SPECIFICATION	ABBREVIATION	UNIT	9 mm	TEST METHOD
		Kürzel	Einheit		NORM
	Fire resistance performance fire classification				
30	Sheet material			B1	DIN 4102-1
31	Sheet material + backup w-board			B1**)	DIN 4102-1
32	Sheet material			C-s1-d0	EN 13501
33	Sheet material				NF 92-512
34	Sheet material				EN 13501
35	Sheet material + backup f-board				EN 13501
36	Sheet material + backup w-board				EN 13501
37	Sheet material				IMO - modul B & modul D

■ Technical Specification Data Sheet: 12mm

NO	SPECIFICATION	ABBREVIATION	UNIT	12 mm	TEST METHOD		
		Kürzel	Einheit	S028	NORM		
1	Density	P	g/cm ³	1,75	DIN EN ISO 1183		
			kg/m ³	1750			
2	Flexural E-modulus	Ef	Mpa	8900	DIN EN ISO 178		
3	Flexural strength	σ fm	Mpa	70.1	DIN EN ISO 12372		
4	Ultimate elongation	εfm	%	1.01	DIN EN ISO 178		
5	Tensile Strength	σ fm	Mpa	32.7	DIN EN ISO 527		
6	Thermal expansion coefficient	α	mm/mk	0.048	DIN EN 12664		
			mm/°C	*)48x10 ⁻⁶	DIN EN 14581		
7	Thermal conductivity	λ 10try	W/mK	0.656	DIN EN 12664		
8	Resistance to thermal insulation	R	m ² K/W	0.038	DIN EN 12664		
9	Electrostatic Contact resistance	Ω	> 1x10 ⁹	Isolating	DIN IEC 1340-4-1, 04-`92		
			> 1x10 ¹²		EN 61340-5-1		
10	Water vapour permeability efficient of diffusion resistance	μ	μ	18607	DIN EN ISO 12572		
11	Water absorption	sp. G	%	0.1	DIN EN 438-12		
12	Increase of weight						
	Increase of thickness	d	%	0.1			
13	Measure variation at humidity change		Length	%	-0.03	DIN EN ISO 318_5-`98	
			Thickness	%	0.06		
			Mass	%	0.05		
14	Slippery resistance Angle of acceptance 10° to 19°	R		> 0.32-0.9	GMG 100 (±R9)		
				R10	DIN 51130		
15	Scratch fastness			4D	DIN 68861_4,11-`81		
16	Ball indentation hardness HB Mohs-hardnesst Pin-hardness			N/mm ²	257		
17	Barcol hardness			65	EN ISO 19712-2-15		
18	Rockwell hardness		HR	119	EN ISO 19712-2-15		
19	Impact resistance ball impact by large-diameter			mm	1815	EN ISO 19712-2-8	
20	Resistance to dry heat	5=best	rating ³⁾	4	EN ISO 19712-2-12		
21	Resistance to wet heat	5=best	rating	5	EN ISO 19712-2-13		
22	Resistance to temperatur change		rating	No change	EN ISO 19712-2-14		
23	Resistance to cigarett burns	5=best	rating ²⁾	3	EN ISO 19712-2-11		
24	Light resistance	5=best	Bl.w.ref6	3 - 4	EN ISO 19712-2-9		
25	Food resistance			Suitable	LMBG §31		
26	Hygiene			Suitable	LGA hygiene certificate		
27	Emission			Emission free ¹⁾	EN ISO 16000-9		

¹⁾ relevant for Sheet and cured adhesive

²⁾ ISO 19712-2, Abs.11

Rating scale:

Rating 5: No visible change

Rating 4: Slight change in gloss, only visible at certain viewing angles and/or slight brown stain

Rating 3: Moderate change in gloss and/or moderate brown stain

Rating 2: Severe brown mark, but no destruction of the surface

Rating 1: surface Blistering and/or cracks

³⁾ ISO 19712-2, Abs.12

Rating scale:

Rating 5: No visible change (No damage)

Rating 4: Slight change in gloss visible only when the light source is moved in the test area and the light is reflected towards the observer's eye, or a few isolated imperfections just visible

Rating 3: Slight mark (s) visible when viewed from several directions, for example an almost complete disc

Rating 2: Distinct mark(s) or region(s) of slight discolorations or region(s) of slight disturbance of the surface visible

Rating 1: Distinct mark(s) or region(s) of slight discolorations or region(s) of distinct disturbance of the surface visible

■ Fire Classification

NO	SPECIFICATION	ABBREVIATION	UNIT	12 mm	TEST METHOD
		Kürzel	Einheit	S028	NORM
	Fire resistance performance fire classification				
30	Sheet material			B1 *)	DIN 4102-1
31	Sheet material + backup w-board				DIN 4102-1
32	Sheet material			B-s1-d0	EN 13501
33	Sheet material				NF 92-512
34	Sheet material				EN 13501
35	Sheet material + backup f-board			B-s1-d0	EN 13501
36	Sheet material + backup w-board			C-s1-d0	EN 13501
37	Sheet material				IMO - modul B & modul D

■ Technical Specification Data Sheet: 19 / 20mm

NO	SPECIFICATION	Kürzel	UNIT	12 / 20mm	TEST METHOD					
			Einheit	S028	NORM					
1	Density	P	g/cm ³	1.73	DIN EN ISO 1183					
			kg/m ³	1730						
2	Flexural E-modulus	Ef	Mpa	10000	DIN EN ISO 178					
3	Flexural strength	σ fm	Mpa	70.4	DIN EN ISO 12372					
4	Ultimate elongation	εfm	%	0.81	DIN EN ISO 178					
5	Tensile Strength	σ fm	Mpa	51.3(%1,69)	DIN EN ISO 527					
6	Thermal expansion coefficient	α	mm/mk		DIN EN 12664					
			mm/°C	42x10 ⁻⁶	DIN EN 14581					
7	Thermal conductivity	λ 10try	W/mK	0.871	DIN EN 12664					
8	Resistance to thermal insulation	R	m ² K/W	0.022	DIN EN 12664					
9	Electrostatic Contact resistance	Ω	> 1x10 ⁹	513x10 ⁹	DIN IEC 1340-4-1, 04-`92 EN 61340-5-1					
			> 1x10 ¹²	> 0.513x10 ¹²						
10	Water vapour permeability efficient of diffusion resistance	μ	μ	8060	DIN EN ISO 12572					
11	Water absorption	sp. G	%	0.1	DIN EN 438-12					
12	Increase of weight									
	Increase of thickness	d	%	0.3						
13	Measure variation at humidity change		Length	%	DIN EN ISO 318_5-`98					
			Thickness	%						
			Mass	%						
				%						
14	Slippery resistance Angle of acceptance 10° to 19°	R			GMG 100 (±R9)					
					DIN 51130					
15	Scratch fastness				DIN 68861_4,11-`81					
16	Ball indentation hardness HB Mohs-hardnesst Pin-hardness		N/mm ²	270	EN ISO 19712-2-15					
						17	Barcol hardness		65	EN ISO 19712-2-15
						18	Rockwell hardness	HR	119	EN ISO 19712-2-15
19	Impact resistance ball impact by large-diameter		mm	1808	EN ISO 19712-2-8					
20	Resistance to dry heat	5=best	rating ³⁾	4	EN ISO 19712-2-12					
21	Resistance to wet heat	5=best	rating	5	EN ISO 19712-2-13					
22	Resistance to temperatur change		rating	No change	EN ISO 19712-2-14					
23	Resistance to cigarett burns	5=best	rating ²⁾	3	EN ISO 19712-2-11					
24	Light resistance	5=best	Bl.w.ref6	3 - 4	EN ISO 19712-2-9					
25	Food resistance				LMBG §31					
26	Hygiene				LGA hygiene certificate					
27	Emission				EN ISO 16000-9					

¹⁾ relevant for Sheet and cured adhesive

²⁾ ISO 19712-2, Abs.11

Rating scale:

Rating 5: No visible change

Rating 4: Slight change in gloss, only visible at certain viewing angles and/or slight brown stain

Rating 3: Moderate change in gloss and/or moderate brown stain

Rating 2: Severe brown mark, but no destruction of the surface

Rating 1: surface Blistering and/or cracks

³⁾ ISO 19712-2, Abs.12

Rating scale:

Rating 5: No visible change (No damage)

Rating 4: Slight change in gloss visible only when the light source is moved in the test area and the light is reflected towards the observer's eye, or a few isolated imperfections just visible

Rating 3: Slight mark (s) visible when viewed from several directions, for example an almost complete disc

Rating 2: Distinct mark(s) or region(s) of slight discolorations or region(s) of slight disturbance of the surface visible

Rating 1: Distinct mark(s) or region(s) of slight discolorations or region(s) of distinct disturbance of the surface visible

■ Fire Classification

NO	SPECIFICATION	ABBREVIATION	UNIT	19 / 20 mm	TEST METHOD
		Kürzel	Einheit	S028	NORM
	Fire resistance performance fire classification				
30	Sheet material			B1	DIN 4102-1
31	Sheet material + backup w-board				DIN 4102-1
32	Sheet material			B-s1-d0	EN 13501
33	Sheet material				NF 92-512
34	Sheet material				EN 13501
35	Sheet material + backup f-board				EN 13501
36	Sheet material + backup w-board				EN 13501
37	Sheet material				IMO - modul B & modul D



LRV is a measurement that tells you how much light a colour reflects, and conversely how much it absorbs. LRV runs on a scale from 0% to 100%. Zero being absolute black and 100% being a perfectly reflective white.

SOLIDS	Colour Code	Colour Name	LRV Value
	S001	Satin White	72.06
	S002	Almond	53.58
	S005	Grey	45.22
	S006	Arctic White	87.27
	S009	Cream	77.29
	S022	Black	6.92
	S025	Fiery Red	13.97
	S026	Banana	53.83
	S027	Orange	25.13
	S028	Alpine White	85.12
	S029	Ivory White	79.24
	S034	Diamond White	97.09
	S100	Coffee Brown	17.28
	S102	Babylon Beige	38.14
	S103	Concrete Grey	24.68
	S104	Toffee Brown	15.64
	S106	Lemon Squash	48.46
	S108	Marta Grey	21.47
	S109	Steel Grey	22.23
	S111	Dark Night	12.88
	S115	Deep Indigo	11.97
	S116	Festival Pink	15.38
	S117	Midnight Grey	9.09
	S118	Mink	35.32
	S119	Evergreen	30.79
	S120	Cosmic Blue	27.92
	S121	Suede	60.32
	S201	Nougat Cream	64.33
	S203	Sky Blue	27.46
	S212	Light Green	58.19

TERRAZZO	Colour Code	Colour Name	LRV Value
	Q001	Terrazzo Classico	58.29
	Q002	Terrazzo Grigio	26.24

LUCENT	Colour Code	Colour Name	LRV Value
	S302	Opal	77.45
	S303	Sapphire	57.05
	S304	Ruby	69.70
	S305	Emerald	65.87

CONCRETE	Colour Code	Colour Name	LRV Value
	M551	Chic Concrete	25.35
	M552	Shadow Concrete	18.87
	M553	Ebony Concrete	11.22
	G554	Urban Concrete	31.96
	G555	Steel Concrete	23.26
	G556	Snow Concrete	65.37
	G557	Cloud Concrete	45.12

MARMO	Colour Code	Colour Name	LRV Value
	M603	Pavia	77.22
	M605	Sanremo	8.49
	M606	Aurora Bianco	78.35
	M608	Aurora Grey	58.52
	M617	Aurora Blanc	77.12
	M615	Aurora Cotton	73.51
	M614	Aurora Umber	13.03
	M601	Aurora Torano	71.82
	M612	Aurora Bisque	53.48
	M201	Terni	33.18
	M303	Capri	67.54
	M422	Cremona	54.73
	M426	Laviano	45.14
	M427	Bellizzi	8.37
	M428	Ispani	89.56
	M501	Edessa	75.75
	M904	Naples	20.22

STRATO	Colour Code	Colour Name	LRV Value
	Z001	Strato Cloud - White	75.98
		Strato Cloud - Grey	64.99
	Z003	Strato Wind - Background	83.11
		Strato Wind - Marble	82.18
	Z005	Strato Slate - Background	31.64
		Strato Slate - Background	30.99

LUCIA	Colour Code	Colour Name	LRV Value
	W001	Ice Queen	89.67
	W003	Shadow Queen	67.44
	W004	Star Queen	32.44
	W010	Red Quinoa	34.38

GRANITE	Colour Code	Colour Name	LRV Value
	G005	White Granite	45.30
	G007	Platinum Granite	24.98
	G031	Black Granite	5.64
	G034	Arctic Granite	76.69
	G074	Mocha Granite	10.01
	G100	Peanut Butter	43.42
	G180	Cotton Field	77.93
	G181	Windy Hill	61.81
	G183	Highland	20.87

QUARTZ	Colour Code	Colour Name	LRV Value
	G038	Sea Oat Quartz	52.18
	G063	Allspice Quartz	11.93
	G101	Crystal Beige	68.88

SAND & PEARL	Colour Code	Colour Name	LRV Value
	G002	Grey Sand	47.69
	G009	Black Sand	10.45
	G010	Black Pearl	7.01
	G015	Midnight Pearl	10.77
	G048	Beach Sand	50.49
	G050	Tapioca Pearl	71.21
	G105	Brown Pearl	8.68
	G106	Riviera Sand	61.57
	G107	Pebble Pearl	53.29
	G108	Lunar Sand	71.86

ASTER	Colour Code	Colour Name	LRV Value
	T010	Nebula	83.37
	T011	Venus	61.78
	T017	Andromeda	85.37
	T019	New Moon	63.73
	T020	Hercules	28.46

VOLCANICS	Colour Code	Colour Name	LRV Value
	VA001	Santa Ana	44.35
	VA022	Frosty	39.31
	VB002	Cima	15.24
	VE001	Tambora	59.15
	VG021	Mauí	18.38
	VW001	Gemini	84.32

INTENSE ULTRA	Colour Code	Colour Name	LRV Value
	S922U	Intense Ultra Black	6.54
	S923U	Intense Ultra Grey	9.99
	S924U	Intense Ultra Dark Grey	7.50

TECHNICAL DATA SHEET COLOUR CODES(RAL, PANTONE, NCS)



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HI·MACS

Solids

No	Code	Name	RAL Design	RAL Classic	NCS	Pantone
1	S001	Satin White	-	-	-	11-4800 TPX
2	S002	Almond	095 80 10	-	S 2005-Y30R	13-0607 TPX
3	S033	Nordic White	-	9003	-	11-4201 TPX
4	S034	Diamond White	-	9003	-	11-4201 TPX
5	S005	Grey	000 80 00	-	S 2500-N	14-4201 TPX
6	S006	Arctic White	-	9016	S 0300-N	11-0601 TPX
7	S009	Cream	075 92 05	-	S 1005-Y	11-0105 TPX
8	S100	Coffee Brown	060 20 05	-	S 8505-Y80R	19-0712 TPX
9	S102	Babylon Beige	090 70 10	-	S 3010-Y20R	14-0210 TPX
10	S103	Concrete Grey	000 45 00	-	S 6502-B	18-4005 TPX
11	S104	Toffee Brown	050 40 10	-	S 7010-Y30R	18-1015 TPX
12	S106	Lemon Squash	100 80 50	-	S 5070-G80Y	13-0648 TPX
13	S108	Marta Grey	000 55 00	-	S 5000-N	160-1-2 C
14	S109	Steel Grey	100 60 05	-	S 4502-Y	17-0205 TPX
15	S111	Dark Night	260 30 05	-	S 8005-R80B	433 M
16	S115	Deep Indigo	-	-	S 8010-R90B	19-4010 TPX
17	S116	Festival Pink	340 50 45	-	S 2060-R30B	2415 M
18	S117	Midnight Grey	-	-	S 7502-B	19-3906 TPX
19	S118	Mink	-	-	S 7000-N	18-5102 TPG
20	S119	Evergreen	-	-	S 6020-B50G	19-5413 TPG
21	S120	Cosmic Blue	-	-	S 8010-R70B	19-3927 TPG
22	S121	Suede	-	-	S 2005-Y50R	14-0002 TPG
23	S201	Nougat Cream	095 90 10	-	S 1005-Y40R	12-0000 TPX
24	S203	Sky Blue	250 60 15	-	S 3020-R90B	644 M
25	S212	Light Green	110 80 50	-	S 0550-G50Y	373 M
26	S022	Black	000 15 00	-	S 9000-N	19-4006 TPX
27	S025	Fiery Red	020 40 50	-	S 2070-R	19-1763 TPX
28	S026	Banana	080 80 70	-	S 1060-Y10R	14-0848 TPX
29	S027	Orange	050 50 70	-	S 1080-Y60R	1665 M
30	S028	Alpine White	-	9003	-	11-4201 TPX
31	S029	Ivory White	-	9010	50 603 G80Y	11-0602 TPG

Lucent

No	Code	Name	RAL Design	RAL Classic	NCS	Pantone
1	S302	Opal	000 90 00	-	S 0502-B	11-4800 TPX
2	S303	Sapphire	240 90 05	-	S 1010-R90B	544M
3	S304	Ruby	010 90 05	-	S 0510-R30B	373M
4	S305	Emerald	180 90 10	-	S 0520-B70G	317M

TECHNICAL DATA SHEET

MSDS HIMACS SHEET | Material Safety Data Sheet



Photo: Petr Krejci Photography

SECTION 1: Chemical product and manufacturer's information

1.1 Chemical Product Name: HIMACS

1.2 Usage: Interior building material and furniture applications

1.3 Manufacturer: LX Hausys, Oksan Plant

9, Oksansandan 3-ro, Hungduk-gu,
CHEONGJU CITY, CHUNGBUK 361-912, KOREA
Tel.: +82-43-716-7268
FAX: +82-43-716-7297

1.4 In Case of Emergency: Tel.: +82-2-6930-0825

SECTION 2: Composition and information ingredients

INGREDIENTS	CAS NUMBER	MAX. CONTENT (%)
Acrylic Polymer	9011-14-7	35~45
Hydrated Alumina, Aluminum Hydroxide, Aluminum Trihydroxide	21645-51-2	55~65

SECTION 3: Health hazard data

3.1: The product is a solid surface sheet of varying color and, as such, has no health hazards associated with it. However dust generated from cutting, sanding, or routing may cause mechanical irritation to the skin, eyes and respiratory tract.

3.2 Eyes: Dust generated during fabrication may irritate eyes.

3.3 Skin: Any sharp edges will cut or abrade the skin. Dust generated by fabrication may cause skin sensitization. (Methyl Methacrylate has been shown to cause allergic responses at high concentrations.)

3.4 Respiratory Tract: Dust generated during fabrication may cause irritation to respiratory tract, characterized by sneezing and coughing. May also cause headache in case of long term exposure.

SECTION 4: First aid

4.1 Eye contact: Upon contact with nuisance dust particles, flush eyes immediately with large amounts of water for a minimum of 15 minutes. Seek medical attention.

4.2 Skin contact: Not expected to be a problem. It may cause skin sensitization. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. If irritation persists, seek medical attention.

4.3 Ingestion: Not applicable.

SECTION 5: Fire and explosion data

5.1 Flammability: Non-flammable

5.2 Flash Point: not available

5.3 Auto ignition temperature: Not available

5.4 Products of combustion: Some metallic oxides

5.5 Fire hazards in presence of various substances: Non-flammable in presence of shock heat, oxidizing materials, reducing materials, combustible materials, organic materials, metals, acids, alkalis and moisture.

5.6 Fire Fighting Media – Use dry chemicals, CO₂, Water spray or foam.

Extinguishing Media must not be used for safety reason; high volume water jet.

SECTION 6: Spill procedures and waste disposal

6.1: Review Federal, provincial or State and Local government requirements prior to disposal. Store material for disposal as indicated in storage conditions. Disposal by controlled incineration may be accepted.

6.2 Waste-Key-codes according to EU regulations: 12 01 05 plastic chips / 17 02 03 Plastics // 15 01 03 Packaging wooden pallets.

SECTION 7: Handling and storage

7.1 Handling: Do not breathe dust. If user operations generating dust, use ventilation and exhaust extraction system to keep airborne contaminants below the exposure limit.

7.2 Storage: No specific storage is required. Be sure that it is not necessary to strain to reach materials and that shelves are not overloaded.

7.3 DOT/TDG classification: Not a DOT controlled material.

SECTION 8: Special protection information

8.1 Eye: Safety glasses

8.2 Hands: Gloves to protect against cuts and abrasions are highly recommended.

8.3 Respirator: Wear appropriate respirator when ventilation is inadequate (NIOSH approved) because of generated dust.

SECTION 9: Fire and explosion data

9.1 Appearance: Solid

9.2 Odor: Odorless

9.3 pH: Not applicable

9.4 Specific Gravity: 1.75

9.5 Evaporation Rate: Not available

9.6 Vapor Pressure: Not available

9.7 Solubility in water: Insoluble

9.8 Solubility in solvents: Insoluble in methanol, diethyl ether, n-octanol, acetone

SECTION 10: Stability and reactivity

10.1 Stability: Stable

10.2 Chemical instability/Materials to avoid: Not considered to be reactive according to our database.

10.3 Corrosivity: Not considered to be corrosive for metals and glass according to our data-base.

10.4 Hazardous decomposition: Not available

10.5 Hazardous polymerization: May occur

SECTION 11: Potential chronic health effects

11.1: The product is not toxic to blood, kidneys, lungs, the nervous system, the reductive system, liver, or mucous membranes.

11.2 Chronic effects: No data available

11.3 Mutagenic effects: No data available

11.4 Teratogenic effects: No data available

SECTION 12: Ecological information

12.1 Eco-toxicity: Not applicable

12.2 BODS and COD: Not applicable

12.3 Toxicity of the products of biodegrading: Not applicable

■ SECTION 13: Federal regulations

13.1 TSCA (Toxic Substance Control Act): All components of the product are listed on the TSCA inventory.

13.2 HMIS (Hazardous Material Information System):

Health hazard – 1, Fire hazard – 0, Reactivity – 0, Personal Protection – A

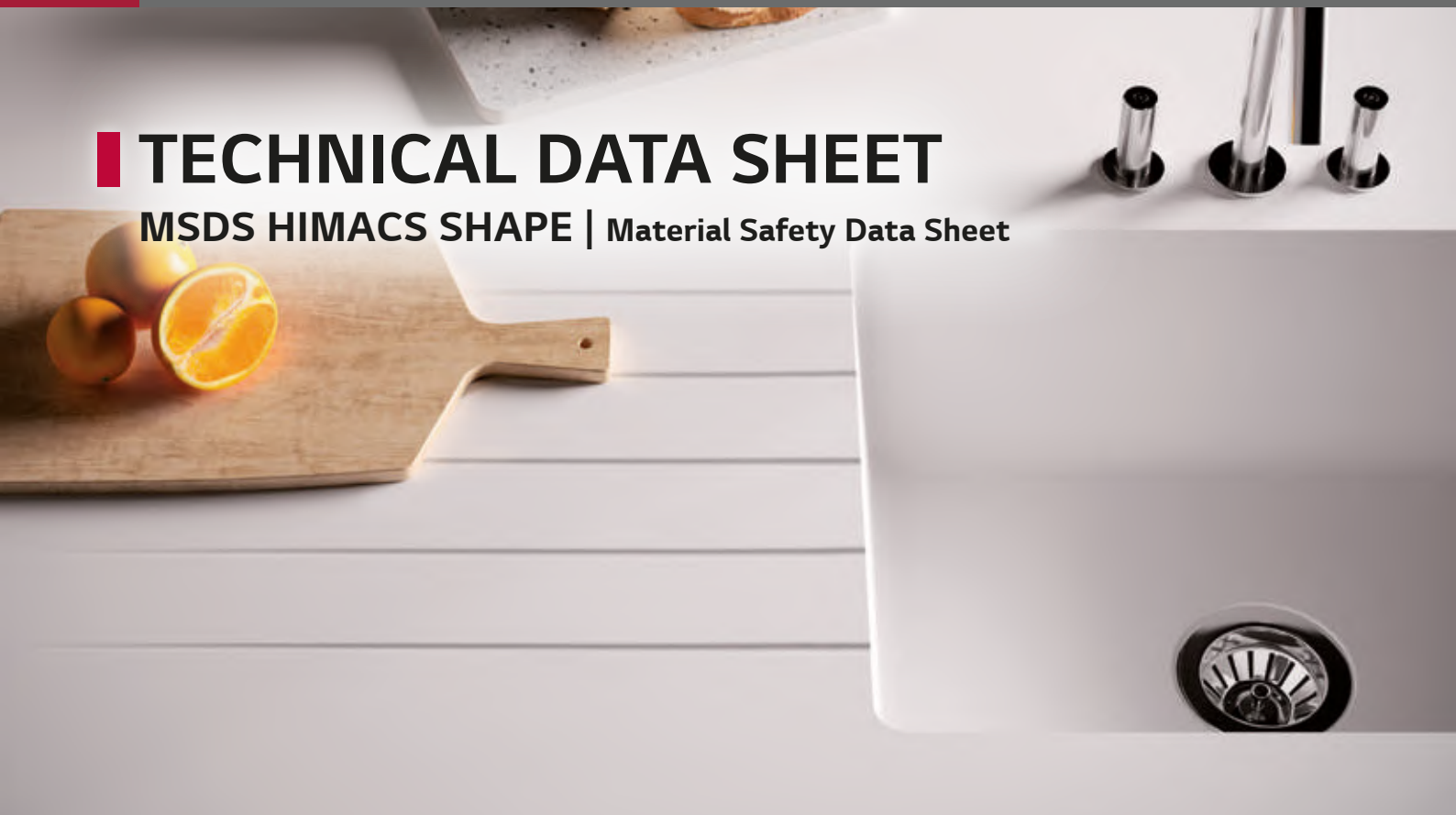
■ SECTION 14

The information provided in this safety data sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the test.

This safety data sheet is given for guidance only, without any warranty, express or implied.

TECHNICAL DATA SHEET

MSDS HIMACS SHAPE | Material Safety Data Sheet



Photos : Studio Podrini

SECTION 1: Chemical product and manufacturer's information

1.1 Identification of the substance. Name: Solid surface

1.2 Identification of the Company: Made in EU

Responsible Company:
LX Hausys Europe GmbH
Lyoner Str. 15
60528 Frankfurt am Main
Germany

SECTION 2: Composition and information ingredients

2.1 Description of the product: Solid surface is a polymeric material used in sanitary field as shower plate, bath tubes, vanities, kitchen sinks laborites shapes or other wet areas.

2.2 Information on ingredients:

HAZARDOUS COMPONENTS	CAS N.º	EINECS	CONCENTRATION%	HAZARD SYMBOLS	R/S PHRASES
Methylmetacrilate	80-62-6	201-297-7	30-40	F Xi	R11 R37/38 R43
Al (OH)3	21645-51-2	244-492-7	60-70	-	R37 S2-22-24-25

SECTION 3: Health hazard data

3.1: In the form supplied the product is non-hazardous. The polymerization reactions uptake monomeric units (reagents) and the end-product is supplied without solvents. Never less some dust can be released in case of mechanical processing; dust consist in polymeric material and Aluminum hydroxide.

SECTION 4: First aid measures

EXPOSURE WAY	SYMPTOMS	MESURES TO BE TAKEN IMMEDIATELYW
Inhalation	Irritation or soreness of respiratory ways	Go away from the contamianated zone. Seek medical attention if needed.
Eyes	Temporary irritation	Flush eyes with large quantities of clean water. Seek medical attention if needed.
Skin contact	-	-
Ingestion	Unknown	Seek medical attention.

Last Revision Year: 2022
HIMACS Technical Data Sheet

■ SECTION 5: Fire and explosion data

5.1: This material it is not inflammable or explosive as supplied. Never less is combustible and it is compatible with all standard Firefighting methods (Water, CO2, etc.).

■ SECTION 6: Spill procedures and waste disposal

6.1 Personal precautions: See section N°8

6.2 Environmental precautions: There are no known risk associated with the product if it is exposed to soil or surface water contact.

6.3 Methods for cleaning up: According to amount, remove spilled material manually, or by mechanical means.

■ SECTION 7: Handling and storage

7.1 Handling: No special precaution is required.

7.2 Storage: Store in dry and manually aired area, away from heat sources that cause damage to the product or to packing materials eventually present. Excessive moisture or water are not dangerous, but can damage the product.

■ SECTION 8: Special protection information

8.1 Exposure controls: In case of mechanical processing use engineering measures such as dust extraction at point of work to keep dust level to a minimum. Customers are advised to check National legislation for limit values and their period of reference.

8.2 Personal protection: During the installation or mechanical processing are required:

- Respiratory protection: Use approved equipment if conditions so require.
- Hand protection: Use wears non-porous antislip gloves.
- Eye protection: Protection glasses are required if only dust is generated during placement and processing.
- Skin protection: Safety footwear and overalls are recommended.

SECTION 9: Physical and chemical properties

Physical form	Solid
Appearance	Stiff product
Odour	None
Bulk density	Not available
Melting point	Not available
Boiling point	Not available
Vapour pressure	Not available
Solubility	insoluble in water
Ph	-
Flammability	None
Auto flammability	None
Explosive properties	None

SECTION 10: Stability and reactivity

10.1 Chemical stability: This material is stable in the form supplied and under normal conditions of dry storage.

10.2 Incompatibility: Exposure to moisture, solvents or heat although not hazardous, will make unstable the product.

10.3 Decomposition products:

SECTION 11: Potential chronic health effects

11.1: There are no health affects known that can arise from the product on delivery. The main danger is the possibility of accidental and prolonged exposure to dust overdose in case of mechanical processing.

11.2 Acute health effects: Irritation or soreness of respiratory ways. Irritation and inflammation of eyes.

SECTION 12: Ecological information

12.1: The unused product is considered inert respect to the environment, it remains stable over the time.

SECTION 13: Federal regulations

HAZARD SYMBOLS	RISK PHRASES	SAFETY ADVICE PHRASES
-	-	-

SECTION 14: Other informations

See: EEC Directives 91/155/EEC-93/112/EEC

This Safety Data Sheet has been prepared in strict observance of EC directives CEE 91/155/ECC - 93/112/CEE and in observance of DM 07/09/2002.

This information was obtained from sources like safety data sheets of ingredients, but they can not be considered to be exhaustive themselves. The conditions or methods of handling, storage, use and disposal are beyond our control and may be beyond our knowledge. Thus we can not accept responsibility for any loss, damage or expense connected with the handling, storage, use or disposal of the product.

■ TECHNICAL DATA SHEET

MSDS HIMACS ADHESIVE COMPONENT A |
ADHESIVE COMPONENT B | Material Safety Data Sheet



1. Identification of the substance / mixture and of the company / undertaking

1.1 Product identifier: HIMACS JOINT ADHESIVE KIT – COMPONENT A

1.2 Relevant identified uses of the substance or mixture and uses advised against:

Relevant identified uses: Adhesive.

Uses advised against: Do not use in medical applications involving permanent implantation in the human body.

1.3 Details of the supplier of the safety data sheet:

LX Hausys CO., LTD.

10 Gukjegeumyoong-ro, Yeongdeungpo-gu, Seoul 07326, Korea
rukibana@lghausys.com (Europe : timlie@lxhausys.com)

1.4 Emergency telephone number:

UK National Poisons Information Service: 0844 892 0111

(24-hour telephone information line, for healthcare professionals only)

2. Hazards identification

2.1 Classification of the substance or mixture:

2.1.1 Classification according to Regulation (EC) No 1272/2008,

GHS: Physical hazard:

- Flammable liquid: Health hazard: Flam. Liq. 2, H225

- Skin corrosion / irritation: Skin Irrit. 2, H315

- Serious eye damage / eye irritation: Eye Irrit. 2, H319

- Skin sensitization: Skin Sens. 1, H317

- Specific target organ toxicity: – single exposure: STOT SE 3, H335

– Target organ: Respiratory tract irritation

Environmental

hazard: - Aquatic

Environment

Acute 1, Chronic 1

2.1.2 Classification according to Directive 1999/45/EC:

Highly flammable: F; R11

Irritant: Xi; R36 / 37 / 38

Sensitizing: R43

2.1.3 Additional information: For full text of R-phrases and hazard statements: see chapter 16. Other information.

2.2 Label elements:

Labelling according to Regulation (EC) No 1272 / 2008:

Hazard pictograms:



Signal word:

Danger ▶

Hazard statements:

H225 Highly flammable liquid and vapor.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H400 Very toxic to aquatic life
H410 Very toxic to aquatic life with long lasting effects

Precautionary statements:**Prevention:**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. – No smoking.
P233 Keep container tightly closed.
P240 Ground / bond container and receiving equipment.
P241 Use explosion-proof electrical / ventilating / lighting / equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P280 Wear protective gloves / protective clothing / eye protection / face protection.
P261 Avoid breathing vapours.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P264 Wash thoroughly after handling.
P273 Avoid release to the environment.

Responses:

P303 + P361+ P353 IF ON SKIN (or hair): Remove / Take off Immediately all contaminated clothing.
Rinse SKIN with water / shower.
P333 + P313 If skin irritation or rash occurs: Get medical advice / attention.
P362 + P364 Take off contaminated clothing and wash before reuse.
P305 + P351 + P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P363 Wash contaminated clothing before reuse.
P337 + P313 If eye irritation persists: Get medical advice / attention.
P304 + P340 IF INHALED: Remove victim to fresh air and Keep at rest in a position comfortable for breathing.
P312 IF exposed: call a POISON CENTER or doctor / physician.
P370 + P378 In case of fire: Use Dry chemical / carbon dioxide for extinction.
P391 Collect spillage. Hazardous to the aquatic environment

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P235 Keep cool.

Disposal:

P501 Dispose of contents / container in accordance with local / regional / national / international regulations.

Hazardous ingredients for labelling: Methyl methacrylate.

2.3 NFPA

Rating : Health: 2 flammability: 3 eactivity: 0 ater reactivity: 0

2.4 Other hazards: There is no additional information.

3. Composition / information on ingredients

3.1 Substances: Not relevant.

3.2 Mixtures: Description of the mixture: Synthetic resin(s) and filler(s). The mixture contains these substances:

SUBSTANCE NAME	EC / CAS NO.	CLASSIFICATION				CONC. (%)
		67 / 548 / EEC	CLP			
			HAZARD CLASS AND CATEGORY CODE(S)	HAZARD STATEMENT	PICTOGRAM / SIGNAL WORD	
Methyl methacrylate ^{1, D}	201-297-1 / 80-62-6	Highly flammable F; R11 Irritant Xi; R36 ² / 37 / 38 Sensitizing R43	Flam. Liq. 2 Skin Irrit. 2 Eye Irrit. 2 ² Skin Sens. 1 STOT SE 3	H225 H315 H319 ² H317 H335	GHS02 GHS07 Dgr	35~50
PMMA[Polymer]	618-466-4 / 9011-14-7	-	-	-	-	20~35
Aluminum Trihydrate	244-492-7 / 21645-51-2	-	-	-	-	10~20
Additives	-	-	-	-	-	3

1 Substance with workplace exposure limits.

2 Classification according to manufacturer.

Note D: Certain substances which are susceptible to spontaneous polymerisation or decomposition are generally placed on the market in a stabilised form. It is in this form that they are listed in Part 3. However, such substances are sometimes placed on the market in a non-stabilised form. In this case, the supplier must state on the label the name of the substance followed by the words 'non-stabilised'.

For full text of H-statements and R-phrases: see chapter 16. Other information.

■ 4. First aid measures

4.1 Description of first aid measures:

General advice

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart.

Following ingestion

Rinse mouth with water (only if the person is conscious). Ingest activated charcoal. Do NOT induce vomiting. Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed:

Symptoms and effects are not known to date.

4.3 Indication of any immediate medical attention and special treatment needed: None.

■ 5. Firefighting measures

5.1 Extinguishing media: Suitable extinguishing media: water spray, alcohol resistant foam, dry chemical, carbon dioxide (CO₂). Unsuitable extinguishing media: water jet.

5.2 Special hazards arising from the substance or mixture: In case of insufficient ventilation and / or in use, may form flammable / explosive vapour-air mixture. Solvent vapours are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Hazardous combustion products: nitrogen oxides (NO_x), carbon monoxide (CO), carbon dioxide (CO₂).

5.3 Advice for firefighters: In case of fire and / or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel: Ensure adequate ventilation. Use personal protective equipment. Remove all sources of ignition. Remove persons to safety. For emergency responders: Wear breathing apparatus if exposed to vapours.

6.2 Environmental precautions: Keep away from drains, surface and ground water. Retain contaminated washing water and dispose it.

6.3 Methods and material for containment and cleaning up: Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage (sawdust, diatomite, sand, universal binder). Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections:

Hazardous combustion products: see chapter 5. Firefighting measures.
Personal protective equipment: see chapter 8. Exposure controls / personal protection. Incompatible materials: see chapter 10. Stability and reactivity.
Disposal considerations: see chapter 13. Disposal considerations.

7. Handling and storage

7.1 Precautions for safe handling: Use local and general ventilation. Keep away from sources of ignition – No smoking. Take precautionary measures against static discharge. Use only in well-ventilated areas. Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches. Ground / bond container and receiving equipment. Use explosion-proof electrical / ventilating / lighting equipment. Use only non-sparking tools. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Vapours are heavier than air, spread along floors and form explosive mixtures with air. Vapours may form explosive mixtures with air. Wash hands after use. Do not to eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities: Keep container tightly closed and in a well-ventilated place. Use local and general ventilation. Keep cool. Protect from sunlight. Keep away from sources of ignition - No smoking. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Take precautionary measures against static discharge. Ground / bond container and receiving equipment.

7.3 Specific end use(s): No data available.

8. Exposure controls / personal protection

8.1 Control parameters:

Occupational exposure limit values listed in EH40 / 2005 Workplace exposure limits:

SUBSTANCE	CAS NUMBER	WORKPLACE EXPOSURE LIMIT				COMMENTS
		LONG-TERM EXPOSURE LIMIT (8-HR TWA REFERENCE PERIOD)		SHORT-TERM EXPOSURE LIMIT (15-MINUTE REFERENCE PERIOD)		
		PPM	G / M ³	PPM	G / M ³	
Methyl methacrylate	80-62-6	50	08	100	416	-
Titanium dioxide total inhalable respirable	13463-67-7	-	10	-	-	-
Carbon black	1333-86-4	-	.5	-	-	-

8.2 Exposure controls:

8.2.1 Appropriate engineering controls: General ventilation.

8.2.2 Individual protection measures, such as personal protective equipment:

8.2.2.1 Eye / face protection: Wear eye / face protection.

8.2.2.2 Skin protection:

Hand protection: Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness / impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. Other: Take recovery periods for skin regeneration. Preventive skin protection (barrier creams / ointments) is recommended. Wash hands thoroughly after handling.

8.2.2.3 Respiratory protection: In case of inadequate ventilation wear respiratory protection.

8.2.2.4 Thermal hazards: No data available.

8.2.3 Environmental exposure controls: Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties:

APPEARANCE	liquid
	colour: various
ODOUR:	acrylic
ODOUR THRESHOLD:	no data available
pH:	6.5 ~ 7.5 at 20°C *Sample: H2O=1:5(V / V)
MELTING POINT / FREEZING POINT:	no data available
INITIAL BOILING POINT AND BOILING RANGE:	> 98 °C
FLASH POINT:	< 20°C (Rapid equilibrium method)
EVAPORATION RATE:	no data available
FLAMMABILITY (SOLID, GAS):	not applicable
UPPER / LOWER FLAMMABILITY OR EXPLOIVE LIMITS:	2.1 vol. % (lower)
	12.5 vol % (upper)
VAPOR PRESSURE (20°C):	39 hps
VAPOR DENSITY:	no data available
RELATIVE DENSITY:	1.20 - 1.24 kg / l
SOLUBILITY(IES):	partially miscible in water
PARTITION COEFFICIENT: N-OCTANOL / WATER:	no data available
AUTO-IGNITION TEMPERATURE:	430°C
DECOMPOSITION TEMPERATURE:	no data available
VISCOSITY:	> 1,000m a s(cP) at 20°C
EXPLOSIVE PROPERTIES:	no data available
OXIDIZING PROPERTIES:	no data available

9.2 Other information: No data available.

10. Stability and reactivity

- 10.1 Reactivity:** Concerning incompatibility: see below “Conditions to avoid” and “Incompatible materials”. The mixture contains reactive substance(s): risk of ignition.
- 10.2 Chemical stability:** No decomposition if stored and applied as directed.
- 10.3 Possibility of hazardous reactions:** No data available.
- 10.4 Conditions to avoid:** Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. UV radiation / sunlight.
- 10.5 Incompatible materials:** Oxidisers – reducing agents.
- 10.6 Hazardous decomposition products:** Methyl methacrylate monomer.

11. Toxicological information

11.1 Information on toxicological effects: Test data are not available for the complete mixture.

Substances: Methyl methacrylate

Acute toxicity: LD50, oral: 7872 mg / kg (RTECS, 47796)

Mixtures:

Acute toxicity:

Oral rat LD50: > 2,000 mg / kg ※ from US NLM / ECHA

Skin rabbit LD50: > 2,000 mg / kg

Inhalation rat LC50 (mist, 4h): No data available

Skin corrosion / irritation: Causes skin irritation.

Serious eye damage / irritation: Causes serious eye irritation.

Respiratory or skin sensitization: May cause an allergic skin reaction.

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Based on available data, the classification criteria are not met.

Reproductive toxicity: Based on available data, the classification criteria are not met. Specific target organ toxicity (STOT) – single exposure: May cause respiratory irritation. Specific target organ toxicity (STOT) – repeated exposure: Based on available data, the classification criteria are not met.

Aspiration hazard: Based on available data, the classification criteria are not met.

Other information: Repeated and prolonged exposure to solvents may cause brain and nervous system damage.

12. Ecological information

12.1 Toxicity: Mixture is not classified as hazardous to the aquatic environment.

Fish LC50: > 100 mg / L, 96 h ※ from US NLM / ECHA

Crustacean LC50: > 20 mg / L, 48 h

Algae EC50: > 0.3 mg / L, 72 h

12.2 Persistence and degradability: No data available.

12.3 Bio-accumulative potential: No data available.

12.4 Mobility in soil: No data available.

12.5 Results of PBT and vPvB assessment: No data available.

12.6 Other adverse effects: No data available.

13. Disposal considerations

13.1 Waste treatment methods: Dispose off in accordance with local and national regulations.
Do not empty into drains. Avoid release to the environment. Handle contaminated packages in the same way as the substance itself.

14. Transport information

14.1 UN number: 1133
14.2 UN proper shipping name: ADHESIVES containing flammable liquid
14.3 Transport hazard class(es): 3.
14.4 Packing group: II
14.5 Environmental hazards: No data available.
14.6 Marine pollution: No.
14.7 Special precautions for user: Fire EmS Guide : F-E. Spillage EmS Guide : S-D
14.8 Transport in bulk according to Annex II of MARPOL73 / 78 and the IBC Code: No data available.

15. Regulatory information

15.1 Safety, health and environmental regulations / legislation specific for the substance or mixture: The substances in the mixture are not subject to the authorization under Title VII nor restrictions under Title VIII of Regulation (EC) No. 1907 / 2006.

15.2 Chemical safety assessment: Chemical safety assessment for substances in this mixture is not available.

16. Other information

List of relevant hazard statements:

H225	Highly flammable liquid and vapor.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
R11	Highly flammable.
R36 / 37 / 38	Irritating to eyes, respiratory system and skin.
R43	May cause sensitization by skin contact.

Instructions for the training:

Product handling instruction shall be included into the educational system about the safety work (initial training, training at the workplace, repeated training) according to specific conditions at the workplace.



Recommended restrictions on use (i.e. non-statutory recommendations by supplier):

Mixture should not be used for any other purpose than for which is appointed (point 1.2). Because of the fact that specific conditions of use of substance are out of supplier's control, it is responsibility of the user to adjust the prescribed warnings to local laws and regulations. Safety information describes the product in terms of safety and it cannot be considered as technical information about product.

Sources of key data used to compile the Safety Data Sheet: SDS was elaborated according to requirements set in Annex II of Regulation (EC) No 1907 / 2006 of the European Parliament and of the Council. SDS was prepared using data from the producer. This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

Classification procedure:

Physical and chemical properties: The classification is based on tested mixture.

Health hazards / environmental hazards: The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

Purpose of SDS: Purpose of this SDS is to provide relevant information for users of product to ensure proper handling and control of risks / hazards.

Abbreviations and acronyms

CLP	Regulation (EC) No 1272 / 2008 on classification, labelling and packaging of substances and mixtures
EH40 / 2005	EH40 / 2005 Workplace exposure limits, Table 1: List of approved workplace exposure limits
Eye Irrit.	eye irritation
F	highly flammable
Flam. Liq.	flammable liquid
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
PBT	Persistent, Bioaccumulative and Toxic
ppm	parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
Skin Irrit.	skin irritation
Skin Sens.	skin sensitisation
STOT SE	specific target organ toxicity – single exposure
vPvB	very Persistent and very Bioaccumulative
Xi	irritant

1. Identification of the substance / mixture and of the company / undertaking

1.1 Product identifier: HIMACS JOINT ADHESIVE KIT – COMPONENT B

1.2 Relevant identified uses of the substance or mixture and uses advised against:

Relevant identified uses: Adhesive.

Uses advised against: Do not use in medical applications involving permanent implantation in the human body.

1.3 Details of the supplier of the safety data sheet:

LX Hausys CO., LTD.

10 Gukjegeumyoong-ro, Yeongdeungpo-gu, Seoul 07326, Korea

rukibana@lghausys.com (Europe: timlie@lghausys.com)

1.4 Emergency telephone number:

UK National Poisons Information Service: 0844 892 0111 (24-hour telephone information line, for healthcare professionals only)

2. Hazards identification

2.1 Classification of the substance or mixture:

2.1.1 Classification according to Regulation (EC) No 1272 / 2008, GHS:

Skin sensitization: Skin Sens. Category 1, H317

Eye Irritation: Eye Irrit. Category 2, H319

Aquatic Environment: Chronic 2

2.1.2 Classification according to Directive 1999 / 45 / EC:

Sensitizing: R43

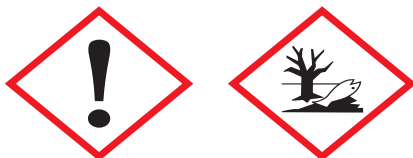
2.1.3 Additional information: For full text of R-phrases and hazard statements: see chapter 16.

Other information.

2.2 Label elements:

Labelling according to Regulation (EC) No 1272 / 2008:

Hazard pictograms:



Signal word: Warning

Hazard statements:

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H411 Toxic to aquatic life with long lasting effects.

Precautionary statements:

P261 Avoid breathing vapours.

P280 Wear protective gloves / protective clothing / eye protection / face protection.

P272 Contaminated work clothing should not be allowed out of the workplace.

P264 Wash thoroughly after handling.



P273 Avoid release to the environment.
 P302 + P352 IF ON SKIN: wash with plenty of water.
 P333 + P313 IF SKIN irritation or rash occurs: Get medical advice / attention.
 P362 + P364 Take off contaminated clothing and wash before reuse.
 P305 + P351 + P338 If in eyes: Rinse cautiously with water for several minutes.
 Remove contact lenses, if present and easy to do. Continue rinsing.
 P337 + P313 If eye irritation persists: Get medical advice / attention.
 P391 Collect spillage. Hazardous to the aquatic environment
 P363 Wash contaminated clothing before reuse.
 P501 Dispose of contents / container in accordance with local / regional / national / international regulations.

Hazardous ingredients for labelling: Dibenzoyl peroxide.

2.3 NFPA Rating:

Health: 2 Flammability: 1 reactivity: 0 Water reactivity: 0

2.4 Other hazards: There is no additional information.

3. Composition / information on ingredients

3.1 Substances: Not relevant.

3.2 Mixtures: Description of the mixture: Plasticizer. The mixture contains these substances:

SUBSTANCE NAME	EC / CAS NO.	CLASSIFICATION				CONC. (%)
		67 / 548 / EEC	CLP			
			HAZARD CLASS AND CATEGORY CODE(S)	HAZARD STATEMENT	PICTOGRAM / SIGNAL WORD	
Dipropylene glycol dibenzoate	248-258-5 / 27138-31-4	-	-	-	-	94
Dibenzoyl peroxide ¹	202-327-6 / 94-36-0	Explosive E; R3 Oxidising O; R7 Irritant Xi; R36S sensitising R43	Org. Perox. B Eye Irrit. 2 Skin Sens. 1	H241 H319 H317	GHS01 GHS02 GHS07 Dgr	3
Fumed silica, cryst.-free ¹	601-216-3 / 112945-52-5	-	-	-	-	3

¹ Substance with workplace exposure limits.

For full text of H-statements and R-phrases: see chapter 16. Other information.

■ 4. First aid measures

4.1 Description of first aid measures:

General advice

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

Following ingestion

Rinse mouth with water (only if the person is conscious). Ingest activated charcoal. Do NOT induce vomiting. Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed: Symptoms and effects are not known to date.

4.3 Indication of any immediate medical attention and special treatment needed: None.

■ 5. Firefighting measures

5.1 Extinguishing media:

Suitable extinguishing media: water spray, alcohol resistant foam, dry chemical, carbon dioxide (CO₂).

Unsuitable extinguishing media: water jet.

5.2 Special hazards arising from the substance or mixture:

Hazardous combustion products: nitrogen oxides (NO_x), carbon monoxide (CO), carbon dioxide (CO₂).

5.3 Advice for firefighters: In case of fire and / or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel: Ensure adequate ventilation. Use personal protective equipment. Remove all sources of ignition. Remove persons to safety. For emergency responders: Wear breathing apparatus if exposed to vapors.

6.2 Environmental precautions: Keep away from drains, surface and ground water. Retain contaminated washing water and dispose it.

6.3 Methods and material for containment and cleaning up: Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage (sawdust, diatomite, sand, universal binder). Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections:

Hazardous combustion products: see chapter 5. Firefighting measures.
Personal protective equipment: see chapter 8. Exposure controls / personal protection.
Incompatible materials: see chapter 10. Stability and reactivity.
Disposal considerations: see chapter 13. Disposal considerations.

7. Handling and storage

7.1 Precautions for safe handling: Use local and general ventilation. Keep away from sources of ignition – No smoking. Use only in well-ventilated areas. Wash hands after use. Do not to eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities: Keep at temperatures below 30°C. Water mist may be used to cool closed containers. Incompatible products: Polymerization accelerators and easily oxidized materials. Reacts violently in contact with acids, amines, driers.

7.3 Specific end use(s): No data available.

8. Exposure controls / personal protection

8.1 Control parameters:

Occupational exposure limit values listed in EH40 / 2005 Workplace exposure limits:

SUBSTANCE	CAS NUMBER	WORKPLACE EXPOSURE LIMIT				COMMENTS
		LONG-TERM EXPOSURE LIMIT (8-HR TWA REFERENCE PERIOD)		SHORT-TERM EXPOSURE LIMIT (15-MINUTE REFERENCE PERIOD)		
		PPM	G / M ³	PPM	G / M ³	
Dibenzoyl peroxide	94-36-0	-		-	-	-
Fumed silica, Crystalline-free	-	-	0,1	-	-	-

8.2 Exposure controls:

8.2.1 Appropriate engineering controls: General ventilation.

8.2.2 Individual protection measures, such as personal protective equipment

8.2.2.1 Eye / face protection: Wear eye / face protection.

8.2.2.2 Skin protection:

Hand protection: Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness / impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Other: Take recovery periods for skin regeneration. Preventive skin protection (barrier creams / ointments) is recommended. Wash hands thoroughly after handling.

8.2.2.3 Respiratory protection: In case of inadequate ventilation wear respiratory protection.

8.2.2.4 Thermal hazards: No data available.

8.2.3 Environmental exposure controls: Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties:

APPEARANCE	liquid
	colour: light yellow
ODOUR:	slight
ODOUR THRESHOLD:	no data available
pH:	6.5 ~ 7.5 at 20°C ※ Sample : H ₂ O = 1:5 (V/V)
MELTING POINT / FREEZING POINT:	no data available
INITIAL BOILING POINT AND BOILING RANGE:	> 100
FLASH POINT:	230°C (Cleveland open cup)
EVAPORATION RATE:	no data available
FLAMMABILITY (SOLID, GAS):	not applicable
UPPER / LOWER FLAMMABILITY OR EXPLOCIVE LIMITS:	no data available
VAPOR PRESSURE (20°C):	1.3 hps
VAPOR DENSITY:	no data available
RELATIVE DENSITY:	1.1 at 20°C
SOLUBILITY(IES):	immiscible in water
PARTITION COEFFICIENT: N-OCTANOL / WATER:	no data available
AUTO-IGNITION TEMPERATURE:	No spontaneous combustion under 200°C
DECOMPOSITION TEMPERATURE:	103°C
VISCOSITY:	> 1,000 m a . s (cP) at 20 °C
EXPLOSIVE PROPERTIES:	no data available
OXIDIZING PROPERTIES:	no data available

9.2 Other information: No data available.

■ 10. Stability and reactivity

10.1 Reactivity: Concerning incompatibility: see below “Conditions to avoid” and “Incompatible materials”.

10.2 Chemical stability: Decomposition starting from 103°C: Dibenzoyl peroxide 100%.

10.3 Possibility of hazardous reactions: No data available.

10.4 Conditions to avoid: Keep away from heat and ignition sources.

10.5 Incompatible materials: Reacts violently in contact with acids, amines, driers, polymerization accelerators and easily oxidized materials.

10.6 Hazardous decomposition products: Benzoic acid, biphenyls, benzene.

■ 11. Toxicological information

11.1 Information on toxicological effects: Test data are not available for the complete mixture.

Substances:

Oxydipropyl dibenzoate

Acute toxicity: LD50, oral: 8000 mg / kg (RTECS, 59814)

Dibenzoyl peroxide

Acute toxicity: LD50, oral: 7710 mg / kg (RTECS, 19455)

Mixtures:

Acute toxicity: Based on available data, the classification criteria are not met.

Oral rat LD50 : > 2,000 mg / kg ※ from US NLM / ECHA

Skin rabbit LD50 : No data available

Inhalation rat LC50 (mist, 4h) : No data available

Skin corrosion / irritation: Based on available data, the classification criteria are not met.

Serious eye damage / irritation: Based on available data, the classification criteria are not met.

Respiratory or skin sensitization: May cause an allergic skin reaction.

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Based on available data, the classification criteria are not met.

Reproductive toxicity: Based on available data, the classification criteria are not met.

Specific target organ toxicity (STOT) – single exposure: Based on available data, the classification criteria are not met.

Specific target organ toxicity (STOT) – repeated exposure: Based on available data, the classification criteria are not met.

Aspiration hazard: Based on available data, the classification criteria are not met.

Other information: Repeated and prolonged exposure to solvents may cause brain and nervous system damage

12. Ecological information

12.1 Toxicity: Mixture is not classified as hazardous to the aquatic environment.

Fish LC50 : > 2.0 mg/L, 96 h ※ from US NLM / ECHA

Crustacean LC50 : > 2.0 mg/L, 48 h

Algae EC50 : > 1.0 mg/L, 72 h

12.2 Persistence and degradability: No data available.

12.3 Bio-accumulative potential: No data available.

12.4 Mobility in soil: No data available.

12.5 Results of PBT and vPvB assessment: No data available.

12.6 Other adverse effects: No data available.

13. Disposal considerations

13.1 Waste treatment methods: Dispose off in accordance with local and national regulations.

Do not empty into drains. Avoid release to the environment. Handle contaminated packages in the same way as the substance itself.

14. Transport information

14.1 UN number: No data available.

14.2 UN proper shipping name: No data available.

14.3 Transport hazard class(es): No data available.

14.4 Packing group: No data available.

14.5 Environmental hazards: No data available.

14.6 Special precautions for user: No data available.

14.7 Transport in bulk according to Annex II of MARPOL73 / 78 and the IBC Code: No data available.

15. Regulatory information

15.1 Safety, health and environmental regulations / legislation specific for the substance

or mixture: The substances in the mixture are not subject to the authorization under Title VII nor restrictions under Title VIII of Regulation (EC) No. 1907 / 2006.

15.2 Chemical safety assessment: Chemical safety assessment for substances in this mixture is not available.

16. Other information

List of relevant hazard statements:

H241 Heating may cause a fire or explosion.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.



- R3 Extreme risk of explosion by shock, friction, fire or other sources
R7 of ignition. May cause fire.
R36 Irritating to eyes.
R43 May cause sensitization by skin contact.

Instructions for the training: Product handling instruction shall be included into the educational system about the safety work (initial training, training at the workplace, repeated training) according to specific conditions at the workplace.

Recommended restrictions on use (i.e. non-statutory recommendations by supplier):

Mixture should not be used for any other purpose than for which is appointed (point 1.2). Because of the fact that specific conditions of use of substance are out of supplier's control, it is responsibility of the user to adjust the prescribed warnings to local laws and regulations. Safety information describes the product in terms of safety and it cannot be considered as technical information about product.

Sources of key data used to compile the Safety Data Sheet: SDS was elaborated according to requirements set in Annex II of Regulation (EC) No 1907 / 2006 of the European Parliament and of the Council. SDS was prepared using data from the producer. This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

Classification procedure:

Physical and chemical properties: The classification is based on tested mixture. Health hazards / environmental hazards: The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

Purpose of SDS: Purpose of this SDS is to provide relevant information for users of product to ensure proper handling and control of risks / hazards.

Abbreviations and acronyms

CLP	Regulation (EC) No 1272 / 2008 on classification, labelling and packaging of substances and mixtures
EH40 / 2005	EH40 / 2005 Workplace exposure limits, Table 1: List of approved workplace exposure limits
E	explosive
Eye Irrit.	eye irritation
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
O	oxidising
Org. Perox.	organic peroxide
PBT	Persistent, Bioaccumulative and Toxic
ppm	parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
Skin Sens.	skin sensitisation
vPvB	very Persistent and very Bioaccumulative
Xi	irritant

■ TECHNICAL DATA SHEET STORAGE, HANDLING & TRANSPORTATION



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1. HIMACS Sheets

In the workshop:

1.1. HIMACS Sheets: General

- Always handle HIMACS with care.
- Use always your personal safety protection material (like gloves, safety shoes...etc.).
- Keep the environment of your workplace clean.
- Use proper and safe handling equipment.
- When moving HIMACS sheets in your warehouse or fabrication shop drive and move slowly –but continuously.
- Ensure the area where you are moving material back and forward is smooth and free of any unevenness in the floor.
- When using a fork lift ensure the lifting arms are long and strong enough to take the heavy pallets from the front side, so that the pallet can be lifted free.
- If you receive a standard container delivery you must unload from the head side and have prepared the folk with long lifting arms to unload in the best and safest way.
- In case of taking the pallets from the side ensure to use a wide fork lifter arm to avoid any dangerous bending of the material.
- Due to heavy weight it is best to unload and move pallets singly to prevent any harmful bending of the sheets.

1.2. HIMACS Sheets: Storage & Handling

- HIMACS sheets should always be stored flat on sturdy pallets with a cover board placed on the pallet before stacking the sheets (Fig. 1).
- Keep the sheets in a dry, well ventilated area.
- Using shelving, HIMACS sheets must always be stored with sufficient support so that the sheets do not warp.
- Never attempt to carry sheets of HIMACS on your own. The sheet should be lifted by two people, one at either end. Always lift in a vertical position (Fig. 2).

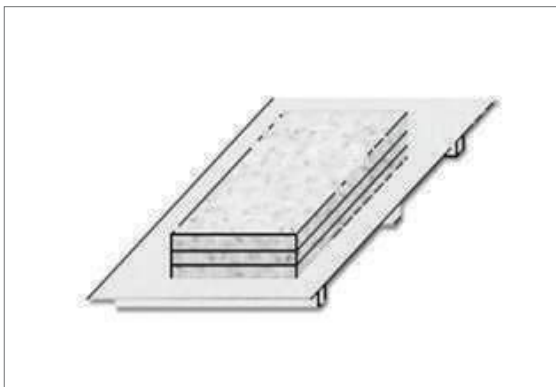


Fig. 1

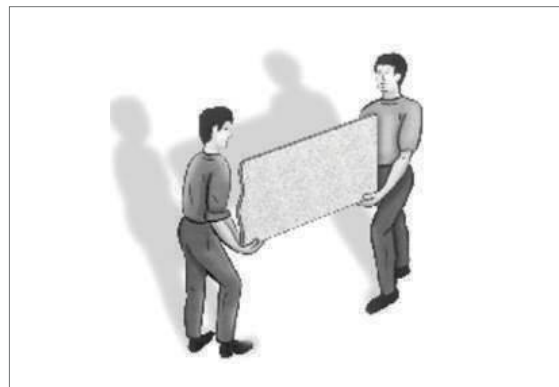


Fig. 2

- Do not drag sheets of HIMACS along the floor as this will lead to chipped or broken edges.
- Always support panels which have cut-outs and/or joins during transportation.
- Store sinks and bowls in the same way as the sheets.
- Pack fabricated elements made out of HIMACS using blister pack for protection.
- Large fabricated elements are best supported on their edge.
- Avoid transporting fabricated items of HIMACS in open top vehicles as this can cause extreme thermal movement and a change of air conditions.
- Prevent panels and elements from moving during transportation.



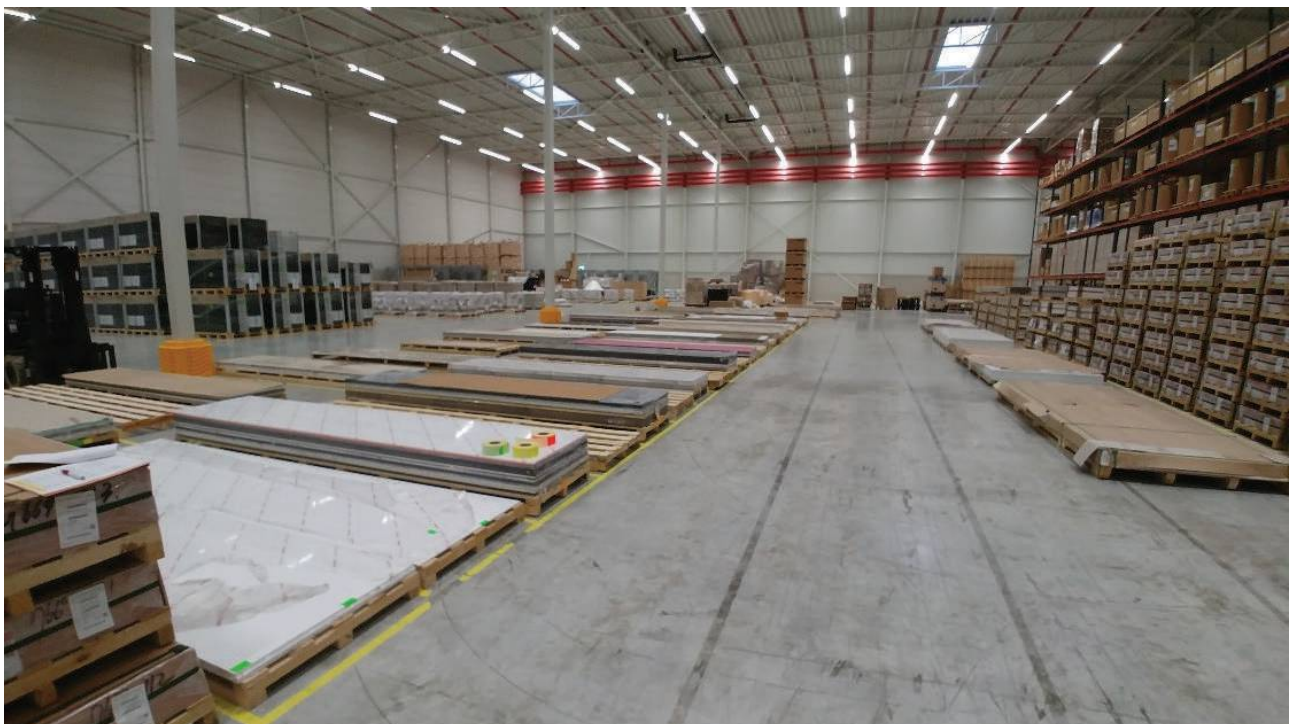
Do NOT store HIMACS Material outside!



Best to store HIMACS Sheets in a well covered room or warehouse hall with closed and protected wall against rain, snow, cold and sunlight.

Ensure HIMACS Sheet material is positioned on a flat and leveled base or straight floor level.

Best practice to store HIMACS Sheets one pallet maximum on a one rack unit.



Best practice: Warehouse sample – Pantos / warehouse
©Lothar Moritz

Ensure when handling HIMACS sheets and pallets by using a forklift the lifting arms are placed in the correct distance apart and are all leveled in one having a straight direction.



- Place pallets only when the shelf arms are levelled to ensure to avoid any warping or wave bending.
- In case you have to store several pallets putting on top of each other for a very short period of time ensure you put enough support under the pallet to avoid any waving of sheet possibility and that those are absolutely aligned to be able to take all the heavy weight.
- When putting a pallet in stock open its transportation steel band and remove the clear plastic sheet of the pallets to minimize the effect of moisture.
- When the pallet is placed in the rack always cover the top with a protective wooden sheet. This avoids the top sheet becoming dirty or easily scratched.



Do NOT pull off the protective film during storage!

Always protect the sheets & pallets against the weather.
Do not leave them outside for hours and days.

- When handling a sheet always do it best with two people or using a vacuum lifting system (for example: company "Schmalz GmbH", Germany, www.vacuworld.com).



- When lifting by hand always turn the sheet on the edge before lifting up.
- Ensure to have proper support to handle the weight of the sheet.
- When providing cut sheets to your customers store the left of sheets by size but avoid mixing long and short sheets due to warping and waving effect of the sheet material.



In case of any complaint in regardless of material defect, please always provide the sheet-no. to be filled in a "QC-Complaint Request Form" (latest published version).

S028 ALPINE WHITE 38AV1 0235 IIII

Sample of sheet no.: „38AV 1 0235“

2. HIMACS Adhesive

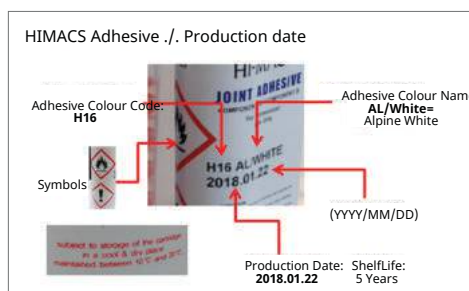
- Store adhesives in a well ventilated room.
- The room should be best: dark , dry and cold
- Storage temperature should be best approximate between + 8°C and + 15°C.
- Avoid any direct sunlight to the adhesive cartridges.
- Follow legal storage handling of “dangerous & flammable” adhesive items.
- Indicate the storage goods with proper signs
- “No Smoking” allowed.



Do NOT store adhesive in uncontrolled conditions or outside.

Shelf life of all cartridges is 5 years starting from the production date printed on the labels of adhesive.

In case of complaint please always provide this production date as reference to be filled in a QC-Complaint Request Form.



Sample of adhesive production date: 2018.01.22

Precautions for safe handling:

- Use local and general ventilation.
- Keep away from sources of ignition
- No smoking.
- Use only in well-ventilated areas. Wash hands after use. Do not to eat, drink and smoke in work areas.
- Remove contaminated clothing and protective equipment before entering eating areas.
- Never keep food or drink in the vicinity of chemicals.
- Never place chemicals in containers that are normally used for food or drink.
- Keep away from food, drink and animal feeding stuffs.

Conditions for safe storage, including any incompatibilities:

- Keep at temperatures below 30°C.
- Water mist may be used to cool closed containers.
- Incompatible products
 - Polymerization accelerators
 - Easily oxidized materials.

Reacts violently in contact with

- Acids
- Amines
- Driers

► For further Information on glue see MSDS of HIMACS Adhesive.

3. HIMACS Shapes

- Always handle with care.
- Do not leave the packaging in the rain or in the snow.
- Check all incoming goods immediately of any outside or inside damage and report on the transportation documentations.
- Do not allow any package to be dropped on the floor neither hidden by a forklift nor bumped on any corner, barrier, walls or any other warehouse/workshop items.
- Leave shapes in their original packaging when storing
- Put the labels in the direction where those can be read from outside.

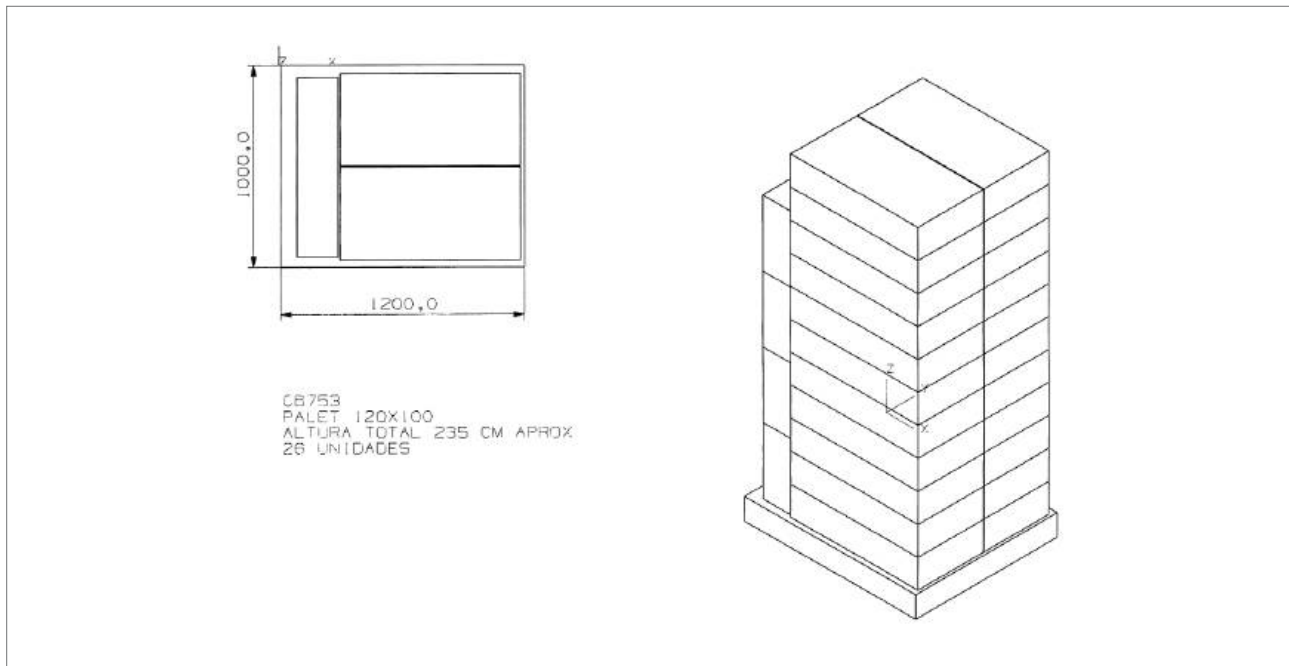


- Store shapes inside a well-ventilated room and do not put them outside.
- Ensure the shelf system is strong enough to easily take the weight of the shapes.
- Depending on packaging size do not put more than 8 to 10 packages on top of each other. Detailed \ package and storage-list: please ask your local Authorized HIMACS Distributor
- Do not put several pallets on top of each other.
- Store the material properly leveled and horizontally only.
- Keep items clean.

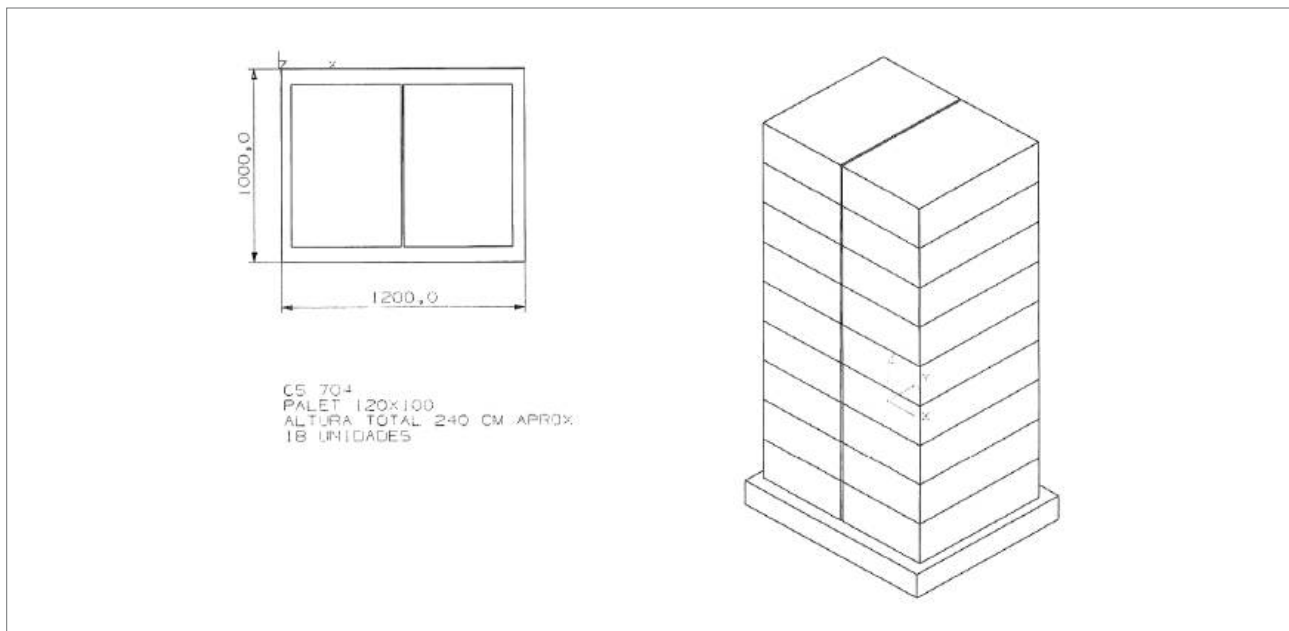


In case of complaint of shape please always provide this production-no as reference to be filled in a QC-Complaint Request Form.

Pallet packaging sampling storage



Pallet packaging CB753



Pallet packaging CB753

- Ensure to fix the tower of boxes with some transportation plastics to avoid any falling down.

Transportation

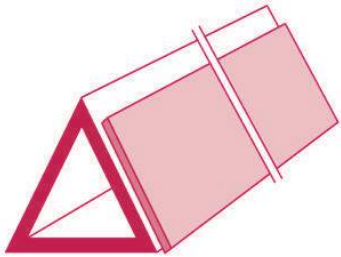


- Ensure the pallets loaded on the lorry (truck) are placed leveled and have full support any time.



- Pallets and boxes should be stopped to avoid any movement during transportation.
- Do not store more than 5 pallets on top of each other. (sheets only / check weight)
- Fabricated items to be protected by a bubble wrap pack / wooden surroundings or full cover boxes for protection.
- Edges and corners need to be protected with pasteboards or other packaging materials to avoid any hitting or edge damage.

In case of complaint of any visible package damage during transportation when unloading the truck make a notification on the transportation documents - delivery note.



Fabricated elements are best transported on the edge of the back and stored on a special A-angled Support-Rack with protection shields

- Any cutouts on fabricated items need to have a proper protection to avoid any breaking by loading, unloading and during transportation.
- Avoid transporting fabricated items of HIMACS in open vehicles as this can cause extreme thermal movement according of used products and will have a huge impact due to a change of atmospheric conditions.

Interior Solid Surface Material

HI·MACS

TECHNICAL DATA SHEET PRODUCT QUALITY SPECIFICATION SHEET, SHAPE, ADHESIVE



HIMACS - Photographed by Dominik Obertreis

1. Sheet

Quality Specification 2021 (Sheet)

PRODUCT	PROPERTY	AIM VALUE	TOLERANCE	
Sheet	Incorrect labeling	None	-	
	Breakage - Cracks	No Cracks	Edge chips, but usable length \geq nominal - 10mm and/or usable width \geq nominal - 3.0mm	
	Length	Standard: 2490; 3000 and 3680 mm flex: 2200 - 3680mm custom request	-6.5 +12.5mm	
	Width	760 or over 910 mm (930; 1220; 1350 and 1520mm)	± 1.5 mm	
	Thickness	4,5; 6; 9; 12 and 20mm	1) 760mm width product: -0,15mm and + 0.45mm 2) Over 910mm width product: ± 0.7 mm 3) 930mm width product: ± 0.2 mm	
	Flatness Warping convex/concave	4,5; 6; 9; 12 and 20mm		
	width 760mm			
width 910 / 930mm	$\pm 2,5$ mm			
width 1220mm	$\pm 3,5$ mm			
width 1350mm	$\pm 4,5$ mm			
width 1550mm	$\pm 5,5$ mm			

Quality Specification 2021 (SHEET)

PRODUCT	PROPERTY	AIM VALUE	TOLERANCE
Face side	Gloss level	5	Variations from 3 to 6
	Chatter marks		
	Colour / pattern consistency within one sheet	No difference	-
	Colour / pattern consistency within 50 production sequential number of same lot	Any pieces seamed together should not show a difference	The seam may be inconspicuous $\Delta E \leq 0.5$
	Dark spots	None or $\leq 0.13 \text{ mm}^2$ size	Less than 5 spots ($\leq 0.13 \text{ mm}^2$ size) Observation Radius 1.000mm Observation Distance 600mm
	Light spots	None or $\leq 0.2 \text{ mm}^2$ size	Less than 5 spots ($\leq 0.13 \text{ mm}^2$ size) Observation Radius 1.000mm Observation Distance 600mm
	Pin holes, voids	None	Less than 5 voids ($\leq 0.1 \text{ mm}^2$ / sheet)
Back side	Gloss level	None	-
	Sanding level	Grit 100	± 20 grit
	Pin holes, voids	None	$\leq 3 \text{ mm}$ deep Less than 6mm in diameter and less than 10 holes within a circle of 100mm diameter

2. Shape

Quality Specification 2021 (Shape)

PRODUCT	PROPERTY	AIM VALUE	TOLERANCE
Shape	Cracks	No cracks	None
	Exposed surface	Free of ripples, craters, air holes, frost and white spots	None
		Free of foreign matter and dirt particles	None
	Interior length and width	Refer to shapes' brochure	(+) 0.5% / (-) 0.5%
	Shrinkage mark outside Shape	No shrinkage mark	None
	Flange	Thickness 11mm	(+) 1.0 mm / (-) 1.0 mm
		Interior edge should be sharp	Radius \leq 0.2 mm
		Flange width	Uniform within 2.5 mm
		Upper surface of flange should be flat	(+) 0.5 mm / (-) 0.5 mm
	Color	Color match according to master piece	max. $\Delta E \leq 0.7$
	Overflow hole	"Slot" according to each shape drawing	None chips broken
		Maximum length: L= x mm Maximum width: L= y mm	± 0.5 mm ± 0.5 mm
		Horizontal & central positioning	None
		Edges both sides (R \geq 1.0 ./ 1.5mm)	± 0.5 mm
	Air bubbles outside shape	Max. size of hole: \varnothing 1.0 mm Depth of hole: max. 1.0mm	None None
	Overflow piece (hardware PVC) plus instructions	Placed into shape during packing	Only for shapes with overflow hole
	Drain hole	Broken edges both sides (R \geq 2.0 mm)	± 0.5 mm
	Kitchen sink	Kitchen sinks / baby bath / bathtub: Edges both sides (R \geq 3.0 mm)	± 0.5 mm
		Circle 360° cut through \varnothing 90,0mm rebate \varnothing 116mm	+1.0mm / -0.0mm +1.0mm / -0.0mm
	Vanity	Circle 360° cut through \varnothing 46,0mm rebate/angel \varnothing 72mm	+1.0mm / -0.0mm +1.0mm / -0.0mm
Shape production label (Stamp)	Placing position: bottom of the shape - near drainhole	None	
Shape product label	2-sites of box (outside) front-side ./ Right hand side	None	

3. Adhesive

Quality Specification 2021 (Adhesive)

PRODUCT	PROPERTY	AIM VALUE	TOLERANCE
Adhesive	Shelf Life for adhesive cartridges	60 months after production date when stored at condition of 12-15°C, dark and dry	None
	Tightness of cartridges	No Leaking	None
	Curing time of joint adhesive	Complete 45 minutes After mixing at +17°C	± 10 minutes

* Method: Check whether the curing time is within specification and visual

► For further details see TDS Adhesive and MSDS Adhesive component A & B

HAZARDOUS INGREDIENTS

	Hazardous mixtures of other liquids, solids or gases	CAS	%
Adhesive	Part A		
	Methyl methacrylate	80-62-6	30 to 60
	Part B		
	Benzoyl peroxide	94-36-0	Up to 3
	Dipropylene Glycol, Dibenzoate	27138-31-4	Up to 60

PHYSICAL DATA

	Article	Data
Adhesive	Boiling point (°F)	350 ~ 450
	Vapour pressure (mm Hg) at 25°C	5mm at 22.2°C
	Vapour density	Heavier than air
	Evaporation rate	Slower than ether
	Water volume	0%

Interior Solid Surface Material

HI·MACS

■ TECHNICAL DATA SHEET JOB PLANNING



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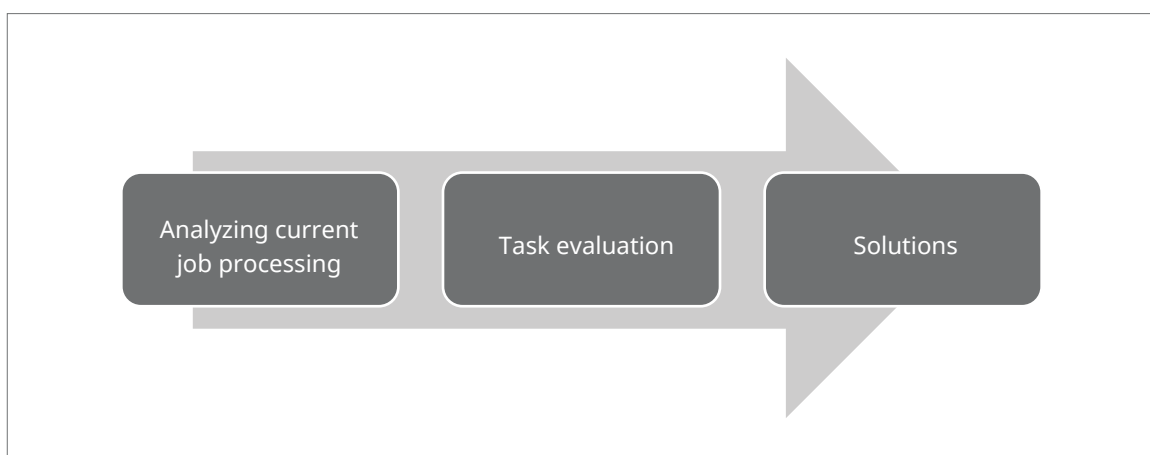
■ 1. Job Planning

Job planning is an important tool to organize your fabrication and the following installation in the best and most efficient way. Numbering of each item and installation plans with best practice and advice will help to keep these costs under control and will reduce the offering price for your customer clientele.

Many aspects need to become aligned and following a continuous flow from the beginning to the end of the job or project:



There are different companies which offer from individual till full system development programs according to your needs of Product Quality delivery to satisfy your customers.



Choose best system to make your job and project successful and profitable.

For industrial fabrication processes be aware that a process of a lot production will have the best quality out-come of goods combined with an individual work-bench fabrication process.

Ensure to assemble work pieces in following sequential numbering, like:
50EB 00350... 50EB 00351... 50EB 00352...

■ 2. Job Planning summery

HIMACS Layout

Before cutting the sheets you have ordered and received from your HIMACS distributor, calculate the number, lengths, widths and elevation to double check the amount of material you will need to finish the entire project. If you calculate too closely, you may create yield problems and dye lot concerns if more material must be ordered.

- Same production date with sequential numbers to ensure colour matching

Cold or hot conditions of environment has a big influence which always needs to be consider before starting fabrication:

Also remember to consider cutouts, backsplash materials and build up or down turn strips. As you look at all of these factors consider the cutout sizes and locations, substructure require-ments, seam locations, possible inlay issues and specialty fabrication, such as a curve backsplash or thermoformed surface requirements.

- Check if columns or additional heating elements are installed.
- Check the transportation possibilities from the street to the place of installation
 - Parking situation / local parking request and requirement
 - Influence of public traffic
 - To which floor level to transport
 - Eventually crane needed
 - Any sharp corners
 - Any elevator available
 - Stairs / doors / windows etc.

TECHNICAL DATA SHEET GENERAL SHEET FABRICATION



© Dominik Obertreis

HI·MACS

Ambitious designs need a material available in a wide range of colours.

Both the material and also its range of colours are crucial with superior quality designs. Elegant White, warm Toffee Brown, mystical Cima with a Volcanics structure, translucent pastel shades or sophisticated shimmering textures. Almost every conceivable shade is available in the HIMACS range. Irrespective of which shade you opt for, HIMACS is homogeneous through and through.

COLOURS		THICKNESS	STANDARD WIDTH	STANDARD LENGTH	AVAILABLE WIDTH	FLEXIBLE LENGTH
Solid	Solid S028	4.5mm	930mm	3000mm	760mm	3000
			760mm	2.490mm		
		6mm	910mm	2.490mm	2.200mm ~3.680mm	
			1,350mm	3.680mm		
			1,520mm	3.680mm		
			760mm	3.680mm		
		9mm	910mm	3.680mm	2.200mm ~3.680mm	
			1,350mm	3.680mm		
			1,520mm	3.680mm		
			760mm	3.680mm		
		12mm	760mm	3.680mm	2.200mm ~3.680mm	
			910mm	3.680mm		
	1,350mm		3.680mm			
	1,520mm		3.680mm			
	Solid (Except S028)	20mm	760mm	3.000mm	N/A	2.200mm ~3.680mm
			6mm	760mm	2.490mm	910mm,1350mm,1520mm
		9mm	760mm	3.680mm	910mm,1350mm,1520mm	2.200mm ~3.680mm
			12mm	760mm	3.680mm	910mm,1350mm,1520mm
20mm		760mm	3.000mm	N/A	2.200mm ~3.680mm	
		12mm	760mm	3.680mm	910mm,1350mm,1520mm	2.200mm ~3.680mm
Ultra Thermofoor		12mm	760mm	3.680mm	910mm,1350mm,1520mm	2.200mm ~3.680mm
		930mm	3.680mm			
Intense Standard	12mm	760mm	3.680mm	N/A	2.200mm ~3.680mm	
Intense ULTRA	12mm	760mm	3.680mm	910mm,1350mm,1520mm	2.200mm ~3.680mm	
S828	12mm	760mm	3.680mm	N/A	2.200mm ~3.680mm	
FR S728 + S728M	12mm	760mm	3.680mm	N/A	2.200mm ~3.680mm	

COLOURS		THICKNESS	STANDARD WIDTH	STANDARD LENGTH	AVAILABLE WIDTH	FLEXIBLE LENGTH
Lucent	OPAL	6mm	760mm	2.490mm	910mm, 1520mm	2.200mm ~3.680mm
			1.350mm	3.680mm		
		9mm	760mm	3.680mm		
			1.350mm	3.680mm		
	12mm	760mm	3.680mm			
		1.350mm	3.680mm			
Except OPAL (SApphire.)	6mm	760mm	2.490mm	910mm, 1350mm, 1520mm	2.200mm ~3.680mm	
	9mm	760mm	3.680mm			
Granite, Quartz, Sand & Pearl	Standard	12mm	760mm	3.680mm	Wide sheet availability has to be discussed by color/case	2.200mm ~3.680mm
		20mm	760mm	3.000mm		2.200mm ~3.680mm
		6mm	760mm	2.490mm		N/A
		9mm	760mm	3.680mm		N/A
Lucia	Standard	12mm	760mm	3.680mm	N/A	2.200mm ~3.680mm
		20mm	760mm	3.000mm	N/A	2.200mm ~3.680mm
Volcanics	Standard	12mm	760mm	3.680mm	N/A	2.200mm ~3.680mm
Aster	Standard	12mm	760mm	3.680mm	N/A	2.200mm ~3.680mm
Marmo	Standard	12mm	760mm	3.680mm	N/A	2.200mm ~3.680mm
Eden	Standard	12mm	760mm	3.680mm	N/A	N/A
Strato	Standard	12mm	760mm	3.680mm	N/A	3.680mm
Terrazzo	Standard	12mm	760mm	3.680mm	N/A	3.680mm

Some colours may easier to fabricate than others, depending on the intended application, and we would be pleased to advise you on the correct choice of colour

The technology of HIMACS fabrication is undelaying to joiners Know How and its fabrication technology. In addition with HIMACS typical material characteristics in recognition and respecting of regulations, design and quality the range of applications becomes dimensional.

There is a differentiation – according to the production and design effect of the HIMACS sheet color and grouped into color families:

- | | | | |
|---|--|---|--|
| <ul style="list-style-type: none">• Solids• Solids Velvet• Solids Special• Application use• Sands | <ul style="list-style-type: none">• Granite• Lucent• Marmo• Aster (Galaxy)• Pearls | <ul style="list-style-type: none">• Quartz• Volcanics• Eden• Lucia | <ul style="list-style-type: none">• Concrete• Intense Ultra• Thermoforming• Strato• Terrazzo |
|---|--|---|--|

General Fabrication

The fabrication recommendations are based mainly on its specific color family. Each single color family has its specific characteristic and needs - here and there- special fabrication techniques are required to get best optical fabrication results.

HIMACS Products Fabrication

The characteristics that give these HIMACS sheet materials their distinct appearance are the result of the manner in which the materials are manufactured. Conventional seaming methods for field seams, edge treatments, and backsplashes are not suitable for these products. Conventional methods that work well with solid colors and small particulate do not result in acceptable visual aesthetics when used with these products.

Irregular Patterns (such as “MARMO”)

These products cannot be joined as an “L” or “U”-shape or joined end-to-end without sacrificing material. They will not produce an acceptable “stacked” edge or three-part covered backsplash. The two work-arounds are the “S-seam” and the “Partial Sheet”. Because of this, a fabricator should expect material yield to be as much as 50% less than with solid color or small particulate materials. See the “Irregular Patterns” section for more information.

Translucence

Materials that allow light transmission can be backlit or otherwise illuminated to produce dramatic visual effects. But those same characteristics allow substructures to be visible. See the “Translucence” section for more information.

Striped Material (such as “STRATO”)

Strato material exhibits a greater variation in color, shading, and pattern than is apparent in samples. Even 12-inch (300mm) square samples and full-sheet photographic images can't fully capture these variations. If possible allow the customer to view the actual material together with seaming layout examples and sign a “document of understanding”. Otherwise the finished countertop may not be consistent with customer expectations

HIMACS Sheets cut to size and workshop equipment

The table circular saw

This equipment is mainly used to cut the HIMACS panels to size. It is very popular in the joiner industry and be used for any straight cutting application if square or angled. High-quality saws pay off the benefit of accuracy and precise cuts and angles up to 45° degree.

The vertical panel saw

is a key consideration. High-quality panel saws require substantial investments, but offer the benefit of single-person operation with accurate results.

Dust collection, ventilation and extraction system and/or tables

HIMACS fabrication produces a nuisance dust. Dust collection systems provide a cleaner working environment and lead to an extended tool life. It also is necessary to keep up with OH&S compliance levels at high production capacities.

Forklift

This equipment is essential to the secure moving of HIMACS materials into the shop environment from the delivery truck without incurring damages and exposures to injury. It adds to the level of protection of HIMACS and creates a better work environment.

Engineered work tables and benches

The “stationing” of such tables will heighten efficiencies of production. These tables/stations provide flexible accessibility to electrical power and air connections for hand tools. It also ensures a calibrated work surface.

Cantilevered storage racks

These storage racks improve access to HIMACS materials by heightening efficiency and safety standards within the shop environment.

CNC / V grooving machinery

This machinery processes the materials efficiently and quickly on large jobs. It offers the consistent ability to manufacture components while maximizing material yields.

Digital Template systems

Digital Templating offers the ability to take a digital picture of the field conditions and calibrate it to perfect the accuracy of the dimensions of the HIMACS top. It is then downloaded to the waiting CNC where the fabrication process begins and the materials are cut. This is all accomplished without traditional templates and before the estimator returns from the field to the shop.

HIMACS layout

Before cutting the sheets you have ordered and received from your HIMACS distributor, calculate the number, lengths, widths and elevation to double check the amount of material you will need to finish the entire project. If you calculate too closely, you may create yield problems and dye lot concerns if more material must be ordered.

You must also remember to consider cutouts, backsplash materials and buildup strips. As you look at all of these factors consider the cutout sizes and locations, substructure requirements, seam locations, possible inlay issues and specialty fabrication, such as a cove backsplash or thermoformed surface requirement.

Material review

Place materials on the work benches. Inspect dye lots and run numbers.

Remove peel coat and inspect for colour variation, match and defects.

Review cuts and dry fit seams when applicable **before cutting!** Remember that this is a review and inspection process. Wet the edges between sheets to be seamed to help determine colour match.

Review all safety and shop procedures before cutting and machining the HIMACS sheet materials.

Think twice – before cutting ones!

Cutting and staging overview

Avoid handling materials alone. Use best two people to move the sheet into position for cutting or use special lifting (vacuum) and workshop transportation systems.

Cut the HIMACS sheet materials for your job specifications. If you are using a table saw, make sure it has out feed supports. If using a vertical panel saw, remember to watch for errant materials after cutting.

Place cut materials on your workbench and create the 5 mm inside corner with the appropriate router and template. Remember that a 10 mm bit creates only a 5 mm radius.

Stage your components and assemblies on a flat, rigid plane surface. If using more than one bench to stage your project, make certain these benches are of the same height! Your supporting work tables should have supports approx. every 600 mm. This will ensure a flat and safe working area as you assemble your tops.

Save any extra materials or out falls for buildup strips, cutting boards and repair materials.

Remember to leave a good size piece of colour matched material at the jobsite in case of repair. A good spot to place this is under the sink cabinet. Pre-drill two holes in the material at your shop. During installation, place a screw into the drilled holes and position the piece to the side wall of the cabinet or chose any other convenient place.

Seam locations and cutout positioning

Keep seams 50 mm from any inside or outside corners and 100 mm from any cutout for stove, sink or other consideration of cutout.

When having to layout and fabricate a countertop, remember to maintain the seam 50 mm from the inside corners.

A distance from hob cutout to backsplash should be 50mm.

Cutout optimizing

When making a cutout, remember to make them larger than the recommendations provided by the manufacturer. The recommendation is a 6 mm gap around the countertop cutout and a 3 mm around the sink cutout. Do not make them too large.

Substructure

HIMACS needs to be supported. Depending on the application, the following materials for support can be recommended:

- Steel/stainless steel profiles
- Aluminum/aluminum profiles
- Moisture resistant wooden sheets of MDF, Plywood or particle board

For application as a kitchen counter top, a frame substructure is strongly recommended.

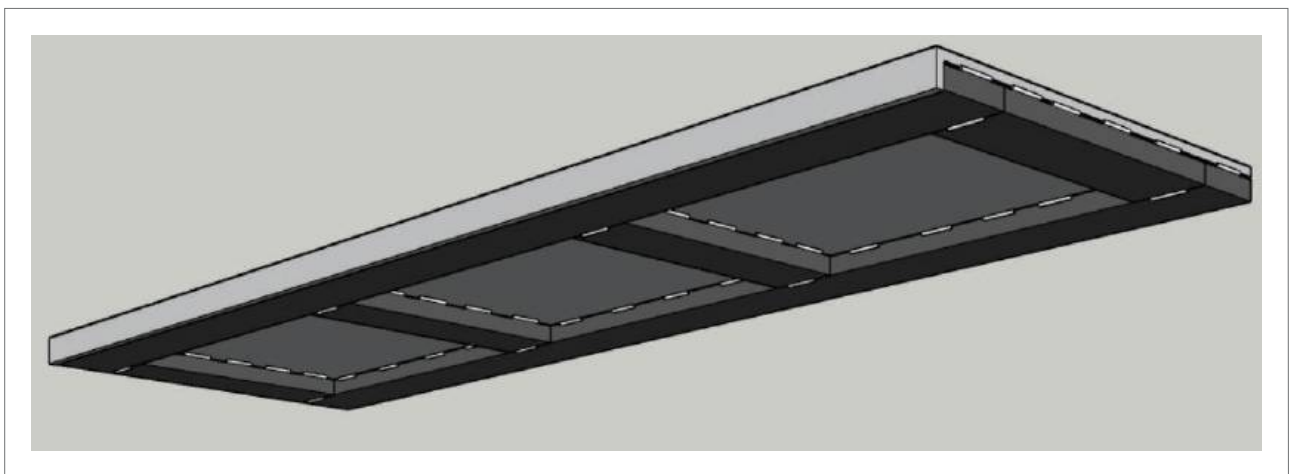


Fig.1.

A full underlayment can but should not be used.

Adjust all substructures with a permanent elastic silicone or with a permanent elastic PU adhesive to the back of the HIMACS sheet, preferably in dots with a maximum distance of approximately 100 mm. Wooden strips should have a width of ca. 80 mm. Rebate for reinforcement strips to be foreseen.

Non kitchen counter tops can be used and fabricated by a full underlayment construction. Ensure the top cannot become warped at any circumstances.

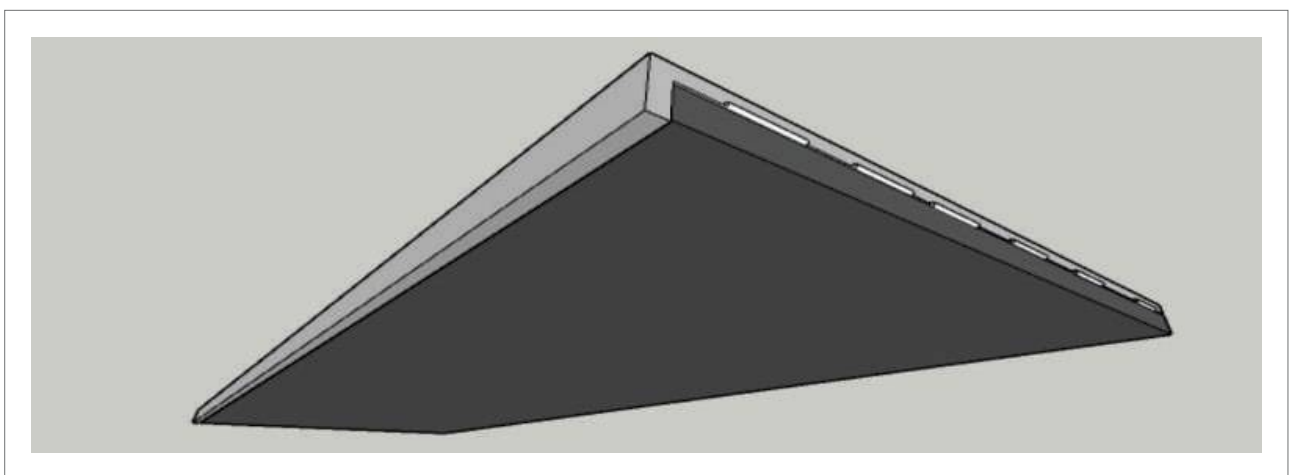


Fig.2.

Prepping

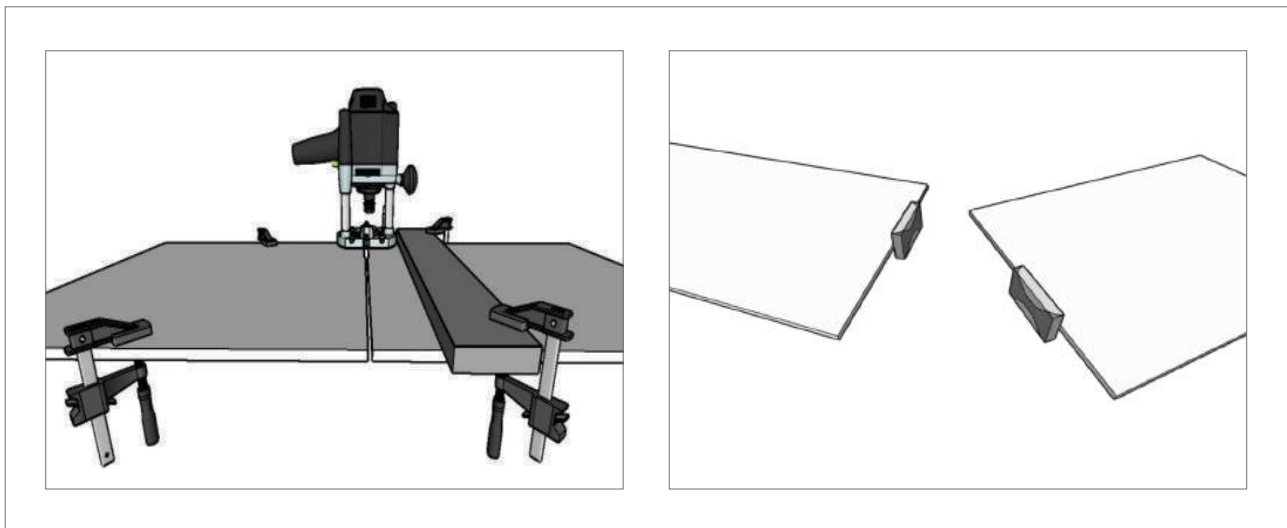
Though it is typically not necessary with acrylics to scuff-sand all surfaces to be bonded, it is a good practice and is recommended. It will increase the strength of the bond. When performing this procedure, use 60grit sandpaper. Remember, as a general requirement to clean the scuff-sanded areas and any joints or seams with denatured alcohol prior to final seam preparation and execution.

As a general rule, use clean, white, lint- free rags (cloth or paper) and avoid rags with any colour dyes. The dyes mixed with the denatured alcohol could contaminate the joints and seams.

Seams

Traditionally, solid seams are the hardest and leave the least amount for error. It is very important when seaming solids that you thoroughly clean the seams and prepares a precise mirror cut.

Seaming with matrix colours, whether it be Sands, Pearls, Quartz or Granite series HIMACS, are more forgiving, by virtue of the many colours of particulate.



Using the following procedures will ensure a great seam

Industry standards suggest that two acceptable methods will ensure a great seam.

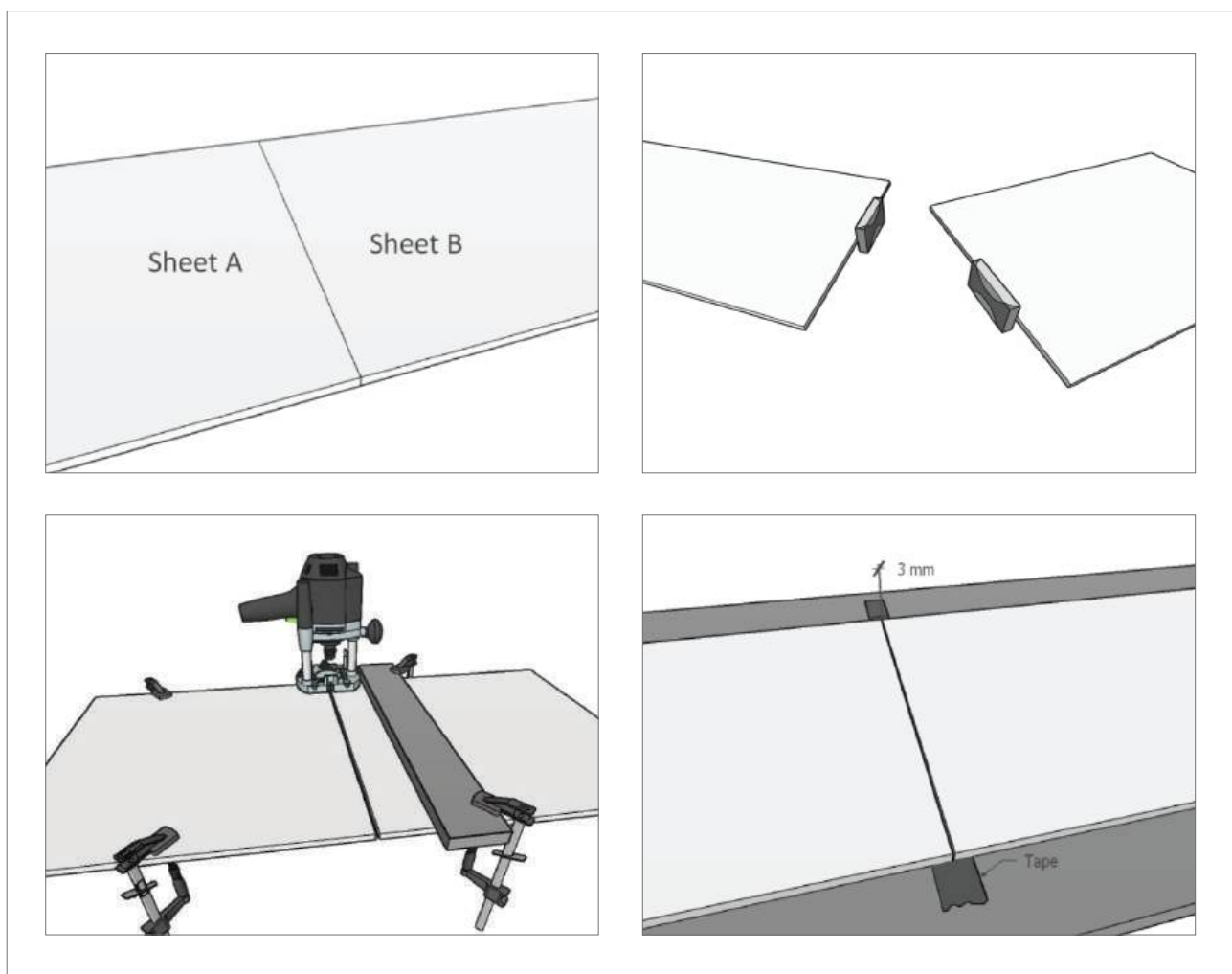
Mirror cut the two pieces to be seamed together and do so at the same time. This is performed by setting a straight edge in place on one of the pieces to be seamed and also clamping down the two pieces to be seamed. Maintain a gap approximately 6 mm greater than the shank of the bit. It will take approximately 3 mm off each of the pieces that will be seamed. A square base router will help the accuracy. With one controlled pass of the router, you will make these two "mirror" edges simultaneously. The two pieces will fit together exactly.

The other method is to do the exact same procedure, but use a wavy bit instead of a standard plunge bit. Using a wavy bit suggests a greater surface area for bonding.

You can also achieve extremely accurate cuts by using C.N.C., Vertical Panel Saws, or Auto "V" Groover. If you scuff-sand the edges with a right angle block and 60 grit sand paper, you will ensure a greater bonding surface than if you do not.

Make sure to clean the joining edges with denatured alcohol and a clean white rag.

Apply a strip of box tape or packing tape to the underside of the area to be joined, half on each side of the two pieces. This will create a bridge. Leave about 3 mm between pieces before applying the tape.



Clamping tips

- Remember clamping pressures. Do not use excessive pressure. If you do, you will create a dry seam. This is when you squeeze all the glue from the seam joint.
- Clamp pressures should be tight enough to allow a bead of adhesive to squeeze out.
- The adhesive will shrink slightly, so do not completely clean off the joint of excess adhesive.
- Look for glue voids and air pockets. Take care of this before the seam adhesive sets up. Inspect the seam to ensure a tight fit.
- Let the adhesive cure for a minimum of 40 minutes in normal conditions or until hard to your fingernail touch.
- Remove the excess adhesive by “Leveling” the seam with a router with a set of skis and a small leveling bit.
- Be careful when using a belt sander to perform this operation. Be aware that excessive heat will weaken the integrity or fail the seam all together.
- Finish sanding all surfaces to specified finish - best according to basic fabrication guidelines.

Reinforcement typical standards

- Seam reinforcement materials should be comprised of 12 mm HIMACS materials.
- The reinforcement must be continuous along the entire seam. This 50mm wide reinforcement strip must be beveled to 45 degrees and sanded smooth to reduce the stress riser.
- Avoid stress risers. A stress riser is a sharp or rough cut or corner that weakens over time as the top expands and contracts. This weakening effect will eventually fail the top and a crack in the countertop will occur.
- Locate reinforced seams where full support is available. Reinforcements can sometimes get in the way of the overall support structure.
- Keep the nearest edge of the seam support a minimum of 50 mm from inside corners.

Note:

Do not place a seam over a dishwasher or washing machine or similar device. Do not place a seam through a sink. Do not place a seam through a cook top area or any other heating device.

Attach scrap material or wooden blocks best with hot melt adhesive.

- Apply the adhesive.
- Use clamping device to tighten seam.
 - Do not over tighten; will cause “dry seam”.
- Remove clamps and blocks after adhesive has hardened.
 - Tip: Use denatured alcohol to spray onto the blocks with hot melt adhesive for better and easy remove.
- HIMACS requires a minimum 25 mm radius on all drop edge inside corners.
 - Diagram indicates recommended build-up.

Edge build-up overview

HIMACS has its unique ability of providing the machining ability for fabricators to exercise their design creativity when creating edges. With the multitude of bits available to the fabricators and terrific adhesives, there are almost endless lists of edge considerations. The fabricator skill level will come into play when considering the level of sophisticated or complicated edge ideas.

The fabricator’s skill level also comes into play in making inconspicuous joints also paramount to the high quality of an edge simple or complicated.

Edge build-ups are typically 38 mm and occasionally 50 or 60 mm thick. Aprons for commercial work are a minimum of 75 mm with a typical being between 150 mm and 200 mm.

Drop edges and build-downs

- Drop edges applied to sheets of HIMACS can create a multitude of design possibilities. One of the easiest
- ways to produce a drop edge is to simply stack layers of HIMACS on the underside of the sheet. Fig.3.

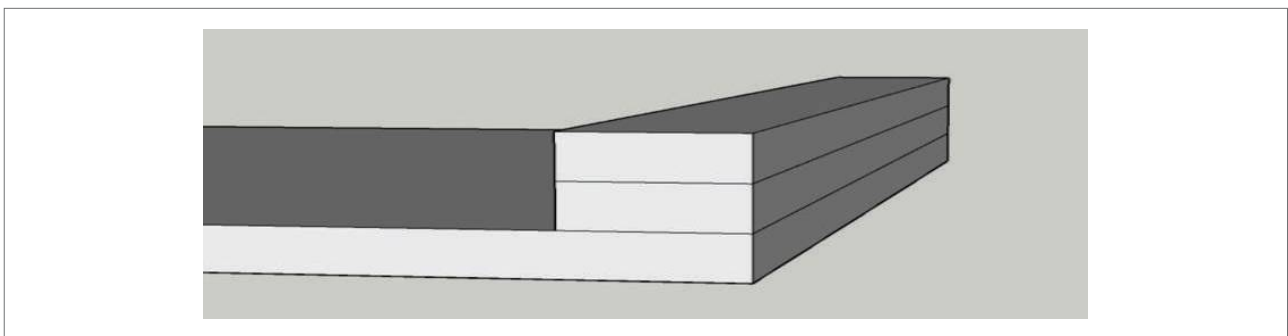


Fig.3

- Start by cutting strips which are slightly oversized and sand the underside with 120 grit paper. Clean with denatured alcohol and white cloth.
- Apply a sufficient amount of HIMACS Joint-Adhesive to each of the strips and smooth out using a wooden or plastic spatula.
- Attach 'A' style spring clamps every 80 / 85 mm and allow to cure (45 min/+20°C). Ensure that, once the clamps have been applied, a reasonable amount of adhesive is forced out from the joins. Fig.4.

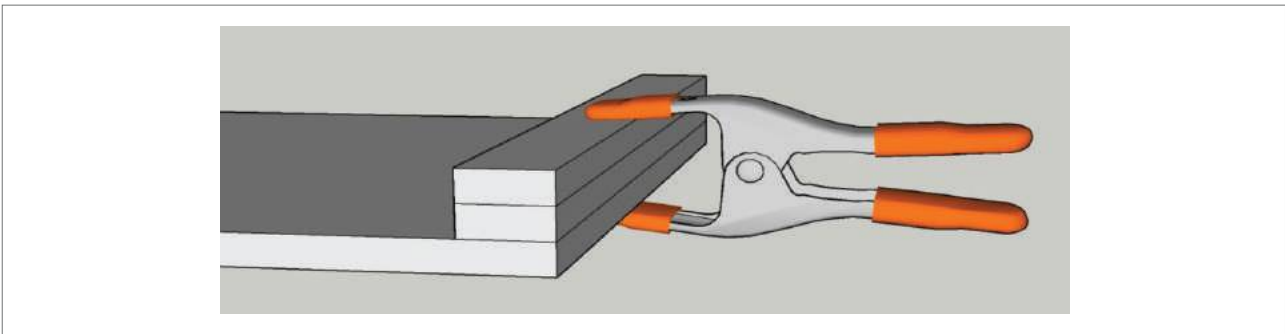


Fig.4

- Once fully cured, trim the edge square by using a table circular saw, then machine the required profile using a portable hand router or spindle moulder. Fig.5.

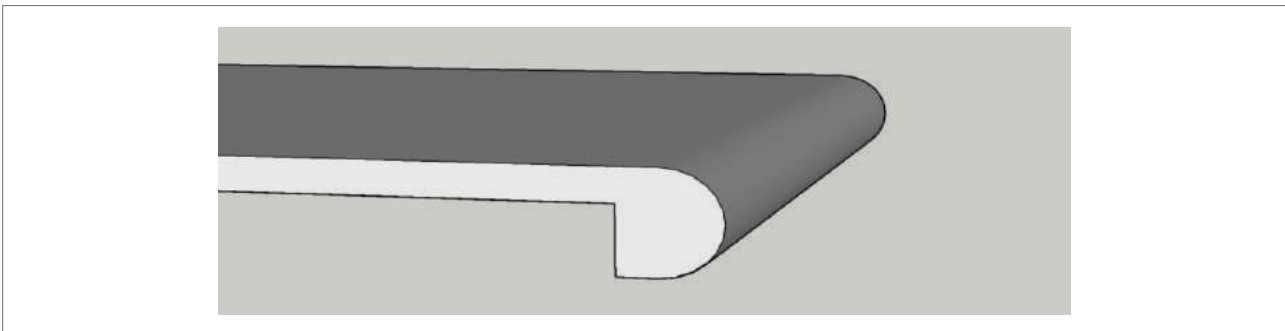


Fig.5

- Drop edges can sometimes be applied on edge, primarily for deeper build-downs. The best way to achieve this detail is to first rebate the underside of the sheet to a depth of approx. 2mm. Fig.6.

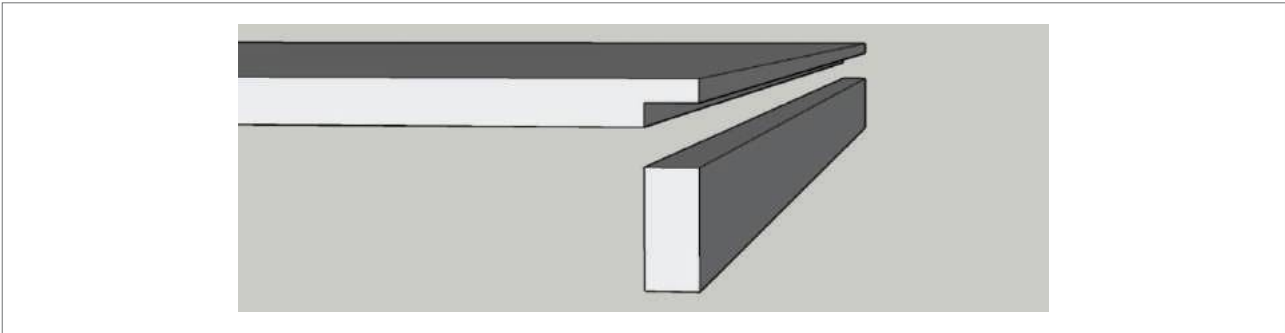


Fig.6

- The rebate serves two functions, firstly it increases the bond strength and secondly it minimizes the effect of uneven particle distribution.
- As you would normally do, sand both the internal edges of the rebate and the corresponding edges of the build-down with 150/180 grit paper, cleaned with denatured alcohol with a white cloth.
- Apply a sufficient amount of adhesive and clamp edge in position with screw clamps set at 80 / 85 mm apart. Fig.7.

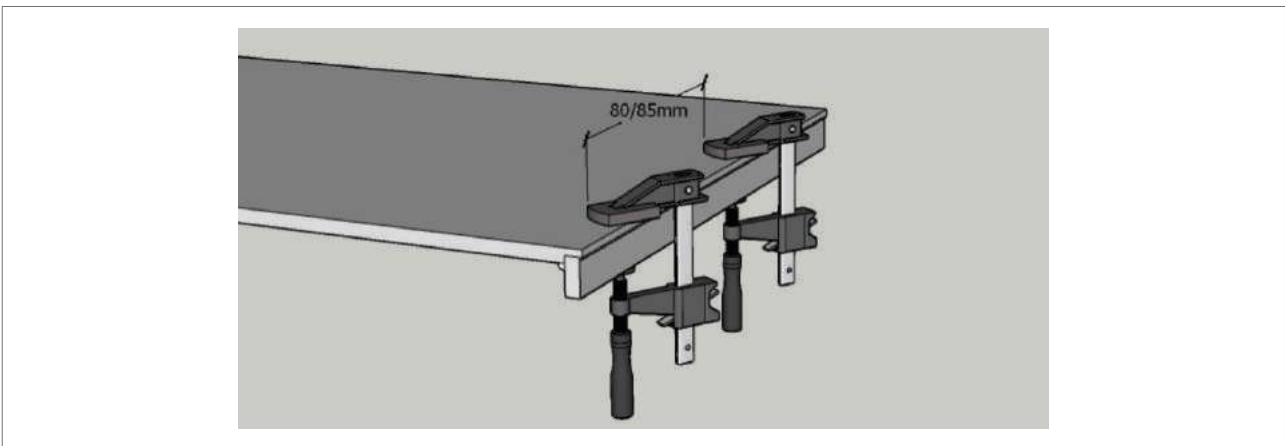


Fig.7

Ensure that beads of adhesive are formed at both the internal and external edge of the joint. Fig.7. Once fully cured trim the overhang using a portable hand router, use a straight cutter with Nylon bearing attachment.

- It is possible to create curved build-downs to shaped counters, simply by thermoforming the edges prior to bonding. Please refer to page 53 for thermoforming techniques (but more time intensive and profile limited).
- For internal/external corners, thermoforming will provide one solution, alternatively simply stack up and bond sheets of HIMACS at these corners and machine using a portable hand router.
- When it comes to a 'waterfall' edge, the top sheet will need to be rebated while the edge will need grooving. Fig. 8.

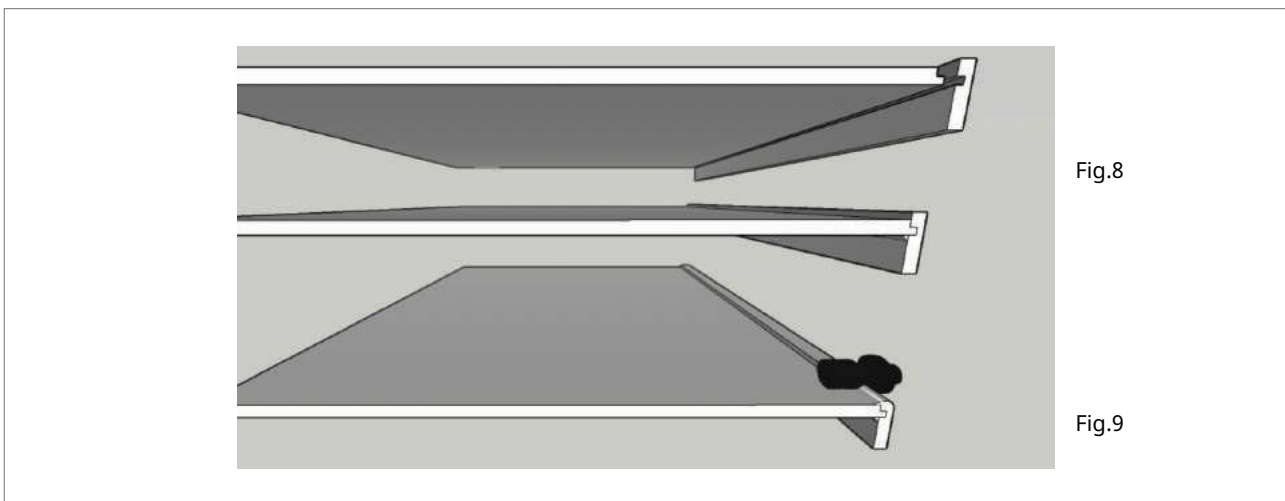


Fig.8 & 9

Ensure that the connection between the rebate and the groove is neither too tight nor too slack. Fig.8. Clamp the section together using sash clamps and allow the adhesive to fully cure. Machine the two edges using a purpose made router tool with a Nylon bearing, working from the top edge. Fig.9. (alternative: place profile to edge in advance due machining)

Overhangs

Overhang Support

Sometimes a countertop design features an overhang that extends beyond the base cabinets.

Overhangs up to 50mm

No additional support required.

Overhangs up to 150mm

Overhangs between 50mm up to 150mm deep require a second layer of HIMACS material beneath the countertop. The second thickness must continue under the countertop and be anchored to the base cabinet(s).

Overhangs more than 150mm

Corbels should be used for widths over 150mm or when unusual loading conditions are present or can be expected. A proper fabricated edge treatment will provide additional strength for the overhang and will conceal the supporting material. If you may don't like shelves visible you may choose a metal frame construction for the whole counter to be fixed to the cabinet.

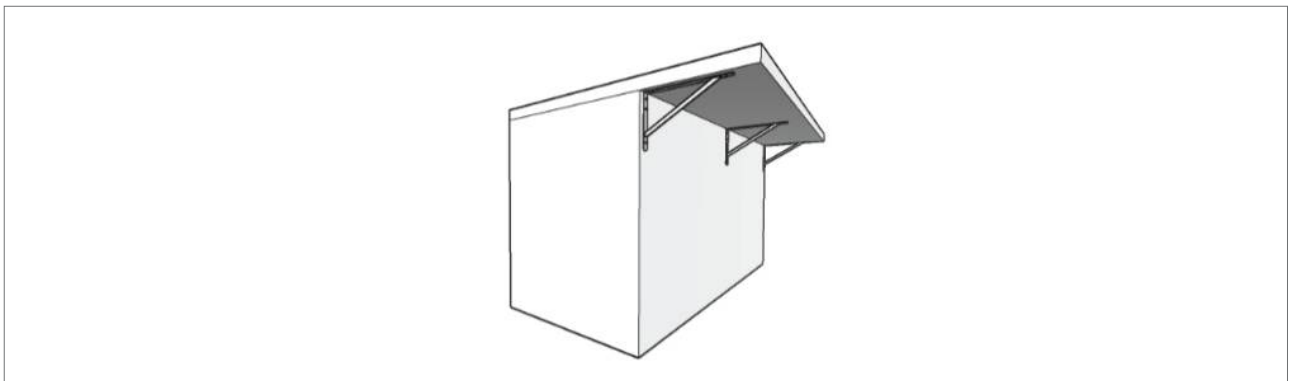


Fig.10

Overhangs & typical expectations of HIMACS

To avoid failure in an overhang, remember to always allow maximum 1/3 of the width to overhang while two thirds of the width should be supported. If this rule cannot be followed, you must install corbel brackets on the overhang for necessary support.

When doing so, do not screw the brackets directly into the HIMACS material, rather, install a piece of hardwood in your perimeter support or lattice support and use screws or fastener that will not surpass the thickness of the wood. When using metal, use silicone between junction points. A full substrate on an overhang with a web support over the cabinets is an acceptable method of support too for overhangs.

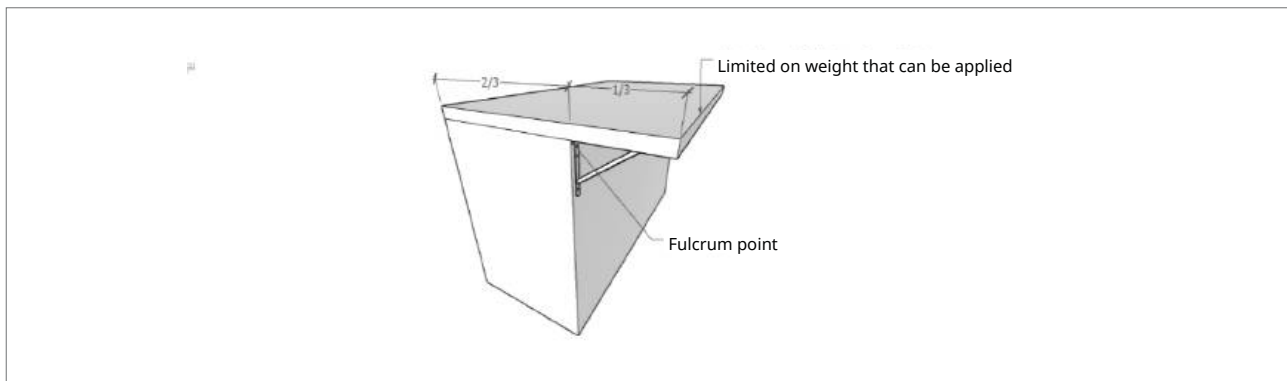


Fig.11

Choose the right method and fittings for your individual project needs to fulfil the necessary requirements.

Backsplash

For installation of backsplash materials from 50 mm – 100 mm, follow the provisions:

- Cut the splash from the same materials as were used on the countertop production. Do not use left material from other sheet production.
- Prepare the strip by sanding and edge-profiling, if required before installing.
- Dry fit the splash materials to ensure all joints and edges are tight.
- Scribe the backsplash to the wall or countertop if necessary.
- Install the backsplash materials with 100% silicone adhesive. Place dabs of silicone every 100 mm – 150 mm on the back side of the backsplash materials that will come in contact with the wall. Prior to setting the splash into position, run a thin bead of clear or colour matched silicone on the back surface edge of the countertop where the splash will rest.
- Put the splash material in place and remove excess silicone squeezed from the joints and finish caulking operation.

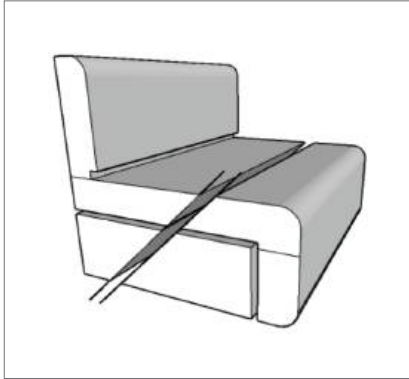


Fig.12

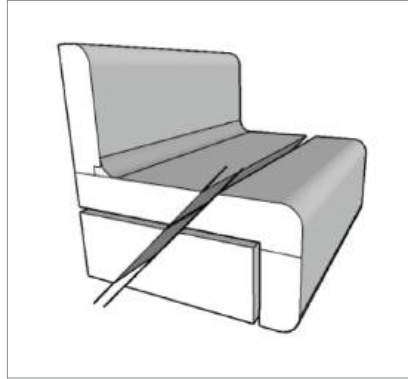


Fig.13

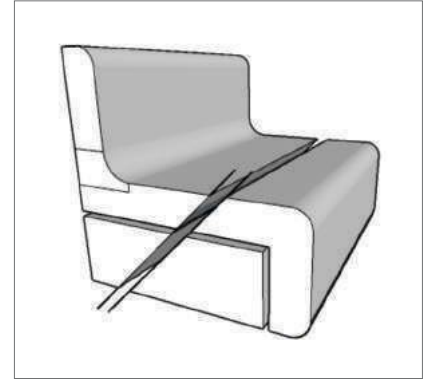


Fig.14

Full height backsplash

- The same steps and procedures are used when installing full height backsplash materials with a few exceptions:
- If using full height splash in either 6 mm or 12 mm HIMACS materials,
- Remember to allow a 3 mm gap below the upper cabinets for expansion.
- Make cuts with only a router and maintain a 12 mm minimum radius on all inside-corners.
- Adhere to wall with silicone – never use panel adhesive which do not allow some movement afterwards.
- In areas of hobs advice a minimum distance of at least 80mm.
- Pots & pans used supposed never have an overhang of the hob, neither the flame of a gas hob supposed burning the surface of HIMACS.

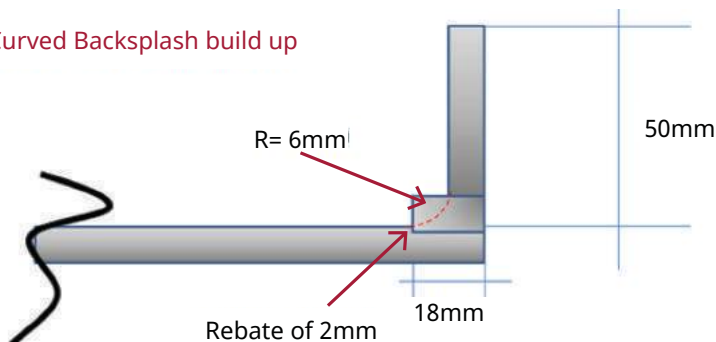
Curved backsplash overview

Curve backsplashes are fabricated in the shop. Specialty routers, tools and procedures are necessary to successfully fabricate a curved backsplash. It should be noted, however, that standard solid surfacing routers and saws can help create a superior quality backsplash, providing the fabricator is skillful and patient. The most important thing to note is the time necessary to create a curved splash, which typically reflects in the cost to your customer. This cost varies depending on shop equipment, frequency and proficiency with cove operations and the time necessary for finish sanding.

- In order to make a curve backsplash, it is recommended to rabbit into the backside of the counter deck in 25 mm from the back edge of the counter deck. This notch should be approximately 3 mm at a minimum depth. This will create a pocket for a HIMACS 25 mm square cove strip to be placed into.

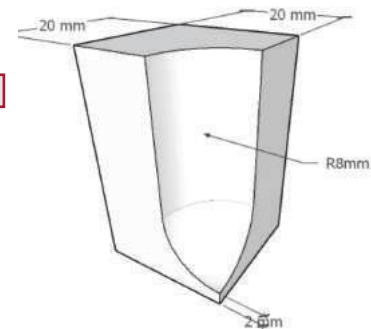
- Cut two 25 mm x 12 mm thick pieces of HIMACS and glue them to the counter deck in the notch (Rabbit) you have created. You will need to prep the materials with denatured alcohol and a clean white rag on the deck and strips. Place the adhesive thoroughly in the deck notch and place the first strip flat into the rabbit created. (Place the 25 mm strip in the 25 mm rabbit flat on the edge using the 12 mm thickness). Once the first strip is put in place, apply adhesive to the top of the first strip and place the second strip on top in a horizontal stack method as used in edge build-ups. Place the spring clamps into position using the clamping procedures outlined in this manual.
- After the adhesive has dried from the strips, it is time to cut the backsplash material you wish to incorporate into the top. This backsplash can be standard, full height or a custom height selected by the customer. Remember, the full height splash is much more difficult to control as you fabricate it in place and in the transportation and installation process.
- As you apply the desired backsplash strip, remember to thoroughly clean the edge you wish to apply adhesive to. Put the adhesive to the back face of the top strip you adhered earlier and place the strip on the glue line. Use bar or pipe clamps to hold the splash in place as the adhesive dries, and remember to use a square to adjust pressures so that the backsplash will remain straight and at a right angle from the countertop surface.
- Once this has dried, you will want to remove the excess material with a cove router. The depth and arc angle of the cut should be tangent to both the deck and backsplash.
- The balance of this operation is sanding the cove you have created. There are power sanders that have been developed, but some hand-sanding will be required for the best results and quality of finish.
- Use the same procedure and steps to create the inside corner cove on an "L" shaped return on the counter-top. Another method is to create an inside corner cove block that is
- Pre-fabricated. It can then be bonded to the inside corner, which is finished in the same manner.

Curved Backsplash build up



Preparation: Cutting list _ Cut to size

Counter top Down	
turn / Apron	
Backsplash upstand	
Backsplash rebate strip for radius	



► Further details see at TDS Backsplashes & Upstands.

Countertop cutouts

Countertops and heat generating appliance applications remain the greatest challenge to Solid Surfacing. The heat generated in various manufacturers of these appliances constantly challenge the performance limits of solid surfacing materials. Fabrication techniques have improved over time and a lot has been learned to avoid most failures in such conditions. It remains true that solid surfacing can take the heat, but must have an outlet for venting or dispersion in order to keep the temperature under critical performance limits.

Note that deviations from these fabrication practices will result in voiding the product warranty!

- Only use a router to cut out the countertop.
- Make certain you ease the top and bottom of the cutout with a 1/8" (3 mm) round over.
- After rounding the cutout profile, remember to finish sand any chatter smooth to 150 Grit.
- Make sure to make the cutout as large as possible, being ever mindful that it must still have the ability to properly support the cook top.
- Create a ≥ 5 mm radius at all inside corners.
- Apply a minimum of 1 layer of heat conductive foil tape (preferably two or three layers as illustrated below) to the edge of the cutout. Place these layers so that the first layer of tape rests on the entire flange of the countertop. You can carefully trim any excess tape after final installation.
- As you apply the second and third layer of tape, remember to fan them out like fins. This will increase the surface area for the heat to travel, and this increased surface area will also assist in faster dissipation of trapped heat. Thus, keeping the HIMACS at heat tolerances and void of failure possibilities.

Fabrication recommendations to ensure a high performance level in cooktops or Bain Maries

Some manufacturers or specific models of countertops are notoriously known to fail in solid surfacing applications and have no prior success. If you have known a model or manufacturer as being successful, these steps can be considered as optional. If you do not know or have history using a specific model or manufacturer of countertop model or manufacturer, opt to use these techniques.

- Increase the inside corner radius to 32-38 mm. Keep the corner enlargements all symmetrical. As a part of this radius and inside corners, inset the inside corners with a router.

- This enlargement should be made 75 mm from the centerline of each corner radius point.
- Apply a thermal barrier tape under the aluminum conductive foil heat tape. Thermal barrier tape will insulate the countertop from heat caused by the countertop flange or firewall box. 3M makes such a tape. It is approximately 1 mm thick. If this is difficult to find, look for a heat tape substitute that contains ceramic materials.
- Provide air ventilation to the cabinet containing the cooktop by using a vent and fan system to help carry the heat away from the countertop material.
- Ensure positive convection currents for the fan to be installed so as to remove and not collect additional heat. It may also require cutting or venting the cabinet walls if the fire box walls are too close to the cabinet and preclude air flow.

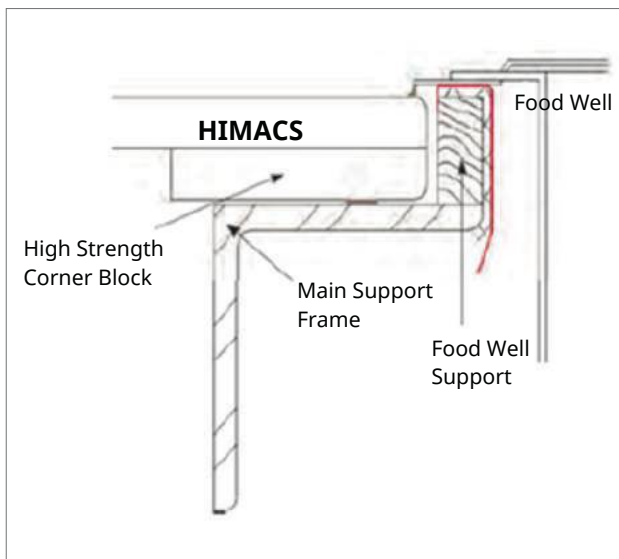


Fig.15

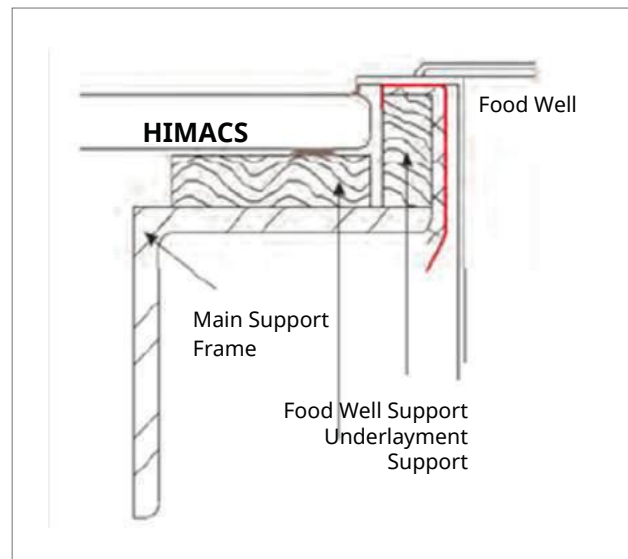


Fig.16

Reinforcing and subassembly techniques to ensure high performance level in cooktops

In some regions a common method used in fabrication today is the “**Underdeck Corner Block**”. The Underdeck Corner Block method is successful in dealing with the amount of heat generated by the cooktop.

Underdeck corner block method

A corner block is placed at each corner of the radius cut cooktop cutout and should be installed just after the cut out is routed. These blocks are placed on the underside of the sheet and will be adhered or bonded to the cooktop.

Do not ease the cutout or finish sanding the chatter until these blocks have been installed.

- 4 blocks are prepared by using outfalls of HIMACS 12 mm sheet materials. These blocks should be a typically 150 mm squares.
- Once the blocks have been cut, make sure you bevel or chamfer the edge to 45 degrees and round the square corners to eliminate the chance of creating a stress riser. Scuff-sand and clean the surface area of the blocks and bottom of the sheet to be bonded.
- Place adhesive on the block thoroughly and position the block so that a 75 mm x 75 mm surface area of the block, extend from the routed cooktop cutout. Clamp in place until dry.
- Now trim the excess material from the blocks on the inside of the cooktop and any extensions or protrusions in the front or back edges of the deck.
- Ease the top and bottom of the cutout and support block materials with a router and finish sand the chatter to a 180 Grit finish.
- Apply the three layers of heat tape as previously described.



Underside of cooktop cutout with reinforcing blocks in place



Close-up of reinforcing block in place



View of reinforcing block after finishing

Thermoforming

Note:

Any Thermoforming process has to be recorded and carefully prepared according to necessary condition needs and to be accepted in our 15-Year-Warranty Program.

Thermoforming equipment

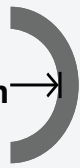







- Pre-Heating Oven
- Vacuum Table
- Hydraulic Press
 - Moulds
 - Safety glasses
 - Long shirt
 - Heat protection
 - cloth others



Templating

Template to a custom shape required using plywood, MDF or professional equipment according to the complexity of job requirement, like high density foam.

Thermoforming process per thickness of product

<p>$Ri \geq 16 \text{ mm}$</p>  <p>4.5mm Solid</p>	<p>$Ri \geq 50 \text{ mm}$</p>  <p>12mm Solid, Sand, Pearls, Lucent, Sparkle</p>	<p>$Ri \geq 200 \text{ mm}$</p>  <p>12mm Volcanics, Aster, (Galaxy), Terrazzo</p>
<p>$Ri \geq 20 \text{ mm}$</p>  <p>6mm Solid</p>	<p>$Ri \geq 85 \text{ mm}$</p>  <p>12mm Granite, Quartz</p>	
<p>$Ri \geq 40 \text{ mm}$</p>  <p>9mm Solid, Sand, Pearls</p>	<p>$Ri \geq 100 \text{ mm}$</p>  <p>12mm Lucia, Eden, Marmo, Aurora 20mm Solid</p>	<p>$Ri \geq 6 \text{ mm}$</p>  <p>12mm Solid Ultra Thermoforming</p>

Ri = inside radius (smallest radius recommendation)

Information of smallest: possible radius is based on standard light colors which can be from some variation of result when using dark colors.

Depending on color family

- More or less / bigger or smaller radius:
- Due to darker or highly pigmented color: whitening can occur change parameter of thermoforming process or change the radius to a larger one to ensure satisfaction of the result.

Note:

Do not overtake the recommendations of smallest radii in above list of the product, whilst light colors will be more align with a positive result than darker colors or materials with large chips.



Tulip by Pierre Cabrera, ©Franck Foucha - Xavier Muyar

Processing

- Peel off the protective film from HIMACS sheet, which is attached to the surface of the product.
- Be careful that the oven temperature does not exceed more than +195°C.
- Best temperature to be used: +155°C up to +165°C; using a Pre-Heating Oven with heating plates up and down.
- Heat up the workpiece for 10 ~ 20 minutes, or more if you need the product with minimum curve R.
→ Check exact heating time according to material thickness.
- Note with caution that a whitening effect can be generated on the surface of the product if the temperature is too high or the heating is prolonged as well as the mold is too tight...

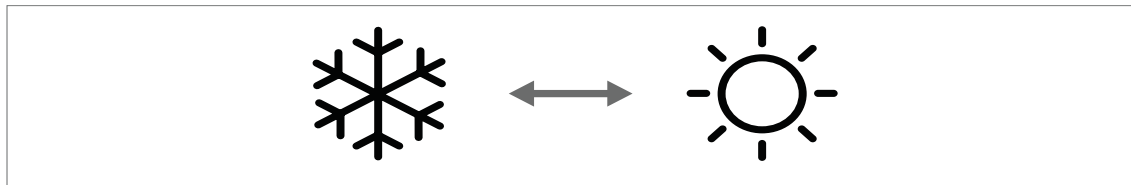
Cooling

- Never take out the product from the template before the temperature reaches + 80°C. The shape of product is maintained at temperatures below + 80°C, even if the product is not supported by the template.
- When workpiece is taken out from molding – place it where air can surround and cool it down further to room temperature.
- Avoid trapped heat.

Re-work

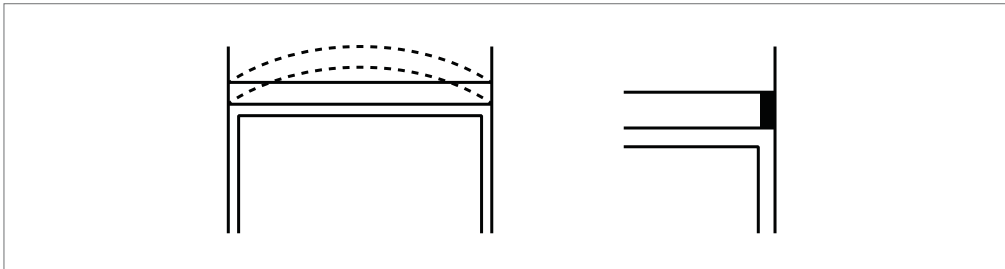
- After reaching room temperature start to re-work the workpiece and finish off according to the fabrication guidelines.

Thermal Expansion & Contraction



Sufficient space should be given to compensate for expansion or contraction at the time of installation since this product may expand or contract depending on the temperature.

Allow 1.5 mm per linear meter for expansion and contraction.



Expansion coefficient HIMACS according to norm DIN 51045:

$\Delta t = \text{ca. } 48 \times 10^{-6} / \text{K}$

Formula without adding limitations
 Δ = expansion
 αt = thermal expansion coefficient
 $\alpha \Delta t$ = temperature difference
 l = length

$\Delta = \alpha t \times \Delta t \times l$

Sample Calculation

$\Delta t = + 30^{\circ}\text{C}$	temperature difference
$\alpha t = 0,000048 \text{ K L}$	thermal expansion coefficient
= 100 cm	sheet length

$\Delta = 0,000048 \text{ K} \times 30^{\circ}\text{C} \times 100\text{cm}$
 $\Delta = 0,00144 \times 100$
 $\Delta = 0,144 \text{ cm}$
 $\Delta = 1,44 \text{ mm}$

Surface Finishing

HIMACS sheet materials are factory sanded prior to peel coat application. The result of this superior quality factory finish offer fabricators less final sanding time in the shop or on the jobsite.

Sanding is a very important part of the fabrication process. Finish considerations can make or break the aesthetic value of your surface. Be very sure to sell a finish that is right for the colour and lifestyle of the customer. Do not oversell the performance of a specific finish, especially in a darker colour selection and in a satin or gloss finish selection. Be forthright, in clearly expressing the performance of a finish option.

The sanding and finishing process can also be the most time consuming and frustrating experience to the fabricator in the process of fabrication. HIMACS would like to simplify the process as you take your countertop finish from a standard matte to satin to high gloss finish.

Additionally, it can be confusing to the fabricator because of the multitude of sanding equipment, systems and sand paper companies available to the fabricator. As you decide the best equipment and sanding papers to incorporate into your fabrication process, remember to purchase good quality sanding equipment and sandpapers.

- Make sure to remove excess adhesives with a surfacing router equipped with a system of skis.
- Avoid use of a belt sander as it generates a great deal of heat and can fail a seam.
- Furthermore, the belt sanding equipment is very aggressive and can remove material quickly.
- That being said you can create more problems for your countertop fabrication if more material is removed than is supposed to be. You want to maintain control in the sanding process. It is the final step of showcasing your work.
- An important step in the process of sanding is to thoroughly clean the top between each step or grit changes. You can do so with a spray bottle of water or preferably denatured alcohol and a clean white rag. Cleaning off sanding dust between steps allow for a more consistent and high quality finish.
- Apply equal pressure and overlapping coverage in both directions of the top. For example, left to right and front to back. Complete one direction before starting the other.
- Change or clean your sandpaper as you sand as it will get loaded and become less efficient.
- As you get to a more detailed finish the sandpapers will load more quickly. If care is not taken to keep the sandpaper loading to a minimum, it will impair your ability to achieve a high quality, consistent finish. In a gloss situation, you may never achieve it.

Finish Possibilities

SURFACE FINISH/SANDING LEVEL	
1	Matt Finish
2	Semi-Gloss Finish
3	High-Gloss Finish

Matte Finish

- To achieve a matte finish, you can either use a “grit” or a “micron” sanding paper system. Remember the numbering system or grades of papers between grit and micron systems are opposite to one another.
- First, use a 120 Grit or 100 micron abrasive. Once this step has been completed, remember to clean the top and switch papers to a 180 or 220 Grit or 60 Micron paper.
- Finally, clean the top once again and surface the top with a Scotch Brite™ pad.
- If you are working with a dark or black colour, you may have to add an additional third step in sanding. This will require a 320-400 Grit or 30 micron paper. If this is done, you will then want to clean the top and then surface the top with a Ultra Fine Scotch Brite™ pad.

Semi-Gloss Finish

- If you wish to achieve a satin finish follow the same steps expressed to achieve a Matte Finish on a dark colour.
- Use a 120 Grit/100 Micron
- Switch to 180-220 Grit/60 Micron.
- Change to use 320-400 Grit/30 Micron paper and finish off with an Ultra Fine Scotch Brite™ pad or by using the Superpad S/G from Joest-Abrasives.

Remember to clean off the top between each single sanding step

Gloss Finish / High Gloss Finish

Gloss prior High Gloss finish is not recommended for any application of use and is not protected neither covered under our warranty.

- Follow the steps to the Satin Finish specification, but do not use the pad yet. As you reach the 320-400 Grit/30 Micron step, you will need to add a few additional steps.
- Sand the top using 600-900 Grit/15 Micron paper. Thoroughly clean the top. Remember to check the loading of your paper during the process and replace it frequently as necessary to maintain a consistent finish.

Sanding & Polishing procedures

Remember the polisher will build a lot of heat as you buff the surface with the polishing compounds. Maintain moderate consistent pressure to prevent overheating of the top and burnishing of the gloss finish.

		Standard recommendation					
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH		
HIMACS colour family	for all colours		for all colours		for all colours		
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	
Step 1	100/80 µ	150/180	100/80 µ	150/180	100/80 µ	150/180	
	take dust away		take dust away		take dust away		
Step 2	60 µ	220	60 µ	220	60 µ	220	
	take dust away		take dust away		take dust away		
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 µ	280/320	30 µ	280/320	
	take dust away		take dust away		take dust away		
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 µ	380/400	
	take dust away		take dust away		take dust away		
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 µ	600/800	
				take dust away	take dust away		
Step 6				industrial paper towel	Finesse-it™ Finish-component	1200	
					take dust away		
Step 7						1500	
						1800	
						2500	

Technical Specification Data Sheet: Comparison Overview

SPECIFICATION	Kürzel	Unit Einheit	Old						Test method Norm
			3mm S028	6mm S028	9mm S028	12mm S06	12mm S728	19mm S028	
Density	P	g/cm ³	1,72	1,70	1,72	1,75	1,72	1,73	DIN EN ISO 1183
		kg/m ³	1720	1700	1720	1750	1720	1730	
Flexural E-modulus	Ef	Mpa	7800	7900	8800	8900	10200	10000	DIN EN ISO 178
Flexural strength	σ fm	Mpa	48,4	69,6	74,7	70,1	74,7	70,4	DIN EN ISO 12372
Ultimate elongation	εfm	%	0,89	0,84	0,83	1,01	0,70	0,81	DIN EN ISO 178
Tensile Strength	σ fm	Mpa	23,1(%0,98)	52,9(%0,97)	54,5(%1,07)	32,7	52,8(%1,13)	51,3(%1,69)	DIN EN ISO 527
Thermal expansion coefficient	α	mm/mk				0,048			DIN EN 12664
	α	mm/°C	42,1x10 ⁻⁶	41,3x10 ⁻⁶	41,3x10 ⁻⁶	30x10 ⁻⁶	41,3x10 ⁻⁶	42x10 ⁻⁶	DIN EN 14581
Thermal conductivity	λ 10try	W/mK	0,671	0,881	0,884	0,656	0,976	0,871	DIN EN 12664
Resistance to thermal insulation	R	m ² K/W	0,0046	0,0063	0,01	0,038	0,0119	0,022	DIN EN 12664
Electrostatic		>1x10 ⁹	205x10 ⁹	254x10 ⁹	308x10 ⁹		389x10 ⁹	513x10 ⁹	DIN IEC 1340-4-1, 04-`92
Contact resistance	Ω	>1x10 ¹²	0,205x10 ⁹	0,254x10 ⁹	0,308x10 ⁹	isolating	0,389x10 ⁹	0,513x10 ⁹	EN 61340-5-1
Wasserdampfdurchlässigkeit efficient of diffusion resistance	μ	μ	81346	44805	23022	18607	17750	8060	DIN EN ISO 12572
Water absorption Increase of weight Increase of thickness	sp. G	%	0,4	0,2	0,1	<0,1	0,1	0,1	DIN EN 438-12
	d	%	2,5	0,2	0,2	<0,1	0,2	0,3	
Measure variation at humidity change	Length	%				-0,03			DIN EN ISO 318_5-`98
	Thickness	%				0,06			
	Mass	%				0,05			
Slippery resistance	R					>0,32-0,9			GMG 100 (±R9)
Angle of acceptance 10° to 19°						R10			DIN 51130
Scratch fastness						4D			DIN 68861_4,11-`81

Product Availability

SIZE	GRADE
4.5 x 930 x 3000 mm (40 sheets/pallet)	Solid
6 x 760 x 2490 mm (30 sheets/pallet)	Lucent
	Granite
	Quartz
	Sand & Pearl
6 x 910 x 2490 mm (30 sheets/pallet)	Solid
	Granite
9 x 760 x 3680 mm (20 sheets/pallet)	Quartz
	Sand & Pearl
	Solid
	Solid
9 x 910 x 3680 mm (20 sheets/pallet)	Solid
	Aster (Galaxy)
	Marmo
	Lucent
	Lucia
	Granite
	Quartz
	Sand & Pearl
12 x 910 x 3680 mm (15 sheets/pallet)	Solid
12 x 1350 x 3680 mm (12 sheets/pallet)	Solid
20 x 760 x 3000 mm (10 sheets/pallet)	Available in all colours except for Eden, Marmo Collection and M551 Chic Concrete, M552 Shadow Concrete and M553 Ebony Concrete from Concrete Collection.
20 x 760 x 3680 mm (10 sheets/pallet)	Solid

Standard Format

SHEET THICKNESS IN MM	SHEET WIDTH IN MM	SHEET LENGTH IN MM
4.5	930	3000 *
6	760	2490
6	910	2490 *
6	1350	3680*
9	760	3680
9	910	3680 *
9	1350	3680 *
12	760	3680
12	910	3680 *
12	1350	3680 *
12	1520	3680 *
20	760	3000 *

Special Format

SHEET THICKNESS IN MM	SHEET WIDTH IN MM	SHEET LENGTH IN MM
4.5	930	3000 *
6	910	2490 **
6	1520	3680 *
9	910	3680 **
9	1520	3680 *
12	910	3680 **
20	760	3000 ***
20	760	3680 ****

Ultra-Thermoforming Format *****

SHEET THICKNESS IN MM	SHEET WIDTH IN MM	SHEET LENGTH IN MM
12	760	3680
12	910	3680
12	930	3680

► Further Information on HIMACS - 3mm sheet material: Technical Bulletin 13

* Only available in S028 Alpine White.

** Only available in S006 Arctic White.

*** Available in all colours except for Eden, Marmo Collection and M551 Chic Concrete, M552 Shadow Concrete and M553 Ebony Concrete from Concrete Collection.

**** Only available in Solid Colours

***** Ultra-Thermoforming is only available in S928 Alpine White

Special format available on special request, minimum quantities apply.

Custom Colour of HIMACS

NAME	THICKNESS (MM)	DIMENSIONS (MM)	COLOUR AVAILABILITY	20° CONTAINER		40° CONTAINER		SHEETS / PAL
				PAL	SHEETS	PAL	SHEETS	
Wide Sheets	12	1,520 x 3,680	S028 Alpine White			10	190	19
	12	1,520 x 3,680	S028 Alpine White			12	216	18
	12	910 x 3,680	S028 Alpine White S006 Arctic White	12	180	24	360	15
	9	1,350 x 3,680	S028 Alpine White			15	300	20
	9	910 x 3,680	S028 Alpine White S006 Arctic White	12	240	24	480	20
	6	1,350 x 3,680	S028 Alpine White			20	420	21
	6	910 x 2,490	S028 Alpine White S006 Arctic White	12	360	24	720	30
	4	1,350 x 3,000	S028 Alpine White			40	720	18
	3	930 x 3,000	S028 Alpine White	12	480	24	960	40
HIMACS Ultra-Thermoforming	12	760 x 3,680	S928 Alpine White	12	180	24	360	15
HIMACS FR	12	760 x 3,680	S728 Alpine White	12	180	24	360	15
20 mm	20	760 x 3,000	S028 Alpine White Any Solid Colour	12	120	24	240	10
Eden **	12	760 x 3,680	Any Eden Colour	12	180	24	360	15

* HIMACS FR: All colours are the same as regular product colour (i.e. S728 Alpine White = S028 Alpine White). Production in Korea. ** Eden colour range: Production in USA. Delivery time: minimum 8 weeks.

Troubleshooting

Repairs

One of the main advantages of HIMACS, is that the surfaces can be repaired in the event of an accident. Depending on the type of damage, a number of solutions can be used.

Scratches

For scratches, it may well be possible to sand them out with Scotch Brite pads, abrasive creams or even abrasive papers.

Small indentations

With small indentation marks it is possible to drill out the affected area and fill the hole with HIMACS colour matched adhesive. Be sure to over fill the hole and try to eliminate any air pockets prior to curing. Once cured the adhesive can be sanded down in the normal way, however, the repaired area will need to be blended in with the existing work surface.

Larger areas of damage

For larger areas of damage, particularly with the Granites and Sands, a plug repair is a possible alternative solution.

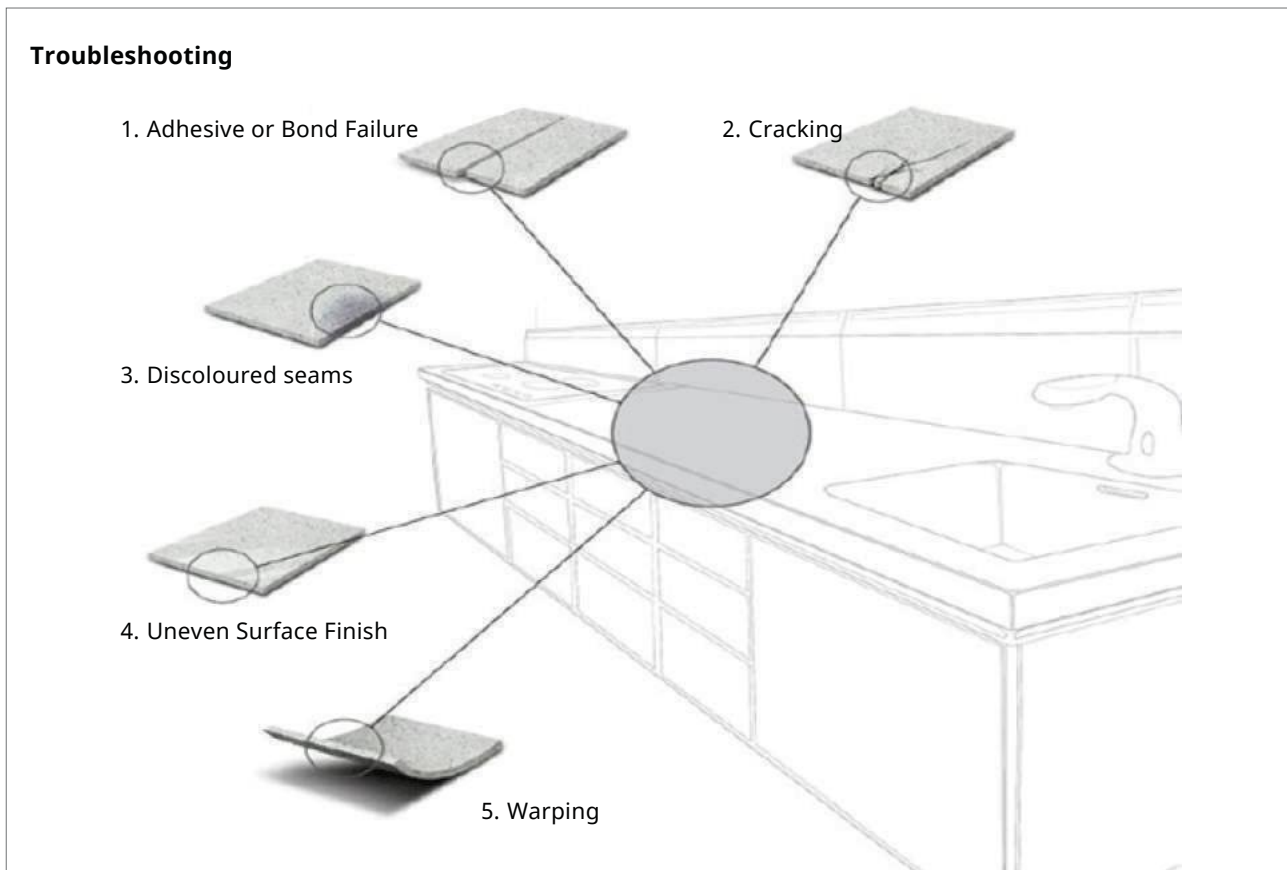
Major damage

For major damage, regarding cracks or burn marks, a 12 mm triangular piece of HIMACS (same thickness / same production as installed / not applicable to any heat source) will need to be fitted. And clamp it to the surface around the damaged area. Machine out the section using a portable hand router. Using the same template cut another section from an offcut of colour matched HIMACS piece or better if the piece is from the same sheet to minimize any colour difference. Bond the triangular spare piece with HIMACS adhesive and reinforce the underside.

Broken seams

To repair a broken seam, first machine a 'V' groove down the entire length of the crack. Cut a square section of matching HIMACS so that when turned through 90°, it fits the groove. Apply HIMACS adhesive into groove and push the square section home until sufficient adhesive is forced upwards. Once fully cured sand down the new section as normal. Ensure that the seam has reinforcement beneath prior to completion. Always leave sink or bowl cutout at the item of your customer for any unexpected repair or trouble solving (original piece for repair).

Apply HIMACS adhesive into groove and push the square section home until sufficient adhesive is forced upwards. Once fully cured sand down the new section as normal. Ensure that the seam has reinforcement beneath prior to completion. Always leave sink or bowl cutout at the item of your customer for any unexpected repair or trouble solving (original piece for repair).



Adhesive or bond failure

- Failure to scuff, sand or clean joint before bonding.
- Improper support of deck or overhang seams.
- Improper mixing of seam kit

Cracking

HIMACS countertop fabricated with stress riser.

- Failure to radius inside corner at least 12 mm
- Failure to install tops on level plane surface.
- Failure to use heat tape at countertop cutout.
- Failure to reinforce countertops, cutouts and seams.
- Failure to allow a 1 mm gap every 1 meter for expansion.
- Failure to use silicone adhesive on dissimilar materials.
- Failure to cover all bonding surfaces with adhesive.

Discoloured seams

- Failure to use clean; white, lint free rags.
- Failure to clean joints with denatured alcohol before adhering.

Uneven surface finish

- Use of a belt sander on countertop surface.
- Failure to use appropriate grit abrasive on sand paper
- Sanding on one spot too long.
- Failure to control x & y motion of sander equally.

Warping

- Failure to fabricate and install countertop on level, plane surface.
- Failure to store received materials properly as prescribed.
- Failure to add 1 mm gap for expansion every 1 meter
- Failure to use heat tape on countertop cutouts.

For further guidelines of fabrication see specific descriptions of sheet and shape fabrication and installation recommendation in other sections according to application and subject.

■ TECHNICAL DATA SHEET

Solids



Sheet Fabrication

Sheet color family: SOLIDS "S"

HIMACS enhances the elegance and harmony of your living environment with its natural beauty and the synthesis of design and creativity

Sheet Offering

Alpine White S028 20/12/9/6/4/ 3 mm E5	Nordic White S033 20/12 mm E5	Diamond White S034 20/12 mm E5	Arctic White S006 20/12/9/ 6 mm	Ivory White S029 20/12/9/ 6 mm E5	Satin White S001 20/12/9/ 6 mm	Alpine White S928 12mm
Nougat Cream S201 20/12 mm	Almond S002 20/12 mm E5	Babylon Beige S102 20/12 mm	Steel Grey S109 20/12 mm	Marta Grey S108 20/12 mm	Concrete Grey S103 20/12 mm	Toffee Brown S104 20/12 mm
Grey S005 20/12/9/ 6 mm	Sky Blue S203 20/12 mm	Light Green S212 20/12 mm	Lemon S wash S106 20/12 mm	Banana S026 20/12 mm	Orange S027 20/12 mm	Fiery Red S025 20/12 mm
Festival Pink S116 20/12 mm	Midnight Grey S117 20/12 mm	Coffee Brown S100 20/12 mm	Deep Indigo S115 20/12 mm	Dark Night S111 20/12 mm	Black S022 20/12/9 mm	Suede S121 20/12 mm
Mink S118 20/12 mm	Evergreen S119 20/12 mm	Cosmic Blue S120 20/12 mm	Alpine White S928 12 mm	Opal S302U 12 mm	Alpine White S728 - E5 20/12 mm	

All main material properties are carried out of 12mm material.

Check out if requirements for the project has been carried out by the chosen product thickness and which does fulfil the necessary needs to the project realization. Check best with your local supplier if the expected requirements are provided and available.

1. Use of Application

A) Use of 19/20mm HIMACS sheet thickness:

For horizontal application, like kitchen countertops or food counters as well as many furniture applications 19mm HIMACS can be used. The sub-construction as well as the strength of the flooring has to commit to the heavy weight of long term use.

B) Use of 12mm HIMACS sheet thickness:

For horizontal application, like kitchen countertops or food counters use 12mm HIMACS only. This is mandatory to all applications where heat zones are integrated or in immediate neighborhood.

C) Use of 9mm HIMACS sheet thickness:

For such applications, where there is no heat or structural need, like e.g. in shop fitting applications as flower shops, optician shops or coffee shops, tables, furniture etc. 9mm HIMACS can be used and will be covered by the L Hausys Europe Warranty Program.

D) Use of 6mm HIMACS sheet thickness:

Not to be used for horizontal applications, will NOT be covered by the L Hausys Warranty Program if you do so.

For vertical applications without any heat source at minimum distance of 150mm.

E) Use of 4,5mm HIMACS sheet thickness:

Not to be used for horizontal applications, will NOT be covered by the L Hausys Warranty Program if you do so.

Seams need to be supported by a reinforcement strip in the same thickness as the cover material. Never construct any seam through any heat or wet zone.

Leave at least a distance of approx. 300mm to the left and right side /
approx. 80 100mm to the back side / 50 80mm at front side.

2. Quality check

Check the material quality before starting fabrication for any unexpected inconvenience. As soon as you start fabrication you have accepted all terms as delivered:

Property	AIM Value	Tolerance
Face Side: Color/Pattern consistency within one sheet	No difference	
Face Side: Color/Pattern consistency within 50 production running number in same lot	Any 2 pieces seamed together should not show a difference	The seam may be Inconspicuous (Delta E 0.5)
Face Side: Dark Spots	None or 0.13mm ² size	Less than 5 spots (0.13mm ² size)
Face Side: Light Spots	None or 0.2mm ² size	Less than 5 spots (0.2mm ² size)
Face Side: Pin holes, voids	None	Less than 5 voids (0.1mm ² / sheet)
Back Side: Pin holes, voids	None	3mm deep, less than 6mm in diameter and less than 10 holes within a circle of 100mm diameter

* Method: Visual inspection in lighting conditions similar to that found on the job

3. Expansion

One of the main characteristics of the material is the importance of the material's expansion and contraction due to temperature changes. This means: always allow the material to expand or to shrink without any possible barrier.

Allow 1.5 mm per linear meter for expansion and contraction.

This also means to be careful with any heat source creation when cutting, trimming or sanding HIMACS material.

Note:

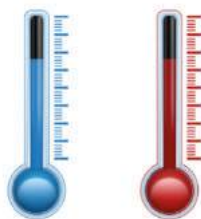
Before start any fabrication: write down the printed sheet-number of each sheet you using for the project.

Ensure to work with sequential sheet numbers and mark always the production flow even best when assembling any kind of project.

The thermal expansion coefficient to take into account is:

$$45 \times 10^{-6} \text{ mm/mm/}^\circ\text{C}$$

for a Delta T of 80°C
(min: -20 C/max: +80 C).



The determined expansion in mm of the panels is given in the tables below, taking into consideration the manufacturing tolerances and Delta T of 100°C, according to the following equations:

$$X = (45 \times 10^{-6}) \times (W \text{ or } H) \times 100$$

X = expansion (mm)
W = panel width (mm)
H = panel height (mm)

Sample Calculation of expansion max.

Expansion

Example t = + 100°C
 t = + 100°C
 L = 100cm

$$= 0.000045K \times 100^\circ\text{C} \times 100\text{cm}$$

$$= 0.0045 \times 100$$

$$= 0.45\text{cm}$$

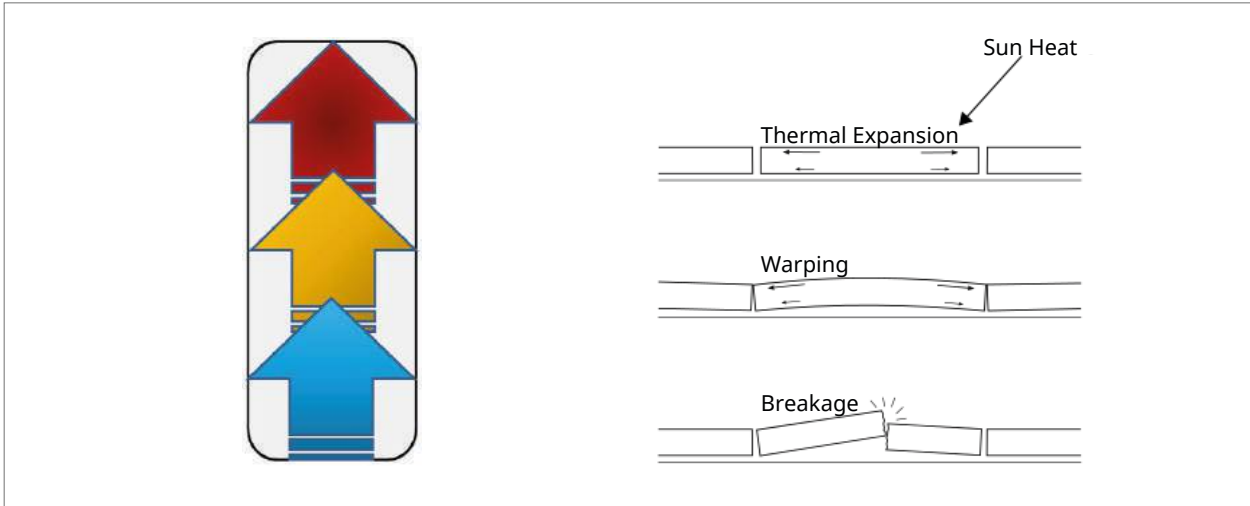
$$= 4.5\text{mm}$$

Note:

At a temperature difference of 100°C HIMACS shrinks or expands of approximate +/- 4.5mm / linear Meter

WIDTH : W (mm)	X (mm)	JOINT TYPE
0 L 1200	5	Open, closed, or lap joints
1200 L 1400	6	
1400 L 1700	7	
1700 L 2000	8	
2000 L 2300	9	Closed, or lap joints
2300 L 2600	10	
2600 L 2800	11	
2800 L 3100	12	
3100 L 3400	13	
3400 L 3670	14	

Source: CSTB: HIMACS Avis Technique



Sample Calculation of expansion max.

Expansion

Expansion coefficient of HIMACS according to norm EN 14851:

$$\alpha t = 45 \times 10^{-6} / K$$

Formula without adding limitations:

$$\Delta = \alpha t \times \Delta t \times l$$

= Expansion
 α = Expansion coefficient
 t = Temperature difference
 L = Length

t = 1°C Material length: 1m

Expansion

Example t = 1°C
 α = 0.000045K
 L = 100cm

= 0.000045K x 1°C x 100cm
 = 0.00004 x 100
 = 0.0045cm
 = 0.045mm

Note:
 At a temperature difference of 1°C HIMACS shrinks or expands of approximate +/- 0.045mm / linear Meter

t = 30°C Material length: 1m

Expansion

Example t = 30°C
 α = 0.000045K
 L = 100cm

= 0.000045K x 30°C x 100cm
 = 0.00135 x 100
 = 0.135cm
 = 1.35mm

Note:
 At a temperature difference of 30°C HIMACS shrinks or expands of approximate +/- 1.5mm / linear Meter

■ 4. Sheet Bonding

- The bonding / jointing process of the standard fabrication of the Colour Range of SOLID can be done as recommended for all other available colours within this colour family.
- The cut or trimming of the edge has to be prepared absolutely straight and absolutely parallel or adjusted as a mirror cut.
- Re-sand the edge with sandpaper of approx. 150/180grit (or 60 micron).
- Prepare the back of the sheet by re-sanding or rebating (by a step of 2mm) of the place where the edge will be placed.
- Always clean the cut edges with a white cloth and use denatured alcohol or acetone.
- Ensure the edge is absolutely straight when making a "butt"-seam.
- Better still, make a profile, such as a tongue and groove.
- Ensure always to fabricate a re-enforcement strip (for kitchen worktops with a 45°angled edge and smooth the adhesive line) from underneath.
- Always tighten pressure but do not over tighten the pressure to the seam.
- Let the adhesive cure (at least for 45min. at a room temperature of +17°C).

Hint:

The adhesive is not developed as filler for repairs. In the case of damage to the surface it is strongly recommended to make a plug repair whenever possible (Tools are available on the market please contact your local technical support).

► Further details, please find under TDS "Seaming"

5. Color use of sheet vs. Adhesive

	COLOR CODE	COLOR NAME	DISCLAIMER	COLOR FAMILY / RANGE	ADHESIVE COLOR CODE	ADHESIVE COLOR NAME
SOLIDS	S01	Satin White		SOLIDS	H01	Satin White
	S02	Almond		SOLIDS	H04	Almond
	S05	Grey		SOLIDS	H03	Grey
	S06	Arctic White		SOLIDS	H02	Arctic White
	S09	Cream		SOLIDS	H20	Cream
	S22	Black		SOLIDS	H07	Black
	S25	Fiery Red		SOLIDS	H18	Red
	S26	Banana		SOLIDS	H17	Banana
	S27	Orange		SOLIDS	H19	Orange
	S28	Alpine White		SOLIDS	H16	Alpine White
	S29	Ivory White		SOLIDS	H32	Ivory
	S33	Nordic White		SOLIDS	H16	Alpine White
	S34	Diamond White		SOLIDS	H113	Diamond White
	S100	Coffee Brown		SOLIDS	H37	Coffee Brown
	S102	Babylon Beige		SOLIDS	H52	Babylon Beige
	S103	Concrete Grey		SOLIDS	H53	Concrete Grey
	S104	Toffee Brown		SOLIDS	H54	Toffee Brown
	S106	Lemon S uash		SOLIDS	H104	Lemon S uash
	S108	Marta Grey		SOLIDS	H107	Marta Grey
	S109	Steel Grey		SOLIDS	H101	Steel Grey
VELVET	S111	Dark Night		SOLIDS	T09	Dark Night
	S115	Deep Indigo		SOLIDS	T08	Deep Indigo
	S116	Festival Pink		SOLIDS	H106	Festival Pink
	S117	Midnight Grey		SOLIDS	H35	Dark
	S118	Mink		SOLIDS	H128	Grey
	S119	Evergreen		SOLIDS	H125	Green
	S120	Cosmic Blue		SOLIDS	H127	Navy
	S121	Suede		SOLIDS	H126	Beige
	S201	Nougat Cream		SOLIDS	H04	Peanut
	S203	Sky Blue		SOLIDS	H30	Dawn Misty
	S212	Light Green		SOLIDS	H56	Light Green

6. Sheet Bonding



Standard with radius



Standard with bevel



Standard with profile



Standard with wave



Standard with back bevel



Bukk-nose



Sandwich



Waterfall edge



Standard v-grooved

■ 7.Edge preparation & build up

HIMACS sheets are delivered with a sanded backside of the sheet where it is highly recommended to sand smooth or to trim the edge making a rebate.

Turn the sheet over so that the back of the sheet is upside-down and you can work comfortably.

Ensure the HIMACS sheet does not sag and the sheet is properly supported at each position and do not round the edge of the bonding area.

Using a rebate at the back of the sheet for the edge treatment also has the advantage to

- take away the rough sanding marks and
- allows stopping the edge on a fine line
- to avoid using gluing blocks or
- Any kind of ruler or gluing templates.

Check all edges carefully before bonding. Ensure that no chips are broken out and no heavy marks of the saw blade or any whitening of the edge is visible. Create the rebate that approximately 0,5mm of the sheet will hang over to trim off later after the adhesive cured.

Put all necessary materials and tools in place which you will need for bonding:

- Clean, white cloth
- Denatured Alcohol (or Acetone)
- HIMACS - Adhesive (check the right color) (small or large cartridge)
- Adhesive dispenser and mixer-tips
- Clamps (C-clamps or best use "Klemsia")

► Further details, please find under TDS Drop Edges & Downturns

8. Sanding

The sanding process is similar to the standard sanding process. When sanding with hand tools or alternative with stationary equipment ensure not to create heat on the surface to avoid any unexpected unevenness of the surface. Depending on available tools and equipment sanding time will be within the same range.

FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH	
	for all colours		for all colours		for all colours	
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper
Step 1	100/80 µ	150/180	100/80 µ	150/180	100/80 µ	150/180
	take dust away		take dust away		take dust away	
Step 2	60 µ	220	60 µ	220	60 µ	220
	take dust away		take dust away		take dust away	
Step 3	useit Superpad S/G Scotch Brite Maroon 7447	280	40/30 µ	280/320	30 µ	280/320
	take dust away		take dust away		take dust away	
Step 4	industrial paper towel	useit Superpad S/G Scotch Brite Maroon 7447	useit Superpad S/G Scotch Brite Maroon 7447	380/400	15 µ	380/400
	take dust away		take dust away		take dust away	
Step 5		industrial paper towel	industrial paper towel	useit Superpad S/G Scotch Brite Maroon 7447	9 µ	600/800
			take dust away		take dust away	
Step 6				industrial paper towel	Finesse-it Finish-component	1200
					take dust away	
Step 7						1500 1800 2500

Alternative Sanding Steps

HIMACS Surface Sanding Process

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Matt	P 60/100	3M Hookit dust remove
	P 120 / 150	3M Hookit dust remove
	P 180	3M Hookit dust remove
	Scotch-Brite	Marron dust remove

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Semi gloss	P 240	3M Hookit dust remove
	P 320	3M Hookit dust remove
	P 400	3M Hookit dust remove
	Scotch-Brite	Grey dust remove
Dust remove	3M Scotch-Brite MS-DC 150x8mm type T white	

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
High gloss	P 600	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1200	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1000	3M Trizact
	Cleanup / dry	Wipe off
P 3000	3M Trizact	
Cleanup / dry	Wipe off	
Finesse-it	Polish paste with felt-disk	
Wipe off	With cotton cloth	

► Further details, please find under TDS "Sanding"

useit-abrasives® - Schleifsysteme für Mineralwerkstoffe useit-abrasives® - for Solid Surface Materials

Bearbeiten von Mineralwerkstoffen wolkenfrei, schattenfrei, staubfrei, schnell und kostensparend mit den patentierten useit®-Schleifmitteln.

Finishing of Solid Surface Materials cloudless, shadeless, dust-free, quick and cost-saving with the patented useit-abrasives®.

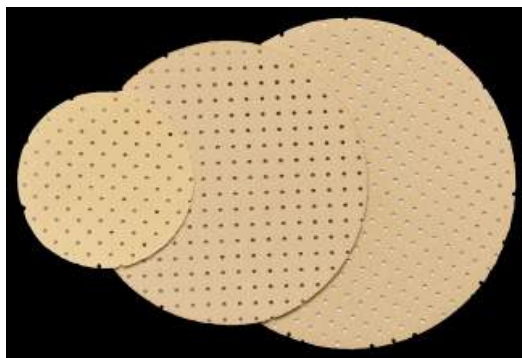


useit®-Superpad P

useit®-Superfinishing-Pad SG

	matt	seidenmatt semigloss	Hochglanz high gloss
useit®-Superpad P 220	x	x	x
useit®-Superpad P 400	x		
useit®-Superfinishing-Pad SG 600		x	x
useit®-Superfinishing-Pad SG 1500			x
useit®-Superfinishing-Pad SG 3000 für Spiegelglanz (nass schleifen) <i>for high gloss (wet sanding)</i>			x

(Kratzer und sonstige Fehler in der Oberfläche mit Korn 80, 120, 150 oder 180 ausschleifen)
(useit®-Superpad P grit 120, 150 or 180 to remove deep sanding marks or other surface defects!)



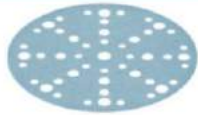
Best Superpad P Gold

Available in different grits and different sizes

► Further details, please find under TDS "Sanding"

■ 9. Festool

Granat



Ø 150

Matte Finish: Light colored material - Granat or Titan II- 120, 150, 180, Vlies 280 Dark colored material - Granat or Titan II 120, 150, 180, 220, Vlies 800

Satin Finish: Light colored material - Granat or Titan II 120, 150, 180, 220, 320, Vlies 800 Dark colored material - Granat or Titan II 120, 150, 180, 220, 320, 400, Platin 500

Semi Gloss Finish: Light colored material - Granat or Titan II 120, 150, 180, 220, 320, 400, Platin 500 Dark colored material - Granat or Titan II 120, 150, 180, 220, 320, 400, Platin 500, 1000 Page 1 of 2




Gloss Finish: Light and dark colored material - Granat or Titan II 120, 150, 180, 220, 320, 400, Platin 500, 1000, 2000, 4000

High Gloss Finish: Same grit se uence as the Gloss finish above. Follow sanding process by applying compounds with felt pads mounted on the polishing pad. Use sander in the gear driven Rotex mode on high speed for coarse sanding and polishing and move to low to medium speed (1-3) using the following pads and compounds: Hard felt Rubbing compound (Marine grade) Soft felt 3M Finess-It II Wool pad Li uid glass

► Further details, please find under TDS "Sanding"

10. Thermoforming

The radius listing below is showing the standard minimum radius of each HIMACS thickness based on a white color. Be aware that due to highly pigmented formulation easily whitening can appear in the radius but always should become agreed with the customer if this may be acceptable or a wider radius has to be chosen. Therefore we suggest making customer sign off the sample you prepare for the project and keep this for further records.

<p>$Ri \geq 15 \text{ mm}$</p>  <p>4.5mm Solid</p>	<p>$Ri \geq 20 \text{ mm}$</p>  <p>6mm Solid</p>	<p>$Ri \geq 40 \text{ mm}$</p>  <p>9mm Solid</p>
<p>$Ri \geq 50 \text{ mm}$</p>  <p>12mm Solid</p>	<p>$Ri \geq 100 \text{ mm}$</p>  <p>20mm Solid</p>	
<p>$Ri \geq 6 \text{ mm}$</p>  <p>12mm Solid, Ultra Thermoforming</p>		

Ri = inside radius (smallest radius recommendation)

Information of smallest possible radius is based on standard light colors which can be from some variation of result when using dark colors.

Solids Special

<p>$Ri \geq 150 \text{ mm}$</p>  <p>12mm S728 CE MED Alpine White</p>	<p>$Ri \geq 50 \text{ mm}$</p>  <p>12mm S828 Alpine White</p>	<p>$Ri \geq 6 \text{ mm}$</p>  <p>12mm S928 Alpine White Ultra Thermoforming S922U S923U S924U</p>
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► Further details, please find under TDS "Thermoforming"

11. Fire performance

Testmethode Norm		3mm S028	6mm S028	9mm S028	12mm S028	12mm S728	19mm S028
DIN 4102-1	Standrad	B2	B2	B1	B1 *)	B1	B1
Din 4102-1 S728	mit Hinterfütterung Gips-Karton-Platte			B1			
EN13501	Standard	D-s1-d0	C-s1-d0	C-s1-d0	B-s1-d0	B-s1-d0	B-s1-d0
NF 92-512						M1	
EN 13501	SBI					B-s1-d0	
EN 13501	mit Hinterfütterung Gips-Karton-Platte				B-s1-d0		

Testmethode Norm					12mm S006	12mm G030	
ASTM E 84					Class A	Class A	

Europäische FR-Klassen im Vergleich zu nationalen Brand-Klassen und Brand-Klassifizierungen Fire Euro class vs e uivalences to national FR rates and FR classifications

Euro Class EN 13501	UK BS 476 pts 6 &	GERMANY DIN 4102	FRANCE NF P 92-512
A1	./.	A1	M0
A2	Class 0	A2	M0
B	Class 0	B1	M1
C	Class 1	B1	M1
D	Class 3	B2	M2
E	Class 3	B2	M3
F	Unclassified	B3	M3/M4

12. Technical Specification Data Sheet: 3 / 4,5mm

NO	SPECIFICATION	ABBREVIATION	UNIT	3 / 4mm	TEST METHOD	
		Kürzel	Einheit	S028	NORM	
1	Density	P	g/cm ³	1,72	DIN EN ISO 1183	
			kg/m ³	1720		
2	Flexural E-modulus	Ef	Mpa	7800	DIN EN ISO 178	
3	Flexural strength	σ fm	Mpa	48.4	DIN EN ISO 12372	
4	Ultimate elongation	εfm	%	0.89	DIN EN ISO 178	
5	Tensile Strength	σ fm	Mpa	23.1(%0.98)	DIN EN ISO 527	
6	Thermal expansion coefficient	α	mm/mk		DIN EN 12664	
			mm/°C	42.1x10 ⁻⁶	DIN EN 14581	
7	Thermal conductivity	λ 10try	W/mK	0.671	DIN EN 12664	
8	Resistance to thermal insulation	R	m ² K/W	0.0046	DIN EN 12664	
9	Electrostatic Contact resistance	Ω	> 1x10 ⁹	205x10 ⁹	DIN IEC 1340-4-1, 04-`92 EN 61340-5-1	
			> 1x10 ¹²	0.205x10 ¹²		
10	Water vapour permeability efficient of diffusion resistance	μ	μ	81346	DIN EN ISO 12572	
11	Water absorption	sp. G	%	0.4	DIN EN 438-12	
12	Increase of weight					
	Increase of thickness	d	%	2.5		
13	Measure variation at humidity change		Length	%	DIN EN ISO 318_5-`98	
			Thickness	%		
			Mass	%		
				%		
14	Slippery resistance Angle of acceptance 10° to 19°	R			GMG 100 (±R9)	
					DIN 51130	
15	Scratch fastness				DIN 68861_4,11-`81	
16	Ball indentation hardness HB Mohs-hardnesst Pin-hardness		N/mm ²	270	EN ISO 19712-2-15	
17	Barcol hardness			65	EN ISO 19712-2-15	
18	Rockwell hardness		HR	119	EN ISO 19712-2-15	
19	Impact resistance ball impact by large-diameter		mm	260	EN ISO 19712-2-8	
20	Resistance to dry heat	5=best	rating ³⁾	3 - 4	EN ISO 19712-2-12	
21	Resistance to wet heat	5=best	rating	5	EN ISO 19712-2-13	
22	Resistance to temperatur change		rating	No change	EN ISO 19712-2-14	
23	Resistance to cigarett burns	5=best	rating ²⁾	2	EN ISO 19712-2-11	
24	Light resistance	5=best	Bl.w.ref6	3 - 4	EN ISO 19712-2-9	
25	Food resistance				LMBG §31	
26	Hygiene				LGA hygiene certificate	
27	Emission				EN ISO 16000-9	

¹⁾ relevant for Sheet and cured adhesive

³⁾ ISO 19712-2, Abs.11

Rating scale:

Rating 5: No visible change

Rating 4: Slight change in gloss, only visible at certain viewing angles and/or slight brown stain

Rating 3: Moderate change in gloss and/or moderate brown stain

Rating 2: Severe brown mark, but no destruction of the surface

Rating 1: Blistering and/or cracks

³⁾ ISO 19712-2, Abs.12

Rating scale:

Rating 5: No visible change (No damage)

Rating 4: Slight change in gloss visible only when the light source is mirrored in the test area and the light is reflected towards the observer's eye, or a few isolated imperfections just visible

Rating 3: Slight mark (s) visible when viewed from several directions, for example an almost complete disc

Rating 2: Distinct mark(s) or region(s) of slight discolorations or region(s) of slight disturbance of the surface visible

Rating 1: Distinct mark(s) or region(s) of slight discolorations or region(s) of distinct disturbance of the surface visible

Fire Classification

NO	SPECIFICATION	ABBREVIATION	UNIT	3 mm	TEST METHOD
		Kürzel	Einheit		NORM
	fire classification				
30	Sheet material			B2	DIN 4102-1
31	Sheet material + backup w-board				DIN 4102-1
32	Sheet material			D-s1-d0	EN 13501
33	Sheet material				NF 92-512
34	Sheet material				EN 13501
35	Sheet material + backup f-board				EN 13501
36	Sheet material + backup w-board				EN 13501
37	Sheet material				IMO - modul B & modul D

13. Technical Specification Data Sheet: 6mm

NO	SPECIFICATION	ABBREVIATION	UNIT	6mm	TEST METHOD
		Kürzel	Einheit	S028	NORM
1	Density	P	g/cm ³	1,70	DIN EN ISO 1183
			kg/m ³	1700	
2	Flexural E-modulus	Ef	Mpa	7900	DIN EN ISO 178
3	Flexural strength	σ fm	Mpa	69.6	DIN EN ISO 12372
4	Ultimate elongation	εfm	%	0.84	DIN EN ISO 178
5	Tensile Strength	σ fm	Mpa	52.9(%0.97)	DIN EN ISO 527
6	Thermal expansion coefficient	α	mm/mk		DIN EN 12664
			mm/°C	41.3x10 ⁻⁶	DIN EN 14581
7	Thermal conductivity	λ 10try	W/mK	0.881	DIN EN 12664
8	Resistance to thermal insulation	R	m ² K/W	0.0063	DIN EN 12664
9	Electrostatic Contact resistance	Ω	> 1x10 ⁹	254x10 ⁹	DIN IEC 1340-4-1, 04-`92
			> 1x10 ¹²	0.254x10 ¹²	EN 61340-5-1
10	Water vapour permeability efficient of diffusion resistance	μ	μ	44805	DIN EN ISO 12572
12	Water absorption Increase of weight Increase of thickness	sp. G d	%	0.2	DIN EN 438-12
			%	0.2	
13	Measure variation at humidity change Length Thickness Mass		%		DIN EN ISO 318_5-`98
			%		
			%		
			%		
14	Slippery resistance Angle of acceptance 10° to 19°	R			GMG 100 (±R9)
					DIN 51130
15	Scratch fastness				DIN 68861_4,11-`81
16	Ball indentation hardness HB Mohs-hardnesst Pin-hardness		N/mm ²	270	EN ISO 19712-2-15
17	Barcol hardness			65	EN ISO 19712-2-15
18	Rockwell hardness		HR	119	EN ISO 19712-2-15
19	Impact resistance ball impact by large-diameter				EN ISO 19712-2-8
			mm	1000	
20	Resistance to dry heat	5=best	rating ³⁾	4	EN ISO 19712-2-12
21	Resistance to wet heat	5=best	rating	5	EN ISO 19712-2-13
22	Resistance to temperatur change		rating	No change	EN ISO 19712-2-14
23	Resistance to cigarett burns	5=best	rating ²⁾	3	EN ISO 19712-2-11
24	Light resistance	5=best	Bl.w.ref6	3 - 4	EN ISO 19712-2-9
25	Food resistance				LMBG §31
26	Hygiene				LGA hygiene certificate
27	Emission				EN ISO 16000-9

¹⁾ relevant for Sheet and cured adhesive

³⁾ ISO 19712-2, Abs.11

Rating scale:

Rating 5: No visible change

Rating 4: Slight change in gloss, only visible at certain viewing angles and/or slight brown stain

Rating 3: Moderate change in gloss and/or moderate brown stain

Rating 2: Severe brown mark, but no destruction of the surface

Rating 1: Blistering and/or cracks

³⁾ ISO 19712-2, Abs.12

Rating scale:

Rating 5: No visible change (No damage)

Rating 4: Slight change in gloss visible only when the light source is mirrored in the test area and the light is reflected towards the observer's eye, or a few isolated imperfections just visible

Rating 3: Slight mark (s) visible when viewed from several directions, for example an almost complete disc

Rating 2: Distinct mark(s) or region(s) of slight discolorations or region(s) of slight disturbance of the surface visible

Rating 1: Distinct mark(s) or region(s) of slight discolorations or region(s) of distinct disturbance of the surface visible

Fire Classification

NO	SPECIFICATION	ABBREVIATION	UNIT	6 mm	TEST METHOD
		Kürzel	Einheit		NORM
	Fire resistance performance fire classification				
30	Sheet material			B1	DIN 4102-1
31	Sheet material + backup w-board				DIN 4102-1
32	Sheet material			C-s1-d0	EN 13501
33	Sheet material				NF 92-512
34	Sheet material				EN 13501
35	Sheet material + backup f-board				EN 13501
36	Sheet material + backup w-board				EN 13501
37	Sheet material				IMO - modul B & modul D

14. Technical Specification Data Sheet: 9mm

NO	SPECIFICATION	ABBREVIATION	UNIT	9mm	TEST METHOD
		Kürzel	Einheit	S028	NORM
1	Density	P	g/cm ³	1,72	DIN EN ISO 1183
			kg/m ³	1720	
2	Flexural E-modulus	Ef	Mpa	8800	DIN EN ISO 178
3	Flexural strength	σ fm	Mpa	74.7	DIN EN ISO 12372
4	Ultimate elongation	εfm	%	0.83	DIN EN ISO 178
5	Tensile Strength	σ fm	Mpa	54.5(%1.07)	DIN EN ISO 527
6	Thermal expansion coefficient	α	mm/mk		DIN EN 12664
			mm/°C	41.3x10 ⁻⁶	DIN EN 14581
7	Thermal conductivity	λ 10try	W/mK	0.884	DIN EN 12664
8	Resistance to thermal insulation	R	m ² K/W	0.01	DIN EN 12664
9	Electrostatic Contact resistance	Ω	> 1x10 ⁹	308x10 ⁹	DIN IEC 1340-4-1, 04-`92
			> 1x10 ¹²	0.308x10 ¹²	EN 61340-5-1
10	Water vapour permeability efficient of diffusion resistance	μ	μ	23022	DIN EN ISO 12572
12	Water absorption Increase of weight Increase of thickness	sp. G d	%	0.1	DIN EN 438-12
			%	0.2	
13	Measure variation at humidity change Length Thickness Mass		%		DIN EN ISO 318_5-`98
			%		
			%		
			%		
14	Slippery resistance Angle of acceptance 10° to 19°	R			GMG 100 (±R9)
					DIN 51130
15	Scratch fastness				DIN 68861_4,11-`81
16	Ball indentation hardness HB Mohs-hardnesst Pin-hardness		N/mm ²	270	EN ISO 19712-2-15
17	Barcol hardness			65	EN ISO 19712-2-15
18	Rockwell hardness		HR	119	EN ISO 19712-2-15
19	Impact resistance ball impact by large-diameter		mm	1750	EN ISO 19712-2-8
20	Resistance to dry heat	5=best	rating ³⁾	4	EN ISO 19712-2-12
21	Resistance to wet heat	5=best	rating	5	EN ISO 19712-2-13
22	Resistance to temperatur change		rating	No change	EN ISO 19712-2-14
23	Resistance to cigarett burns	5=best	rating ²⁾	3	EN ISO 19712-2-11
24	Light resistance	5=best	Bl.w.ref6	3 - 4	EN ISO 19712-2-9
25	Food resistance				LMBG §31
26	Hygiene				LGA hygiene certificate
27	Emission				EN ISO 16000-9

¹⁾ relevant for Sheet and cured adhesive

³⁾ ISO 19712-2, Abs.11

Rating scale:

Rating 5: No visible change

Rating 4: Slight change in gloss, only visible at certain viewing angles and/or slight brown stain

Rating 3: Moderate change in gloss and/or moderate brown stain

Rating 2: Severe brown mark, but no destruction of the surface

Rating 1: Blistering and/or cracks

³⁾ ISO 19712-2, Abs.12

Rating scale:

Rating 5: No visible change (No damage)

Rating 4: Slight change in gloss visible only when the light source is mirrored in the test area and the light is reflected towards the observer's eye, or a few isolated imperfections just visible

Rating 3: Slight mark (s) visible when viewed from several directions, for example an almost complete disc

Rating 2: Distinct mark(s) or region(s) of slight discolorations or region(s) of slight disturbance of the surface visible

Rating 1: Distinct mark(s) or region(s) of slight discolorations or region(s) of distinct disturbance of the surface visible

Fire Classification

NO	SPECIFICATION	ABBREVIATION	UNIT	9 mm	TEST METHOD
		Kürzel	Einheit		NORM
	Fire resistance performance fire classification				
30	Sheet material			B1	DIN 4102-1
31	Sheet material + backup w-board			B1**)	DIN 4102-1
32	Sheet material			C-s1-d0	EN 13501
33	Sheet material				NF 92-512
34	Sheet material				EN 13501
35	Sheet material + backup f-board				EN 13501
36	Sheet material + backup w-board				EN 13501
37	Sheet material				IMO - modul B & modul D

15. Technical Specification Data Sheet: 12mm

NO	SPECIFICATION	ABBREVIATION	UNIT	12 mm	TEST METHOD
		Kürzel	Einheit	S028	NORM
1	Density	P	g/cm ³	1,75	DIN EN ISO 1183
			kg/m ³	1750	
2	Flexural E-modulus	Ef	Mpa	8900	DIN EN ISO 178
3	Flexural strength	σ fm	Mpa	70.1	DIN EN ISO 12372
4	Ultimate elongation	εfm	%	1.01	DIN EN ISO 178
5	Tensile Strength	σ fm	Mpa	32.7	DIN EN ISO 527
6	Thermal expansion coefficient	α	mm/mk	0.048	DIN EN 12664
			mm/°C	*)48x10 ⁻⁶	DIN EN 14581
7	Thermal conductivity	λ 10try	W/mK	0.656	DIN EN 12664
8	Resistance to thermal insulation	R	m ² K/W	0.038	DIN EN 12664
9	Electrostatic Contact resistance	Ω	> 1x10 ⁹	Isolating	DIN IEC 1340-4-1, 04-`92
			> 1x10 ¹²		EN 61340-5-1
10	Water vapour permeability efficient of diffusion resistance	μ	μ	18607	DIN EN ISO 12572
12	Water absorption Increase of weight Increase of thickness	sp. G d	%	0.1	DIN EN 438-12
			%	0.1	
13	Measure variation at humidity change Length Thickness Mass		%	-0.03	DIN EN ISO 318_5-`98
			%	0.06	
			%	0.05	
14	Slippery resistance Angle of acceptance 10° to 19°	R		> 0.32-0.9	GMG 100 (±R9)
				R10	DIN 51130
15	Scratch fastness			4D	DIN 68861_4,11-`81
16	Ball indentation hardness HB Mohs-hardnesst Pin-hardness		N/mm ²	257	EN ISO 19712-2-15
17	Barcol hardness			65	EN ISO 19712-2-15
18	Rockwell hardness		HR	119	EN ISO 19712-2-15
19	Impact resistance ball impact by large-diameter		mm	1815	EN ISO 19712-2-8
20	Resistance to dry heat	5=best	rating ³⁾	4	EN ISO 19712-2-12
21	Resistance to wet heat	5=best	rating	5	EN ISO 19712-2-13
22	Resistance to temperatur change		rating	No change	EN ISO 19712-2-14
23	Resistance to cigarett burns	5=best	rating ²⁾	3	EN ISO 19712-2-11
24	Light resistance	5=best	Bl.w.ref6	3 - 4	EN ISO 19712-2-9
25	Food resistance			Suitable	LMBG §31
26	Hygiene			Suitable	LGA hygiene certificate
27	Emission			Emission free ¹⁾	EN ISO 16000-9

¹⁾ relevant for Sheet and cured adhesive

³⁾ ISO 19712-2, Abs.11

Rating scale:

Rating 5: No visible change

Rating 4: Slight change in gloss, only visible at certain viewing angles and/or slight brown stain

Rating 3: Moderate change in gloss and/or moderate brown stain

Rating 2: Severe brown mark, but no destruction of the surface

Rating 1: Blistering and/or cracks

³⁾ ISO 19712-2, Abs.12

Rating scale:

Rating 5: No visible change (No damage)

Rating 4: Slight change in gloss visible only when the light source is mirrored in the test area and the light is reflected towards the observer's eye, or a few isolated imperfections just visible

Rating 3: Slight mark (s) visible when viewed from several directions, for example an almost complete disc

Rating 2: Distinct mark(s) or region(s) of slight discolorations or region(s) of slight disturbance of the surface visible

Rating 1: Distinct mark(s) or region(s) of slight discolorations or region(s) of distinct disturbance of the surface visible

Fire Classification

NO	SPECIFICATION	ABBREVIATION	UNIT	12 mm	TEST METHOD
		Kürzel	Einheit	S028	NORM
	Fire resistance performance fire classification				
30	Sheet material			B1 *)	DIN 4102-1
31	Sheet material + backup w-board				DIN 4102-1
32	Sheet material			B-s1-d0	EN 13501
33	Sheet material				NF 92-512
34	Sheet material				EN 13501
35	Sheet material + backup f-board			B-s1-d0	EN 13501
36	Sheet material + backup w-board			C-s1-d0	EN 13501
37	Sheet material				IMO - modul B & modul D

16. Technical Specification Data Sheet: 19 / 20mm

NO	SPECIFICATION	Kürzel	UNIT	12 / 20mm	TEST METHOD	
			Einheit	S028	NORM	
1	Density	P	g/cm ³	1.73	DIN EN ISO 1183	
			kg/m ³	1730		
2	Flexural E-modulus	Ef	Mpa	10000	DIN EN ISO 178	
3	Flexural strength	σ fm	Mpa	70.4	DIN EN ISO 12372	
4	Ultimate elongation	εfm	%	0.81	DIN EN ISO 178	
5	Tensile Strength	σ fm	Mpa	51.3(%1,69)	DIN EN ISO 527	
6	Thermal expansion coefficient	α	mm/mk		DIN EN 12664	
			mm/°C	42x10 ⁻⁶	DIN EN 14581	
7	Thermal conductivity	λ 10try	W/mK	0.871	DIN EN 12664	
8	Resistance to thermal insulation	R	m ² K/W	0.022	DIN EN 12664	
9	Electrostatic Contact resistance	Ω	> 1x10 ⁹	513x10 ⁹	DIN IEC 1340-4-1, 04-`92 EN 61340-5-1	
			> 1x10 ¹²	> 0.513x10 ¹²		
10	Water vapour permeability efficient of diffusion resistance	μ	μ	8060	DIN EN ISO 12572	
11	Water absorption	sp. G	%	0.1	DIN EN 438-12	
12	Increase of weight					
	Increase of thickness	d	%	0.3		
13	Measure variation at humidity change		Length	%	DIN EN ISO 318_5-`98	
			Thickness	%		
			Mass	%		
				%		
14	Slippery resistance Angle of acceptance 10° to 19°	R			GMG 100 (±R9)	
					DIN 51130	
15	Scratch fastness				DIN 68861_4,11-`81	
16	Ball indentation hardness HB		N/mm ²	270	EN ISO 19712-2-15	
			Mohs-hardnesst			
			Pin-hardness			
17	Barcol hardness			65	EN ISO 19712-2-15	
18	Rockwell hardness		HR	119	EN ISO 19712-2-15	
19	Impact resistance ball impact by large-diameter				EN ISO 19712-2-8	
			mm	1808		
20	Resistance to dry heat	5=best	rating ³⁾	4	EN ISO 19712-2-12	
21	Resistance to wet heat	5=best	rating	5	EN ISO 19712-2-13	
22	Resistance to temperatur change		rating	No change	EN ISO 19712-2-14	
23	Resistance to cigarett burns	5=best	rating ²⁾	3	EN ISO 19712-2-11	
24	Light resistance	5=best	Bl.w.ref6	3 - 4	EN ISO 19712-2-9	
25	Food resistance				LMBG §31	
26	Hygiene				LGA hygiene certificate	
27	Emission				EN ISO 16000-9	

¹⁾ relevant for Sheet and cured adhesive

³⁾ ISO 19712-2, Abs.11

Rating scale:

Rating 5: No visible change

Rating 4: Slight change in gloss, only visible at certain viewing angles and/or slight brown stain

Rating 3: Moderate change in gloss and/or moderate brown stain

Rating 2: Severe brown mark, but no destruction of the surface

Rating 1: Blistering and/or cracks

³⁾ ISO 19712-2, Abs.12

Rating scale:

Rating 5: No visible change (No damage)

Rating 4: Slight change in gloss visible only when the light source is mirrored in the test area and the light is reflected towards the observer's eye, or a few isolated imperfections just visible

Rating 3: Slight mark (s) visible when viewed from several directions, for example an almost complete disc


Rating 2: Distinct mark(s) or region(s) of slight discolorations or region(s) of slight disturbance of the surface visible

Rating 1: Distinct mark(s) or region(s) of slight discolorations or region(s) of distinct disturbance of the surface visible

Fire Classification

NO	SPECIFICATION	ABBREVIATION	UNIT	19 / 20 mm	TEST METHOD
		Kürzel	Einheit	S028	NORM
	Fire resistance performance fire classification				
30	Sheet material			B1	DIN 4102-1
31	Sheet material + backup w-board				DIN 4102-1
32	Sheet material			B-s1-d0	EN 13501
33	Sheet material				NF 92-512
34	Sheet material				EN 13501
35	Sheet material + backup f-board				EN 13501
36	Sheet material + backup w-board				EN 13501
37	Sheet material				IMO - modul B & modul D

BEYOND ASIAN HUB TOWARD GLOBAL WORLD



TEST REPORT

68, Gajaeul-ro, Seo-gu, Incheon, 22629 Rep. of KOREA TEL 82-32-5709-700 FAX 82-32-575-5813

Report No : TAS-002292 Receipt Date : 2017.02.02.
 Representative : Oh Jang-Soo Test Completion Date : 2017.02.21.
 Company name: LG HAUSYS Co., Ltd
 Address : (Yeouido-dong, One IFC)10, Gukjegeumyung-ro, Yeongdeungpo-gu, Seoul, Korea

Sample name : Artificial Marble (Solid)

Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Specific Gravity(23/23) °C	-	-	1.75	ASTM D792-13(Method A)
Rockwell Hardness(HRM)	-	-	88	ASTM D785-08(2015) (Procedure A)
Barcol Hardness	-	-	65	ASTM D2583-13a
Tensile Strength	MPa	-	44.6	ASTM D638-14(*)
Tensile Modulus of Elasticity	GPa	-	10.0	ASTM D638-14(*)
Flexural Strength	MPa	-	76.4	ASTM D790-15e2(**)
Flexural Modulus of Elasticity	GPa	-	10.6	ASTM D790-15e2(**)
Izod Impact Strength	J/m	-	16.8	ASTM D256-10e1(Method A)
Water Absorption(24 h Immersion)	%	-	0.02	ASTM D570-98(2010)e1
Appearance(Discoloration) after Heat Resistance[(170 ± 2) °C×1 h]	-	-	No Defects	Client Provided Test Method
Appearance(Discoloration) after Hot Water Resistance(***)	-	-	No Defects	Client Provided Test Method
Deflection Temperature Under Load(1.82 MPa)	°C	-	104	ASTM D648-16(B법)


- Next Page -

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 Tested by Jungyuseok
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You Seok
 Technical Manager: You Seok
 Tel: 1577-0091(ARS ①→④)


2017.02.21.

Korea Testing & Research Institute
 President *Byun, Jong-Rip*




QR Code for forgery

Page: 1 of 2



BEYOND ASIAN HUB: TOWARD GLOBAL WORLD



TEST REPORT

68, Gajaeul-ro, Seo-gu, Incheon, 22829 Rep. of KOREA

TEL 82-32-5709-700 FAX 82-32-575-5613

Report No : TAS-002292

Receipt Date : 2017.02.02.

Representative : Oh Jang-Soo

Test Completion Date : 2017.02.21.

Company name: LG HAUSYS Co., Ltd

Address : (Yeouido-dong, One IFC)10, Gukjegeumyung-ro, Yeongdeungpo-gu, Seoul, Korea

Sample name : Artificial Marble (Solid)

Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Thermal Expansion	1/°C	-	3.7×10^{-5}	KS M 3015 : 2003
Pencil Hardness(Mitsu bishi pencil)	-	-	9H	KS M ISO 15184 : 2013

* Speed of Testing : 2.9 mm/min, Support Span : 140 mm
 ** Specimen : Type I, Speed of Testing : 5 mm/min(Modulus : 1 mm/min)
 *** Changing appearance after pour boiled water on the surface
 - Usage of Report: QUALITY CONTROL

NOTE : 1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You can check website (www.ktr.or.kr) or QR code to verify the authenticity of the certificate.
 2. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.
 3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

Jungyuseok

Tested by Jungyuseok
E-mail: jys1064@ktr.or.kr


You Seok

Technical Manager: You Seok
Tel: 1577-0091(ARS ①-④)

2017.02.21.

Korea Testing & Research Institute

President *Byun, Jong-Rip*



QR Code for forgery

Page: 2 of 2

KTR KOREA TESTING & RESEARCH INSTITUTE

KTR-QP-T00-F01-05(01)

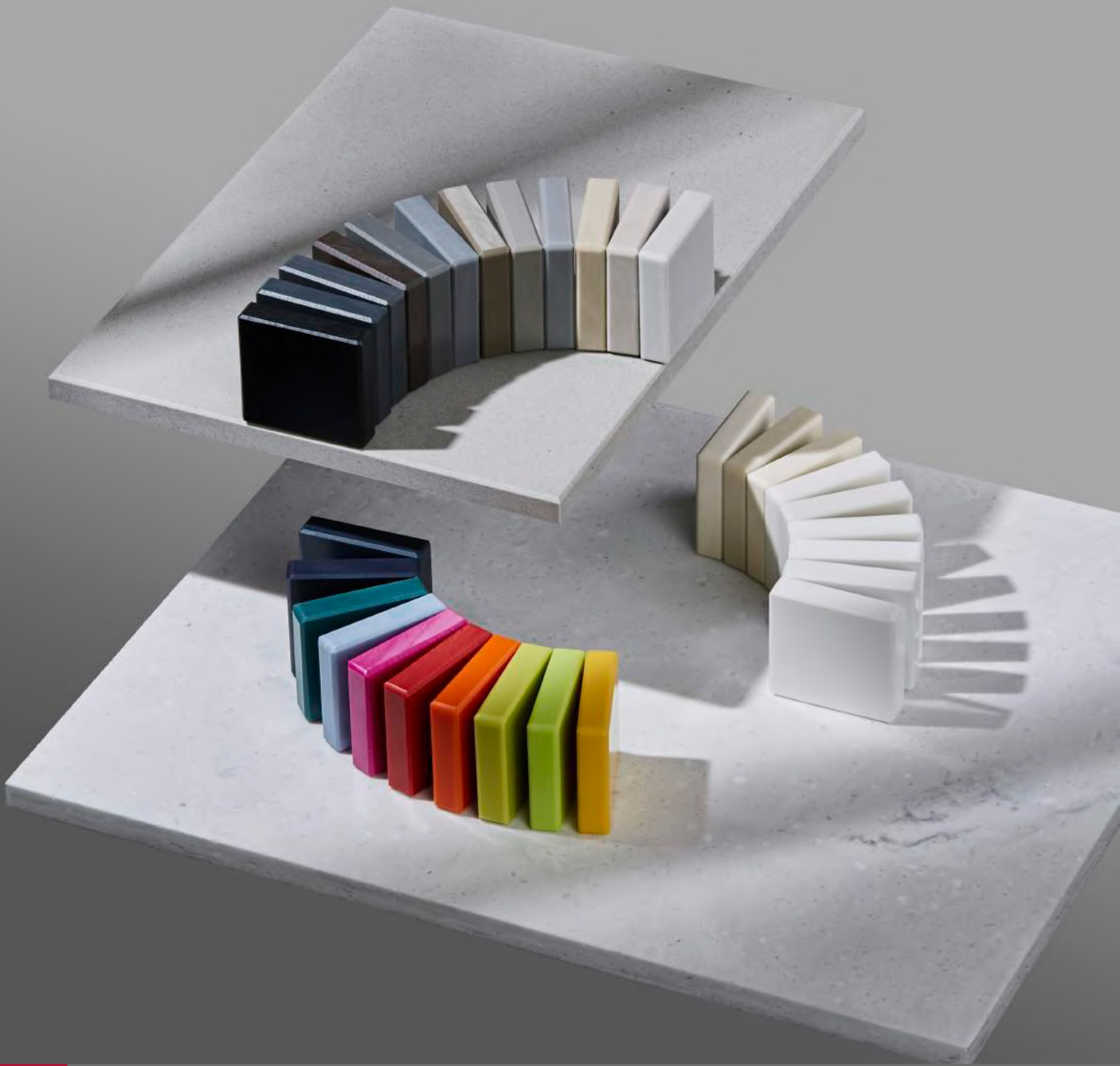
A4(210 x 297)

17. Technical Specification Data Sheet: Comparison Overview

SPECIFICATION	Kürzel	Unit Einheit	Old						Test method Norm
			3mm S028	6mm S028	9mm S028	12mm S06	12mm S728	19mm S028	
Density	P	g/cm ³	1,72	1,70	1,72	1,75	1,72	1,73	DIN EN ISO 1183
		kg/m ³	1720	1700	1720	1750	1720	1730	
Flexural E-modulus	Ef	Mpa	7800	7900	8800	8900	10200	10000	DIN EN ISO 178
Flexural strength	σ fm	Mpa	48,4	69,6	74,7	70,1	74,7	70,4	DIN EN ISO 12372
Ultimate elongation	εfm	%	0,89	0,84	0,83	1,01	0,70	0,81	DIN EN ISO 178
Tensile Strength	σ fm	Mpa	23,1(%0,98)	52,9(%0,97)	54,5(%1,07)	32,7	52,8(%1,13)	51,3(%1,69)	DIN EN ISO 527
Thermal expansion coefficient	α	mm/mk				0,048			DIN EN 12664
	α	mm/°C	42,1x10 ⁻⁶	41,3x10 ⁻⁶	41,3x10 ⁻⁶	30x10 ⁻⁶	41,3x10 ⁻⁶	42x10 ⁻⁶	DIN EN 14581
Thermal conductivity	λ 10try	W/mK	0,671	0,881	0,884	0,656	0,976	0,871	DIN EN 12664
Resistance to thermal insulation	R	m ² K/W	0,0046	0,0063	0,01	0,038	0,0119	0,022	DIN EN 12664
Electrostatic		>1x10 ⁹	205x10 ⁹	254x10 ⁹	308x10 ⁹		389x10 ⁹	513x10 ⁹	DIN IEC 1340-4-1, 04-`92
Contact resistance	Ω	>1x10 ¹²	0,205x10 ⁹	0,254x10 ⁹	0,308x10 ⁹	isolating	0,389x10 ⁹	0,513x10 ⁹	EN 61340-5-1
Wasserdampfdurchlässigkeit diffusion coefficient resistance Water absorption	μ	μ	81346	44805	23022	18607	17750	8060	DIN EN ISO 12572
Increase of weight	sp. G	%	0,4	0,2	0,1	<0,1	0,1	0,1	DIN EN 438-12
Increase of thickness	d	%	2,5	0,2	0,2	<0,1	0,2	0,3	
Measure variation at humidity change Length Thickness Mass		%				-0,03			DIN EN ISO 318_5-`98
		%				0,06			
		%				0,05			
		%							
Slippery resistance	R					>0,32-0,9			GMG 100 (±R9)
Angle of acceptance 10° to 19°						R10			DIN 51130
Scratch fastness						4D			DIN 68861_4,11-`81

TECHNICAL DATA SHEET

Thermo-Sheet S928 Solid Colour Family



1. Product

1.1 Thermo Sheet S928 Alpine White



Alpine White
S928 (12mm)
ΔE 3

Some HIMACS colours are particularly suitable for outdoor applications because of their good UV-resistance. HIMACS offers a 5 Year Warranty on colours' UV resistance for a tolerance of ΔE3 to ΔE4 and loss of gloss over 40%, 10 Year Warranty on colour leaching and 20 Year Warranty on colour peeling, swelling or delaminating. The warranty is applicable after the first installation and is only valid for the sheet material; adhesives are excluded. The conditions for this warranty are based on practical experience and on-going tests.

- Sheet Colour - size - adhesive

Sheet colour code	Sheet colour name	Material thickness mm	Sheet size w x l (mm)	Adhesive colour code	Adhesive colour name
S928	Alphine white	12	760 x 3680	H16	Alphine white

1.2 LRV

Sheet colour code	Sheet colour name	Category	Sheet LRV Value
		Colour Family	
S928	Alphine white	Solid	85.12

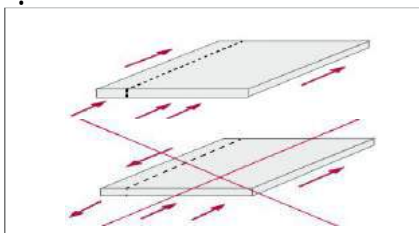
- Color codes

Colour code						
No	Code	Name	RAL Design	RAL Classic	NCS	Pantone
No	S 928	Alphine White	-	9003	-	11-4201 TPX

2. SOLIDS Thermo Sheet S928 Alpine White

2.1 Fabrication - Quality check cutting

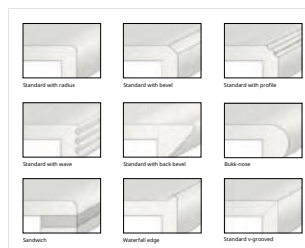
- When fabricating the new Solid colour Velvet there is almost no difference to the general standard HIMACS colour products in fabricating or installing
- Always handle the material with care to avoid any additional uncontrolled scratches from the top or the back of the sheet.
- When cutting HIMACS material always use a new and sharp saw blade or trim off with CNC router accordingly to size required. Ensure cut is perfect straight for later bonding.
- Check on sheet direction to have the same production flow when assemble:



! Check for sequential batch/sheet numbers to avoid any future colour differences during installation

2.2 Fabrication - bonding

- The bonding/jointing process of the standard fabrication of the new colour range of the Thermo-Sheet in the Solid colour family can be done as recommended for all other available sheet colours.
- Edges: As recommended at our standard products: for further details: see TB-no.6 Edge Treatments



2.3 Fabricating - sanding (finishing)

- The reference is as recommended with our standard products:
- for further details: see TB-no.4 Sanding



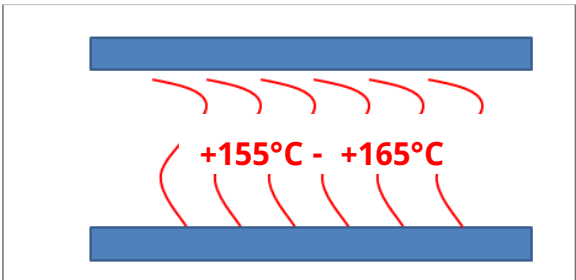
Finish Level	Next Finish	Semi-Gloss Finish	High-Gloss Finish
HIMACS Solid-Surf	For all Solid colors	For all colors of Solid, Velvet, Quartz, Granite, Marble, Vetrostone	For all Solid colors
Sanding step	150/180	100/150	150/180
Step 1	100/150	150/180	100/150
Step 2	60	60	60
Step 3	200	40/20	200/220
Step 4	Substrate primer level	200/220	15
Step 5	Substrate primer level	Substrate primer level	5
Step 6			1200
Step 7			1500
			2000
			2500

Interior Solid Surface Material TDS Thermo Sheet S028 Alpine White

2.4 Fabrication - Thermoforming

- For Thermoforming process best to use pre-heating oven
- For pre-heating 12mm product heat from top & bottom
- Follow our general guidelines of our TB-no.8 "Thermoforming".

- Heating time by contact heat of pre-heating oven: ca. 12 -16 minutes



- Thermoforming comparison test: Standard S028 Alpine White Thermo-Sheet S928 Alpine White

vs

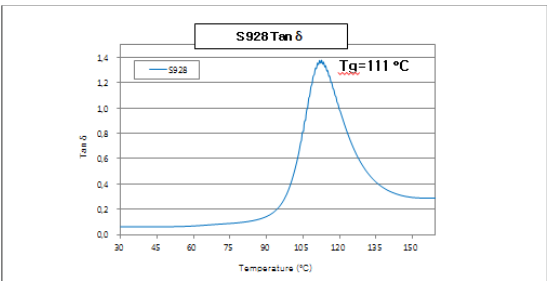
- The Glass-Transition-Temperature is reached by ca. +111°C
- Be aware that this temperature supposed to be all over in the material.

Product & Mold Development History

- New mold production for evaluation of sink ball formability

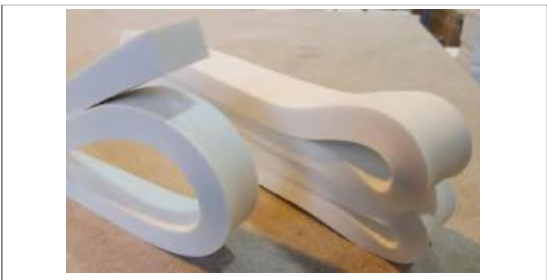
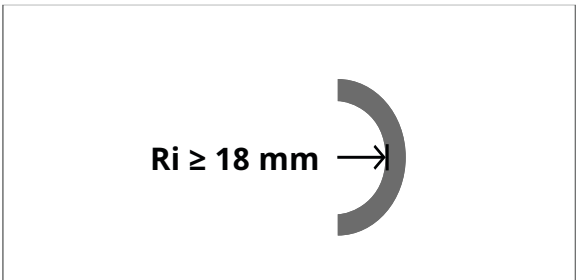
	Before	After
Mold Shape		
Mold Depth	Depth : 110 mm	Depth : 142 mm
Remark		30% enhanced conditions

- History of thermoforming test
 - ① Pilot Test sample with improved properties
 - 142mm depth : Passed



- The smallest radius to bend is approximate Ri=18mm

- Picture below shows bending to the extreme:



3. Technical Specification Data

Sample name : Artificial Marble (Solid_Thermoforming)

Test Results				
Test Item	Unit	Sample	Result	Test Method
Specific Gravity (23/23)°C	-	-	1.72	ASTM D792-13 (Method A)
Rockwell Hardness (HRM)	-	-	82	ASTM D785-08 (2015) (Procedure A)
Barcol Hardness	-	-	63	ASTM D2583-13a
Tensile Strength	MPa	-	43.2	ASTM D638-14(*)
Tensile Modulus of Elasticity	GPa	-	9.79	ASTM D638-14(*)
Flexural Strength	MPa	-	67.9	ASTM D790-15e2(**)
Flexural Modulus of Elasticity	GPa	-	9.30	ASTM D790-15e2(**)
Izod Impact Strength	J/m	-	24	ASTM D256-10e1(Method A)
Water Absorption (24h Immersion)	%	-	0.02	ASTM D570-98(2010)e1
Appearance (Discoloration) after Heat Resistance [(170 ± 2)°C X 1h]	-	-	No Defects	Client Provided Test Method
Hot Water Resistance	-	-	No Defects	Client Provided Test Method (***)
Deflection Temperature Under Load (1.82 MPa)	°C	-	101	ASTM D648-16(Method B)
Thermal Expansion	1/°C	-	3.8X10 ⁻⁵	KS M 3015 : 2003
Pencil Hardness (Mitsubishi pencil)	-	-	9H	KS M ISO 15184 : 2013

* Speed of Testing : 5.2 mm/min, Support Span : 190 mm, Number of Specimen : 4ea

** Specimen : Type I, Speed of Testing : 5 mm/min (Modulus :1 mm/min)

*** Changing appearance after pour boiled water on the specimen surface

■ 4. Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available.

The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs approval from LX Hausys Europe GmbH, for Warranty.

This bulletin is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since LX Hausys Europe GmbH cannot anticipate all variations in actual end-use conditions, LX Hausys Europe GmbH makes no warranties and assumes no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

■ 5. Warranty

The 15-year limited Installed Warranty for HIMACS where offered, does not cover damage caused by failure to follow proper fabrication and installation procedures and maintenance care, for which LX Hausys Europe GmbH does not have published procedures, or damages caused by customer abuse. The above Technical description shows mandatory procedures – for complete details, refer to HIMACS Fabrication Guidelines and/or additional Technical Bulletins of latest relevant updates.

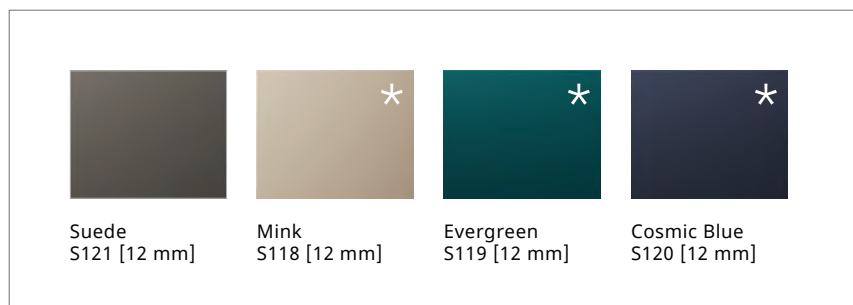
TECHNICAL DATA SHEET

VELVET (SOLIDS) COLOURS

Project: Zeneleau Terrace - Design: PAB Architects for BEPZZ - Fabrication: LCA & Workshop

1. SOLID - Velvet

1.1. Velvet Colour – Colour Codes (NCS/Pantone)



2017 Available Solid Colors in Europe						
NO	CODE	NAME	RAL Design	RAL Classic	NCS	PANTONE
19	S118	Mink	-	-	S 7000-N	18-5102 TPG
20	S119	Evergreen	-	-	S 6020-B50G	19-5413 TPG
21	S120	Cosmic Blue	-	-	S8010-R70B	19-3927 TPG
22	S121	Suede	-	-	S 2005-Y50R	14-0002 TPG

1.2. Sheet Colour - Size - Adhesive

SHEET COLOR CODE	SHEET COLOR NAME	MATERIAL THICKNESS (mm)	SHEET SIZE W X L (mm)	ADHESIVE COLOR CODE	ADHESIVE COLOR NAME
S118	Mink	12	760 x 3680	S118	Grey
S119	Evergreen	12	760 x 3680	S119	Green
S120	Cosmic Blue	12	760 x 3680	S120	Navy
S121	Suede	12	760 x 3680	S121	Beige

1.3. LRV

SHEET COLOR CODE	SHEET COLOR NAME	CATEGORY COLOR FAMILY	SHEET LRV VALUE
118	Mink	Solid	35.32
119	Evergreen	Solid	30.79
120	Cosmic Blue	Solid	27.92
121	Suede	Solid	60.32

1.4. Disclaimer Colour

The basic HIMACS material is identical for every colour but it is important to note that darker and more heavily pigmented colours will show dust, scratches, haziness, marks left by hard water and other ordinary wear and tear more noticeably than lighter textured or marked colours. Therefore colours with a are less suitable for applications that are exposed to contact such as worktops to extensive surface located in heavy traffic area as an example. There may be deviations between the illustrated and actual colours owing to printing techniques. To receive the detailed colour range, please contact us at himacs.eu.

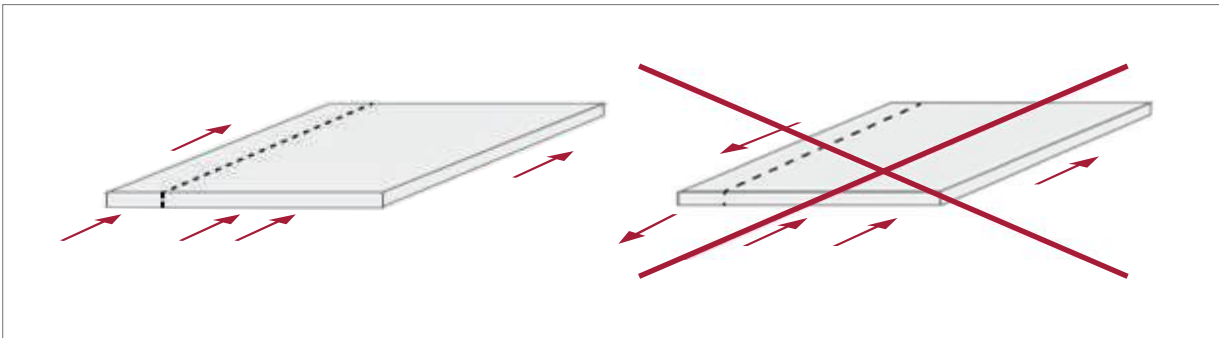
2. Fabrication

2.1. Fabrication – Quality Check Cutting

- When fabricating the new Solid colour Velvet there is almost no difference to the general standard
- HIMACS colour products in fabricating or installing
- Always handle the material with care to avoid any additional uncontrolled scratches from the top or the back of the sheet. (Similar to our standard Colour Back or Fiery Red)
- When cutting HIMACS material always use a new and sharp saw blade for trim off with CNC router accordingly to size required. Ensure cut is perfect straight and free of any unevenness or later bonding.

Quality check:

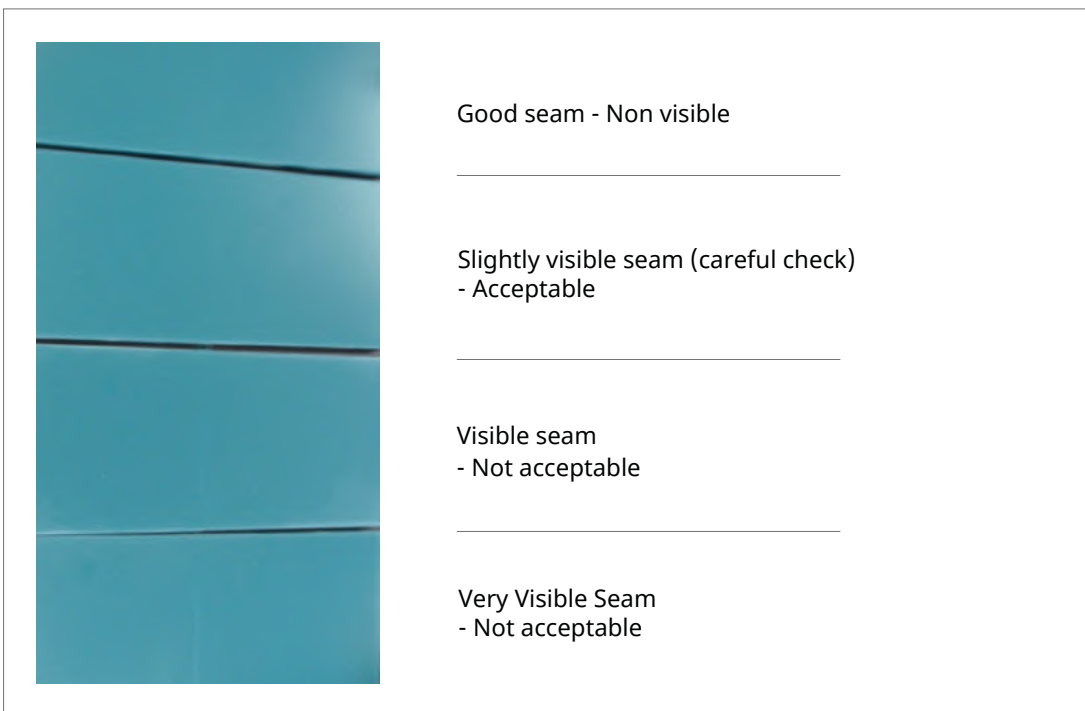
- Check on sequential sheet number and sheet direction to have the same production flow when assemble:



Check for sequential batch/sheet numbers to avoid any future colour differences during installation.

2.2. Fabrication - bonding

- The bonding/jointing process of the standard fabrication of the new colour range of Velvet in the Solid colour family can be done as recommended for all other available sheet colours.



2.3. Fabricating – Sanding (Finishing)

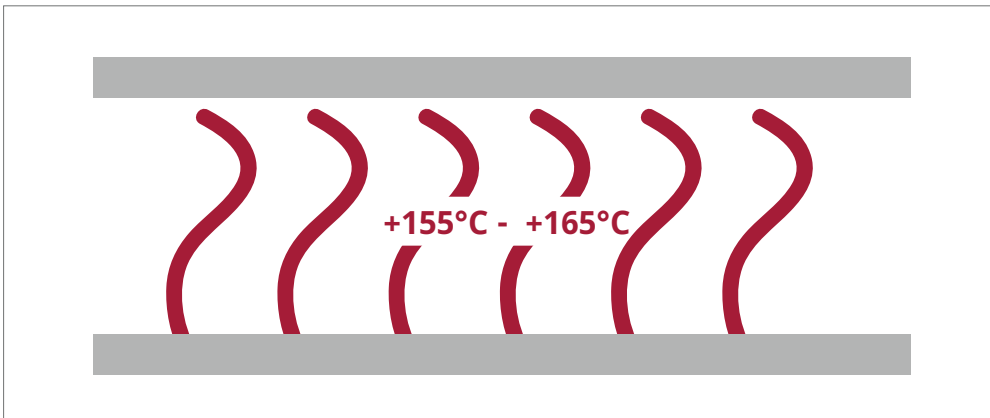
- As recommended at our standard products: for further details: see TDS Sanding



FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH	
HIMACS colour family	For all colours		For all colors of: Sand, Pearls, Quartz, Granite, Pernas, Volcanics	
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper
Step 1	100/80 µ	150/180	100/80 µ	150/180
Step 2	60	220	60	220
Step 3	"useit®" Superpad S/G 240 or Maroon Scotch Brite™ 7447	280	40/30	280/320
Step 4	industrial paper towel	"useit®" Superpad S/G 240 Maroon Scotch Brite™ 7447	"useit®" Superpad S/G 240 Maroon Scotch Brite™ 7447	380
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G 240 Maroon Scotch Brite™ 7447
Step 6				industrial paper towel
Step 7				

2.4. Fabrication - Thermoforming

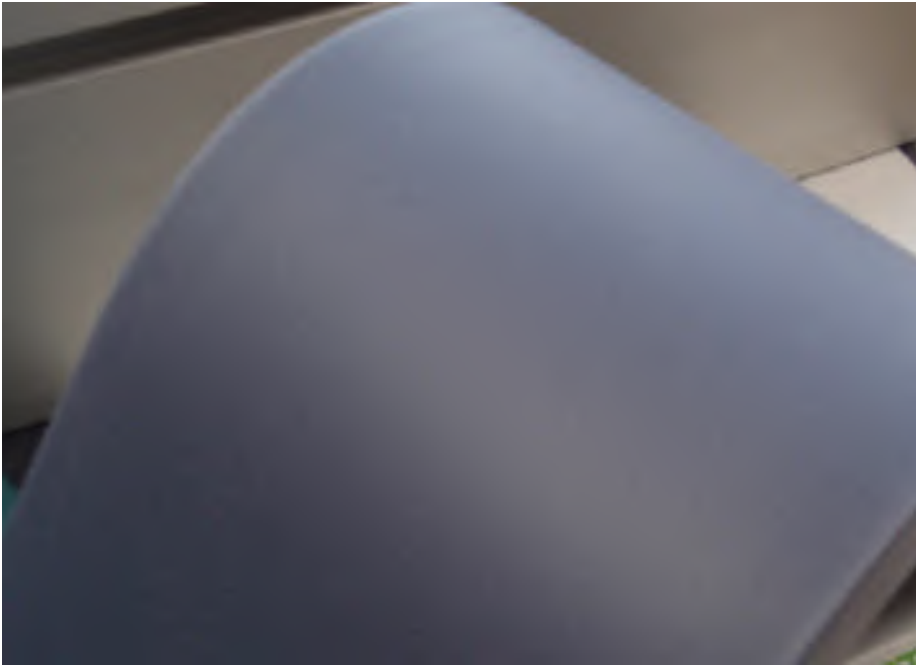
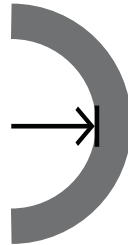
- For thermoforming application it is best to use a pre-heating.
- For 12mm thickness pre-heat from the bottom and from the top. • Heating Temperature:
 - +155°C - +165°C



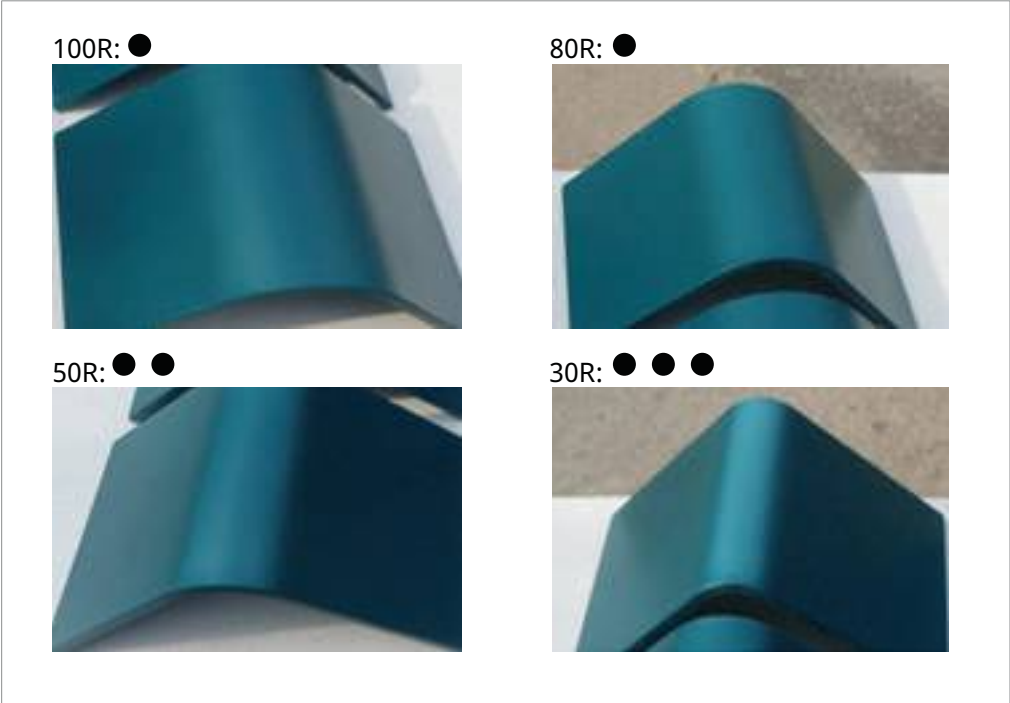
- Heating time by contact heat of pre-heating oven: ca. 12 -16 minutes



$R_i \geq 100 \text{ mm}$



- As Solid Velvet belongs to the range of highly pigmented colours: Be aware that as smaller the Radius is chosen as more whitening may happen.
- Max. minimum Radius recommended: $R_i \geq 100 \text{ mm}$
- Colour comparison of high pigmented sheet colour vs. radii R100 / R 80 / R 50 & R 30.



Color Difference According to R-Value

R VALUE	WHITE	WHITE	WHITE	WHITE	WHITE
100	○	●	●	●	●
80	○	● ●	●	●	●
50	○	● ● ●	● ●	● ●	● ●
30	●	● ● ●	● ● ●	● ● ●	● ● ●

○ No difference ● Little bit difference ●● Difference ●●● Much difference



Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs our approval for Warranty.

This bulletin is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since we cannot anticipate all variations in actual end-use conditions, we make no warranties and assumes no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

Warranty

The 15-year limited Installed Warranty for HIMACS where offered, does not cover damage caused by failure to follow proper fabrication and installation procedures and maintenance care, for which we do not have published procedures, or damages caused by customer abuse. The above Technical description shows mandatory procedures – for complete details, refer to HIMACS Fabrication Guidelines and/or additional Technical Bulletins of latest relevant updates.

Interior Solid Surface Material

HI·MACS

■ TECHNICAL DATA SHEET

20mm Sheets



Photo: Studio Podrini

01 |

Last Revision Year: 2022
HIMACS Technical Data Sheet

 LX Hausys

The HIMACS 20mm Product offering is produced to serve market needs on design and fabrication efficiency.

HIMACS 20mm is a product which has several advantages, for example, less additional construction elements and labour costs thanks to reduced fabrication steps.

1. Products

1.1 Colours available on stock



Lucia



Ice Queen
W001 [20 mm]

Quartz



White Quartz
G004 [20 mm], Δ E5

Granite



Arctic Granite
G034 [20 mm], Δ E5

Solid



Alpine White
S028 [20 mm] Δ E5

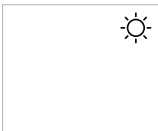
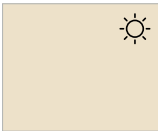






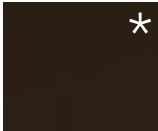

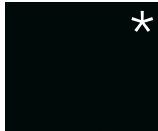


Concrete



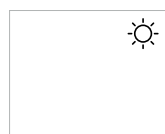
Urban Concrete
G554 [20 mm]

1.2 Colour Offering on special request

Solids

						
Nordic White S033 [20 mm] Δ E5	Diamond White S034 [20 mm] Δ E5	Arctic White S006 [20 mm]	Ivory White S029 [20 mm] Δ E5	Satin White S001 [20 mm]	Cream S009 [20 mm] Δ E5	Nougat Cream S201 [20 mm]
						
Almond S002 [20 mm] Δ E5	Babylon Beige S102 [20 mm]	Steel Grey S109 [20 mm]	Marta Grey S108 [20 mm]	Concrete Grey S103 [20 mm]	Toffee Brown S104 [20 mm]	Grey S005 [20 mm]
						
Sky Blue S203 [20 mm]	Light Green S212 [20 mm]	Lemon Squash S106 [20 mm]	Banana S026 [20 mm]	Orange S027 [20 mm]	Fiery Red S025 [20 mm]	Festival Pink S116 [20 mm]
						
Midnight Grey S117 [20 mm]	Coffee Brown S100 [20 mm]	Deep Indigo S115 [20 mm]	Dark Night S111 [20 mm]	Black S022 [20 mm]	Suede S121 [20 mm]	Mink S118 [20 mm]
						
Evergreen S119 [20 mm]	Cosmic Blue S120 [20 mm]					

Solid S728 CE MED

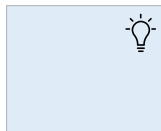


Alpine White
S728 Δ E5 [20 mm]

Lucent



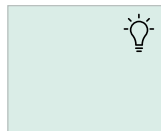
Opal
S302 [20 mm]
Δ E5



Sapphire
S303 [20 mm]



Ruby
S304 [20 mm]



Emerald
S305 [20 mm]

Lucia



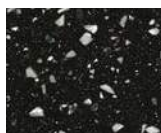
Lentil
W007 [20 mm]



Red Quinoa
W010 [20 mm]



Shadow Queen
W003 [20 mm]

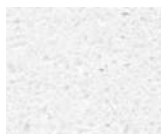


Star Queen
W004 [20 mm]

Aster



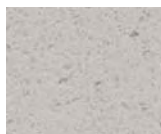
Nebula
T010 [20 mm]



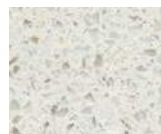
Andromeda
T017 [20 mm]



Carina
T018 [20 mm]



New Moon
T019 [20 mm]



Venus
T011 [20 mm]



Hercules
T020 [20 mm]

Volcanics



Gemini
VW01 [20 mm]



Tambora
VE01 [20 mm]



Santa Ana
VA01 [20 mm]



Frosty
VA22 [20 mm]

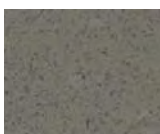


Maui
VG21 [20 mm]



Cima
VB02 [20 mm]

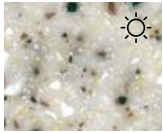
Concrete Collection



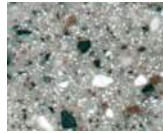
Steel Concrete
G555 [20 mm]

Interior Solid Surface Material

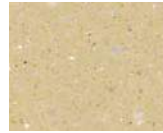
Granite



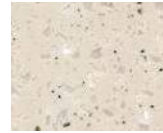
White Granite
G005 [20 mm]
Δ E5



Platinum Granite
G007 [20 mm]



Peanut Butter
G100 [20 mm]



Grey Crystal
G102 [20 mm]



Black Granite
G031 [20 mm]

Sand



Lunar Sand
G108 [20 mm]



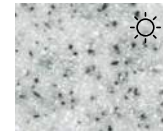
Riviera Sand
G106 [20 mm]



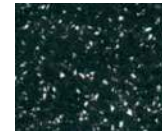
Beach Sand
G048 [20 mm]
Δ E5



Desert Sand
G001 [20 mm]



Grey Sand
G002 [20 mm]
Δ E5



Black Sand
G009 [20 mm]

Quartz



Sea Oat Quartz
G038 [20 mm]
Δ E5



Moonscape Quartz
G058 [20 mm]

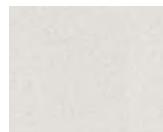


Allspice Quartz
G063 [20 mm]

Pearl



Tapioca Pearl
G050 [20 mm]



Pebble Pearl
G107 [20 mm]



Brown Pearl
G105 [20 mm]

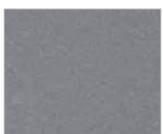


Midnight Pearl
G015 [20 mm]



Black Pearl
G010 [20 mm]

Sparkle



Kold Silver
P102 [20 mm]

★ The basic HIMACS material is identical for every colour but it is important to note that darker and more heavily pigmented colours will show dust, scratches, haziness, marks left by hard water and other ordinary wear and tear more noticeably than lighter textured colours. Therefore colours marked with a ★ are less suitable for applications that are exposed to extensive surface contact such as worktops located in heavy traffic area.

☀ Some HIMACS colours are particularly suitable for outdoor applications because of their good UV-resistance. HIMACS

offers a 10 Year Warranty on colours' UV resistance and loss of gloss over 40%, 10 Year Warranty on colour leaching and 20 Year Warranty on colour peeling, swelling or delaminating. The warranty is applicable after the first installation and is only valid for the sheet material; adhesives are excluded. The conditions for this warranty are based on practical experience and on-going tests.

💡 Lucent colours have a higher level of translucency, more evident when combined with light sources.

2. Product Specifications

2.1 Available Product: Product Code – Colour – Size – Weight

STOCK ITEM			SHEET MATERIAL	SHEET SIZE		M ² PER SHEET	WEIGHT		SHEETS ON PALLET
COLOUR CODE	COLOUR NAME	COLOUR FAMILY	THICKNESS IN MM	WIDTH IN MM	LENGTH IN MM		SHEET IN KG	M ² IN KG	
S028	Alpine White	Solid	20	760	3000	2,28	77,5	33,99	10
G004	White Quartz	Quartz	20	760	3000	2,28	77,5	33,99	10
G034	Arctic Granite	Granite	20	760	3000	2,28	77,5	33,99	10
G554	Urban Concrete	Concrete	20	760	3000	2,28	77,5	33,99	10
W001	Ice Queen	Lucia	20	760	3000	2,28	77,5	33,99	10

2.2 Product: Sheet – Adhesive

SHEET			ADHESIVE		
COLOUR CODE	COLOUR NAME	COLOUR FAMILY	COLOUR CODE	COLOUR NAME	PACKAGING UNIT
S028	Alpine White	Solid	H16	Alpine White	45ml / 250ml
G004	White Quartz	Quartz	H36	Silver	45ml / 250ml
G034	Arctic Granite	Granite	H36	Silver	45ml / 250ml
G554	Urban Concrete	Concrete	H22	Perna Grey	45ml / 250ml
W001	Ice Queen	Lucia	H16	Alpine White	45ml / 250ml

Note: the adhesive is not developed as filler for repairs. In the case of damage to the surface it is strongly recommended to make a plug repair if possible (tools are available on the market – please contact your local technical support).

2.3 Sheets LRV and Colour Codes Pantone – NSC – RAL

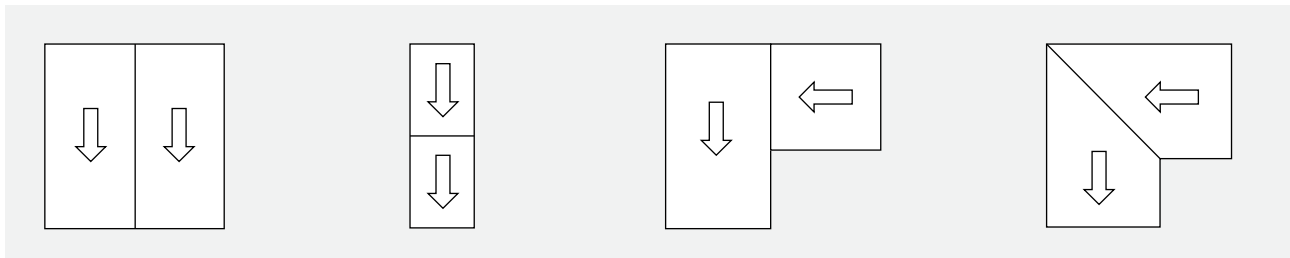
COLOUR CODE	COLOUR NAME	COLOUR FAMILY	LRV	PANTONE	NCS	RAL DESIGN	RAL CLASSIC
S028	Alpine White	Solid	85.12	11 -4201 TPX			9003
G004	White Quartz	Quartz	68.87				
G034	Arctic Granite	Granite	87.27	11-0601 TPX	S 0300-N		9016
G554	Urban Concrete	Concrete	31.96	15-0000 TPG	S 3502-Y		
W001	Ice Queen	Lucia	89.67				

3. Fabrication

3.1 Bonding Sheet to Sheet

When bonding sheet to sheet double check the best veining possibility according to its veining flowing look. There's no way to determine which method will work best with any particular colour other than to visually evaluate the configurations.

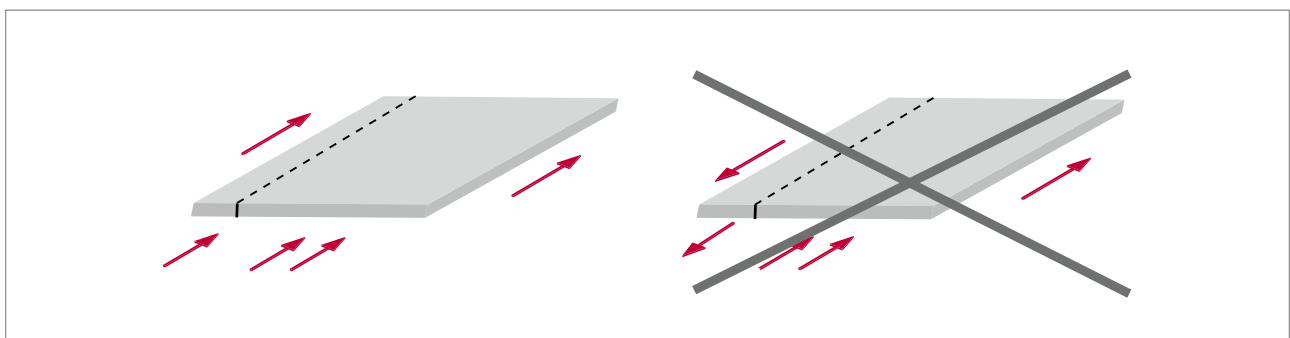
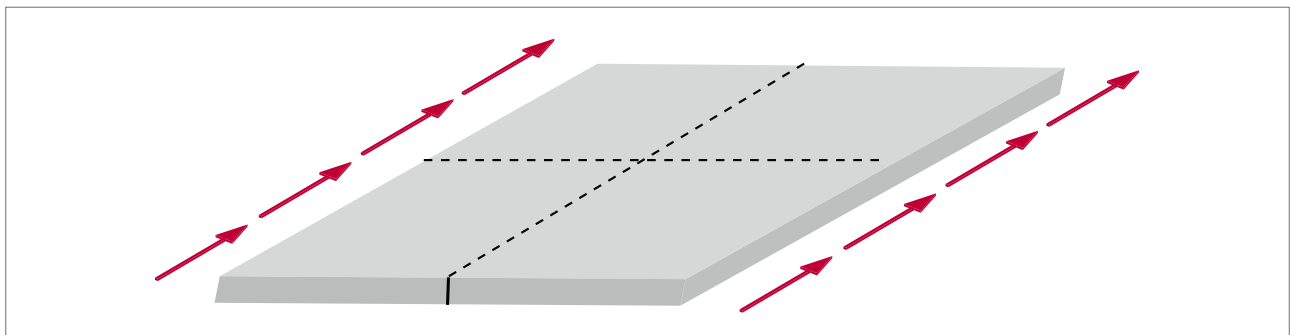
We strongly advise the fabricator to ensure the purchaser and end user understand these considerations before commencing work.



Schematic representation

When using several sheets for doing one job ensure a continuous flow of sequential numbers as well as the same production flow.

Do not turn one sheet into a different direction from the next or opposite side (**no turn** of any sheet by 90°, 180° or 270°). Production arrows are printed on the back of each sheet and the production date and its sequential number printed on the edge of each sheet.



3.2 Cut to size

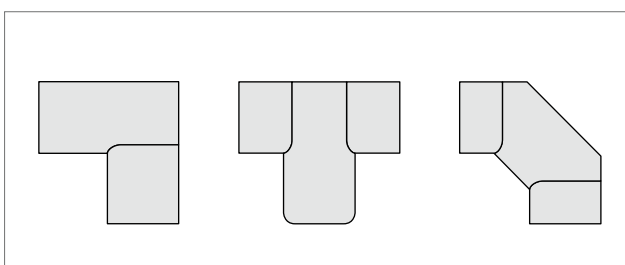
When cutting 20mm-sheets to size use proper adjusted equipment, like panel saw, beam saw, table saw or CNC. Using hand tools, like on site during installation it is best to have 3 to 4 steps down and a final trimming cut to take off the last 10th of a millimeter for a smooth edge. A mirror cut has the best result of a straight and parallel cutting line – a basic element for a good seam result later.



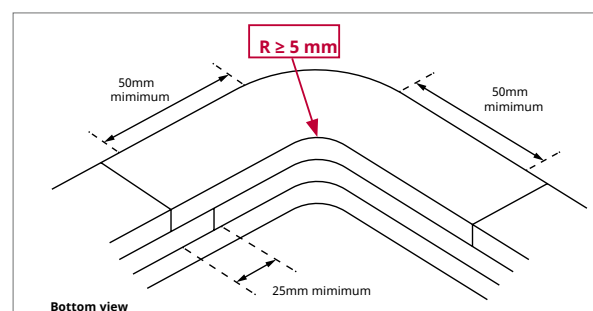
Hint: Please follow the detailed fabrication instruction guidelines according to the colour family chosen.

3.3 Sheet connection

Sheet connections need to be chosen according to its panel application, like kitchen counter tops, bath- and vanity tops, counters or other paneling's, like window sills, wall panels etc.



Edge Corners
HIMACS requires a minimum 5mm radius on all drop edge inside corners. (Diagram indicates recommended build-up).

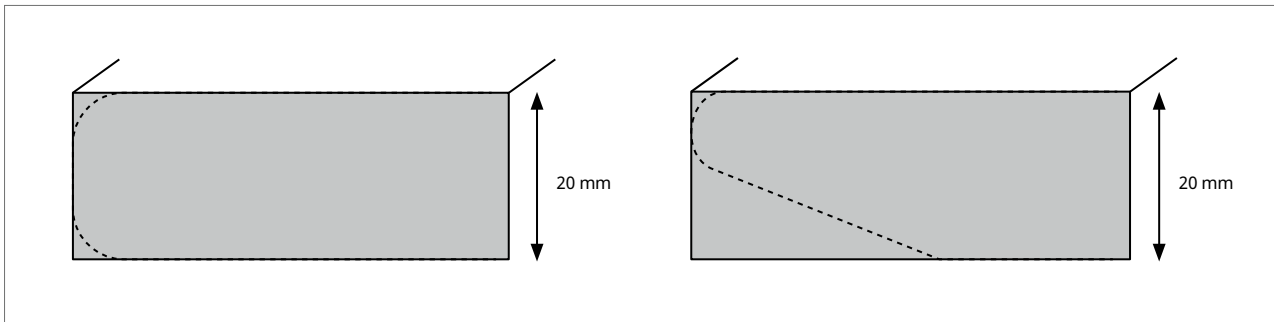


3.4 Sheet connection support

Whatever connection is best for its application: Ensure the sheets have enough and a strong support from underneath to avoid any deformations at a later time due to its own weight or placed heavy duty items on top.

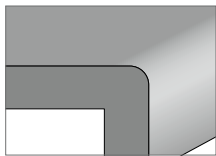
4. Edge

20mm sheets providing the opportunity to reduce fabrication costs by designing a thin edge (without cutting, and bonding a separate edge creation).

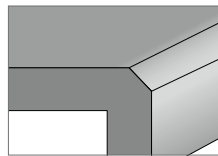


4.1 Standard Edge

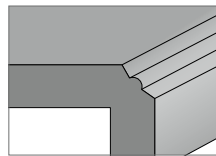
For standard edge-design proceed as described in the Fabrication Manual, section “Drop Edges...”



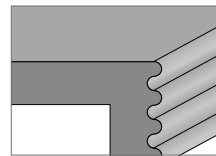
Standard with radius



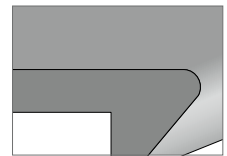
Standard with bevel



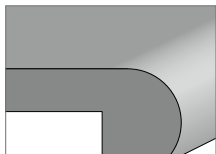
Standard with profile



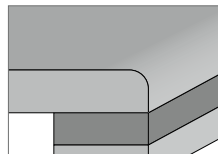
Standard with wave



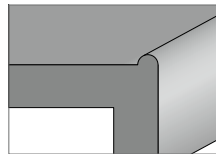
profil Standard with back bevel



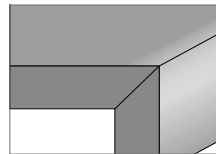
Bull-nose



Sandwich



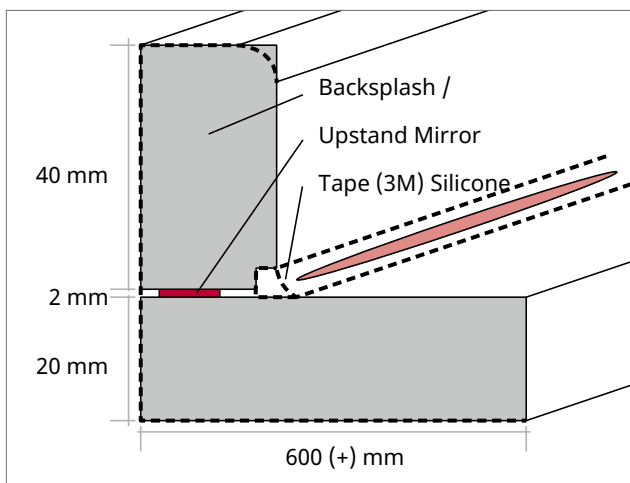
Waterfall edge



Standard v-grooved

5. Backsplash

5.1 Standard Backsplash



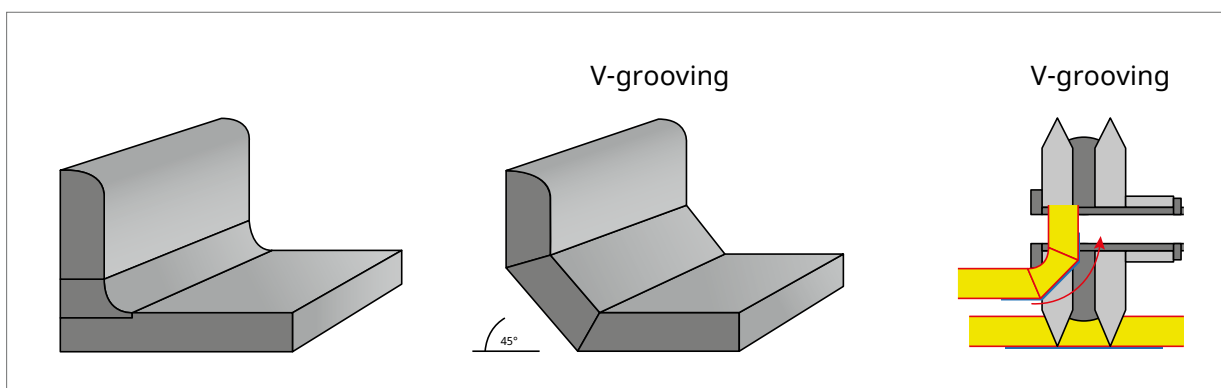
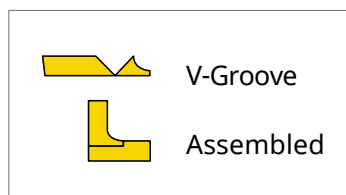
A simple splashback profile strip should be as in the drawing. A rounding off is required at the upper inner side of the profile and a small rebate on the underside of the strip. Then apply adhesive tape (double sided foam tape (3M)). Afterwards, seal the rebate area with silicone.

5.2 Curved Backsplash

To let the pattern flow around the edges a 45° angled cut of the edge or an alternative rebate is one of the best solutions.

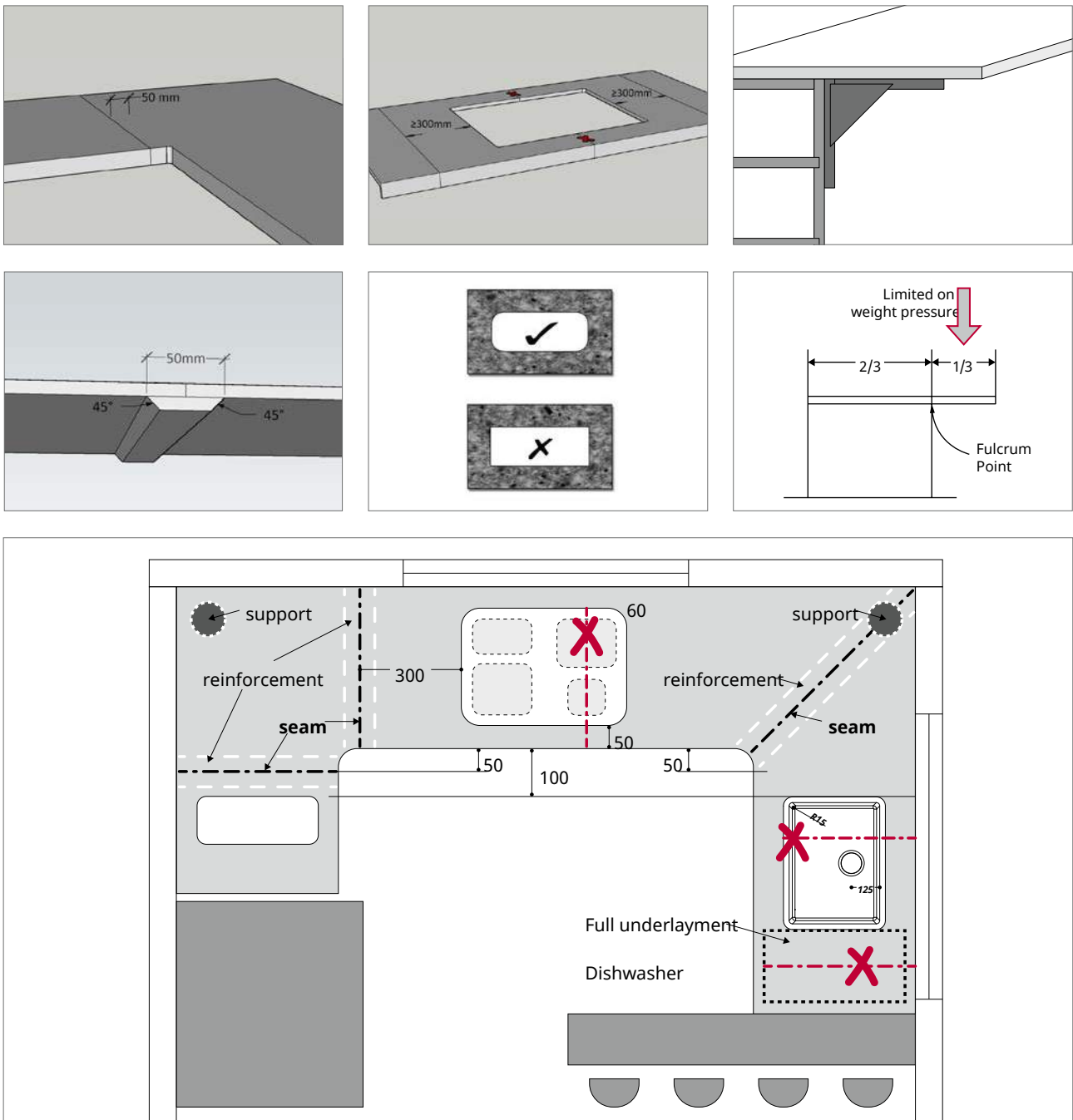
When preparing a curved upstand or downturn, customers may not accept the final result. One may not compare, though with UNI colours used in the kitchen market.

A downturn or an upstand are best achieved with a 45° angle or a profiled folding option – see picture 3 (V-grooving).



6. General fabrication guidelines

For all other applications follow our standard fabrication guidelines, like in kitchen application: cut-outs, hob-cut-outs, shape installations, reinforcement strips, dishwasher/washing machine protection support or even others, like overhangs for breakfast bars etc.



Before commencing any fabrication: write down the printed sheet-number of each sheet you will be using for the project. Ensure to work with sequential sheet numbers and mark always the production flow even best when assembling any kind of project.

6.1 Use of Application

Use of 20mm HIMACS sheet thickness:

For horizontal application, like kitchen countertops or food counters as well as many furniture applications 20mm HIMACS can be used. The sub-construction as well as the strength of the flooring has to commit to the heavy weight of long term use.

6.2 Material preparation

Before starting fabrication: note down in the production sheet (for eventual later reference) all sheet numbers and line out the job in a continuous sequential flow.

When fabricating Solid colours of HIMACS the smell during the fabrication process due to the acrylic based material is very unique whilst the formulation of each colour is the same and composed of the same ingredients. The material is emission free.

Get material to room temperatur (min. +17°C) before starting fabrication.

- Always handle the material with care to avoid any additional uncontrolled scratching from the top or from the back of the sheet.
- When cutting HIMACS material always use a new and sharp saw blade or trim off with a sharp CNC router to the size required.
- Ensure the sawing machine is properly adjusted and that it is running correctly and absolutely straight.
- If marks of the saw blade or cutter of the trimmer are visible ensure to re-sand the edges by using 180 or 220 (240) grit sandpaper.
- Ensure not to sand the edge round to avoid a bad result of the seam afterwards.
- Ensure the edge is smooth and cleaned off from dust.
- Wherever a connection is to make: resand the area smooth and take away any scratches.

The basic fabrication procedures for HIMACS colours is described mainly in the Fabrication Manual of latest publishing. Please note: Darker pigmented sheet colours need to have more precise fabrication work to provide the highest quality finish for the end user.

6.3 Edge preparation & build up

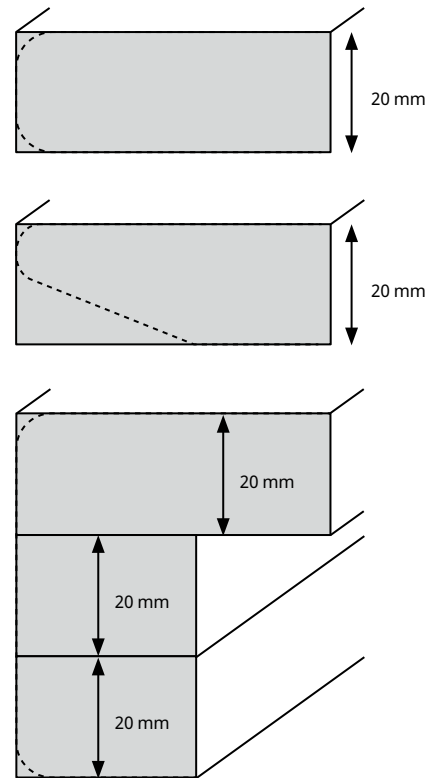
HIMACS sheets are delivered with a sanded backside of the sheet where it is highly recommended to sand smooth or to trim the edge making a rebate.

Turn the sheet over so that the back of the sheet is upside-down and you can work comfortably.

Ensure the HIMACS sheet does not sag and that the sheet is properly supported at each position of the sheet.

The 20mm sheet is developed for thin line design to reduce fabrication cost, but you may fabricate a edge thickness of 40 / 60 / 80 or 100mm. For this case: you must use HIMACS professional Joint-adhesive.

Check all edges carefully before bonding. Ensure that no chips are broken out and no heavy marks of the saw blade or any whitening of the edge is visible



6.4 Cut-Outs

When preparing cutouts in 20mm HIMACS sheet, you should have powerful machines and equipment.

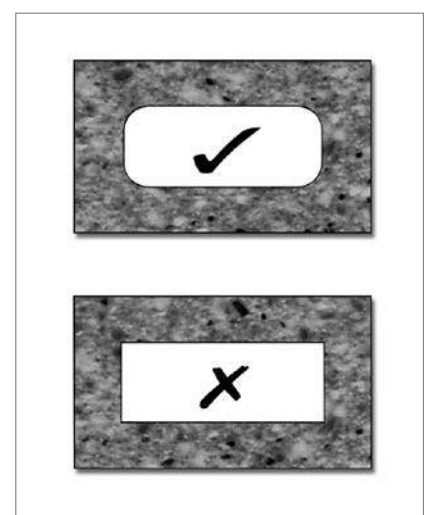
Using Handtools should have at least a minimum power of 2000 Watt/h and a proper shank mount for at least a 25mm long ground and side cutter. To finish a cut-out, 2 to 3 circles may be needed to avoid overheating of the machine.

Best to prepare all relevant measuring and trimming on a CNC.

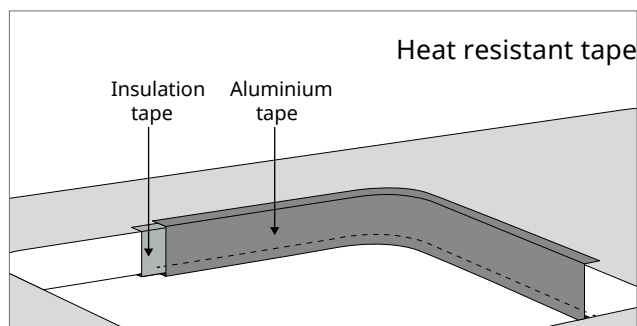
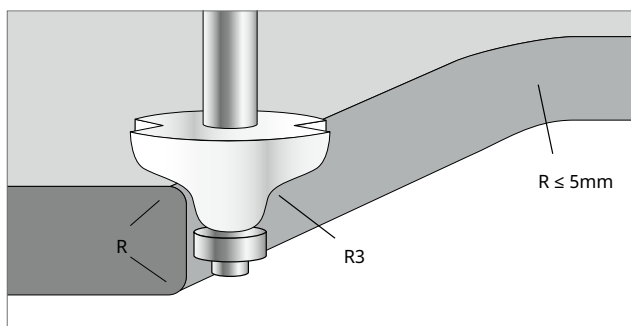
Internal corner cut-outs for sinks, hobs and other accessories will always be subject to higher stress and as such will require to be handled very accurately in accordance with the latest instructions given in these Fabrication Guidelines or additional Technical Bulletins.

Machine the cut-out using a CNC router or hand router and a template. Always machine a radius around these corners and make the radius as large as practical, ($R \geq 5 \text{ mm}$). Never leave a sharp corner or do not leave any sharp edge.

Always ensure that there is a radius of minimum R 3mm on both sides of the edge of the cut-out.

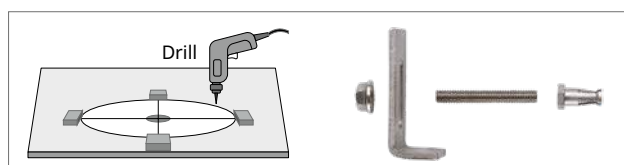


- Do not position a joint or any glue line across any kind of heating device.
- Keep a minimum distance for a seam of min. 300mm from cut-out for hobs.
- For hob cut-outs the internal edge should be covered with self-adhesive Neoprene tape or “Koawool” tape and covered with self-adhesive aluminum reflective tape (3M, tape no.: 425). This will prevent excessive heat buildup and the potential risk of stress cracking.
- Always leave a minimum of at least 3 mm space between the underneath of the appliance and the edge of the HIMACS if possible (depending on the type of hob you may have to include a filling piece)
- Ensure proper air ventilation and avoid any air to accumulate.
- For horizontal application – especially applications with heat sources use 12mm or 20mm material only.



6.5 Shape Installations

- Prepare cut-out accordingly to shape design.
- Drill holes for inserts with drilling machine.
- Place HIMACS adhesive on the flange position of shape
 - Alternative when using other type of shape (like stainless steel: place a moisture resistant silicone around the edge of shape.
- Place shape in correct centre position.
- Place mechanical fixings expl.: (KEIL WB50x20 complete set).



6.6 Adhesive

Prepare HIMACS Adhesive accordingly to its application use and follow the instructions as outlined in the latest TDS Adhesive or described in the Fabrication Manual.

Interior Solid Surface Material **HI·MACS**

TECHNICAL DATA SHEET
HIMACS ADHESIVE 2-COMPONENT

Photo: Jausen/Karliczek, J.H.de

01 | Last Revision Year: 2021
HIMACS Natural Acrylic Stone – www.himacs.eu

LX Hausys

7. Sanding (finishing)

The reference is as recommended with our standard products. For further details: **See TDS-no.4 Sanding.**

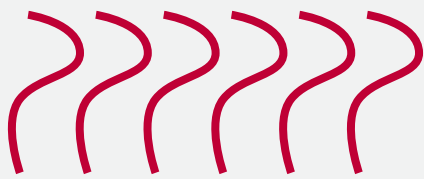


		Standard recommendation					
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH		
HIMACS colour family	for all colours		for all colours		for all colours		
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	
Step 1	100/80 µ	150/180 µ	100/80 µ	150/180 µ	100/80 µ	150/180 µ	
	take dust away		take dust away		take dust away		
Step 2	60 µ	220	60 µ	220	60 µ	220	
	take dust away		take dust away		take dust away		
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 µ	280/320	30 µ	280/320	
	take dust away		take dust away		take dust away		
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 µ	380/400	
	take dust away		take dust away		take dust away		
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 µ	600/800	
			take dust away		take dust away		
Step 6				industrial paper towel	Finesse-it™ Finish- component	1200	
					take dust away		
Step 7						1500	
						1800	
						2500	

8. Thermoforming

To prepare the workpieces, follow the standard thermoforming process

For the Thermoforming process we recommend using a pre-heating oven with double sided heating plates.



Best Heating Temperature:
155°C - 175°C



Best Heating
Time: **20 - 25 min.**

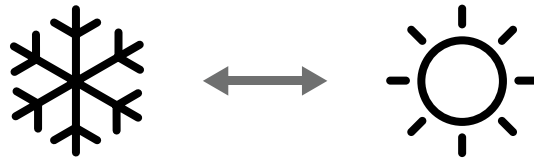
The heating time is similar to the general heating time of HIMACS products for the thermoforming process. The classification of a minimum radius for 20mm Sheet is approx. ≥ 100 mm. Be aware that any undertaking of recommended radii can cause some colour change or create some cracks. For any technical enquiry, contact your local technical support.

For more detailed thermoforming equipment or any thermoforming accessories please contact global@nabuurs.com or visit the web-site: www.globalvacuumpresses.com

$R_i \geq 100$ mm

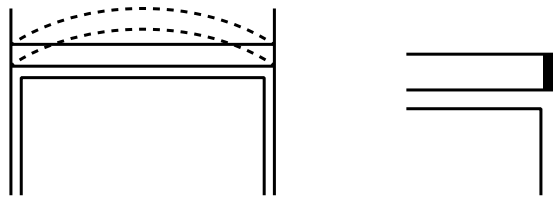


9. Thermal Expansion



Sufficient space should be given to compensate for expansion or contraction at the time of installation since this product may expand or contract depending on the temperature.

Allow 1.5 mm per linear meter for expansion and contraction.



Expansion coefficient HIMACS according to norm DIN EN 14851:

$$\Delta t = \text{ca. } 42 \times 10^{-6} / \text{K}$$

■ 10. Quality Check

- Check any fabricated item on quality aspects before leaving the workshop.
- Any mistakes can easily be repaired in the workshop at the time of fabrication. Repairs needed at a later date will be more costly and time consuming.

Important:

Remember that the 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes.

■ 11. Summary

Before starting any fabrication: write down the printed sheet-number of each sheet you using for the project. Ensure to work with sequential sheet numbers and mark always the production flow even best when assembling any kind of project.

The adhesive is not developed as a filler for repairs. In the case of damage to the surface it is strongly recommended to make a plug repair if possible (tools are available on the market - please contact your local technical support).

12. Specification Data Sheet

	SPECIFICATION	CODE	UNIT	19/20MM S028	TEST METHOD NORM
1	Density	P	g/cm ³	1.73	DIN EN ISO 1183
			kg/m ³	1730	
2	Flexural e-modulus	Ef	Mpa	10000	DIN EN ISO 178
3	Flexural strength	σ fm	Mpa	70.4	DIN EN ISO 12372
4	Ultimate elongation	Efm	%	0.81	DIN EN ISO 178
5	Tensile strength	σ fm	Mpa	51,3 (% 1,69)	DIN EN ISO 527
6	Thermal expansion coefficient	α	mm/mk		DIN EN 12664
			mm/°C	42x10 ⁻⁶	DIN EN 14581
7	Thermal conductivity	λ10try	W/mK	0.871	DIN EN 12664
8	Resistance to thermal insulation	R	m ² K/W	0.022	DIN EN 12664
9	Electrostatic contact resistance	Ω	>1x10 ⁹	513 x 10 ⁹	DIN IEC 1340-4-1, 04-'92
			>1x10 ¹²	>0,513x10 ¹²	EN 61340-5-1
10	Water vapour permeability Coefficient of diffusion resistance Water obsorbtion	μ	μ	8060	DIN EN ISO 12572
11	Increase of weight	Sp. G	%	0.1	DIN EN 438-12
12	Increase of thickness	D	%	0.3	
13	measure variation at humidity change length thickness mass		%		DIN EN ISO 318 5-'98
14	Slippery resistance Angle of acceptance 10° to 19°	R			GMG 100 (±R9) DIN 51130
15	Scratch fastness				DIN 68861_4, 11-'81
16	Ball indention hardness hb Mohs- hardness Pin-hardness		N/mm ²	270	EN ISO 19712-2-15
17	Barcol hardness		65		EN ISO 19712-2-15
18	Rockwell hardness		HR	119	EN ISO 19712-2-15
19	Impact resistance Ball impact by large-diameter		mm	1808	EN ISO 19712-2-8
21	Resistance to dry heat	5=best	rating ³⁾	4	EN ISO 19712-2-12
22	Resistance to wet heat	5=best	rating	5	EN ISO 19712-2-13
23	Resistance to temperature change		rating	no change	EN ISO 19712-2-14
24	Resistance to cigarett burns	5=best	rating ²⁾	3	EN ISO 19712-2-11
25	Light resistance	5=best	Bl.w.ref6	3 – 4	EN ISO 19712-2-9
26	Food resistance				LMBG §31
27	Hygiene				LGA hygiene certificate
28	Emission				EN ISO 16000-9

1) Relevant for Sheet and cured adhesive

2) ISO 19712-2, Abs. 11

Rating scale:

Rating 5: No visible change

Rating 4: Slight change in gloss, only visible at certain viewing angles and/or slight brown stain

Rating 3: Moderate change in gloss and/or moderate brown stain

Rating 2: Severe brown mark, but no destruction of the surface

Rating 1: Blistering and/or cracks

3) ISO 19712-2, Abs. 12

Rating scale:

Rating 5: No visible change (no damage)

Rating 4: Slight change in gloss visible only when the light source is mirrored in the test area and the light is reflected towards the observer's eye, or a few isolated imperfections just visible

Rating 3: Slight mark(s) visible when viewed from several directions, for example an almost complete disc

Rating 2: Distinct mark(s) or region(s) of slight discolouration or region(s) of slight disturbance of the surface visible

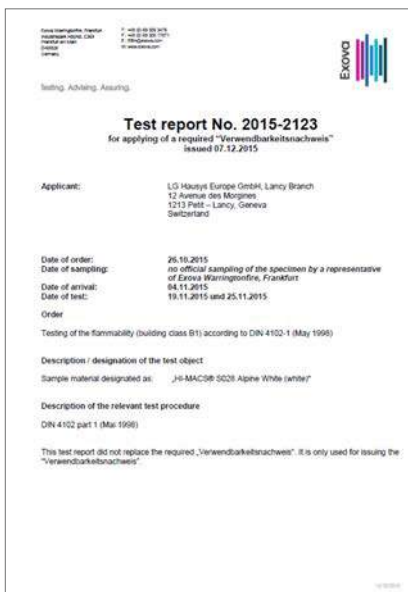
Rating 1: Distinct mark(s) or region(s) of slight discolouration or region(s) of distinct disturbance of the surface visible

Specification Data Sheet 2/2

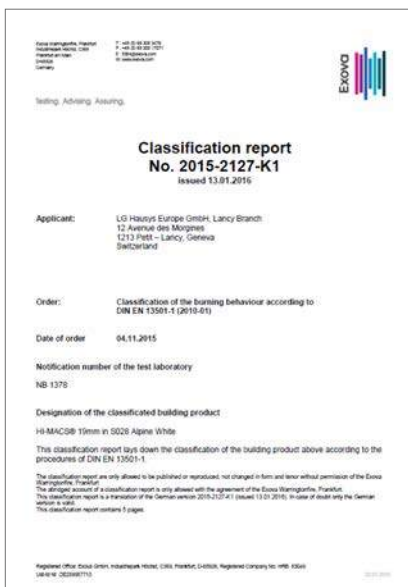
SPECIFICATION	PRODUCT	COLOUR CODE	COLOUR NAME	SHEET THICKNESS	CLASSIFICATION	TEST NORM
Sheet	HIMACS	S028	Alpine White	20 mm	B1	DIN 4102_2
					B - s1 - d0	EN ISO 13501

13. Fire Classification

13.1 Fire Classification Report according to DIN 4102-2 / S028 Alpine White 20mm "B1"



13.2 Fire Classification Report according to EN 13501 / S028 20mm Alpine White "B - s1 - d0"



TECHNICAL DATA SHEET LUCENT COLLECTION



Sheet Fabrication

Sheet color family: Lucent "S"

Sheet Offering

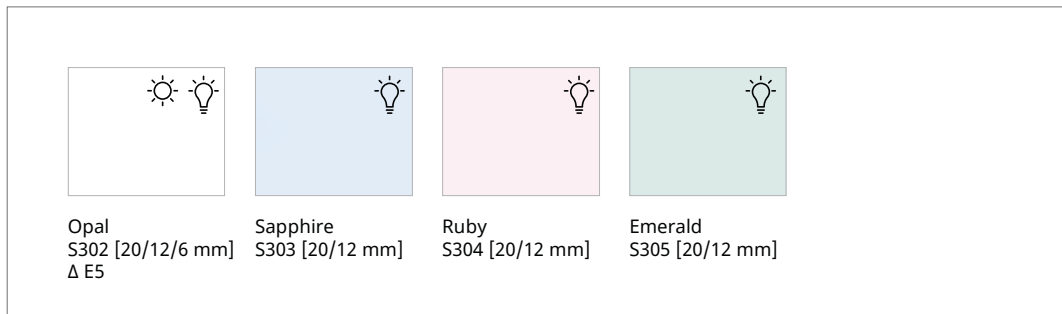


Fig.1

This Technical information summarizes specific characteristics and properties of HIMACS translucent material which have to be taken into consideration when fabricating or installing HIMACS products. This Technical Information gives a basis to ensure the correct use of this high performance material and meet customers' and end-consumers' expectations whilst building an additional cornerstone for our HIMACS Warranty Program (15 years).

Hint:

Before starting any fabrication: take note of the printed sheet-number of each sheet. Ensure to work with sequential sheet numbers in raw and mark always the production flow even and best when assembling any kind of project.

1. Material preparation

- When fabricating translucent colours of HIMACS there is almost no difference from the standard HIMACS products in fabricating or installing. There is even no difference to the smell during the fabrication process due to the acrylic based material where the formulation has been changed slightly but composed of the same ingredients.
- Always handle the material with care to avoid any additional uncontrolled scratching from the top or the back of the sheet.
- When cutting HIMACS translucent material always use a **new and sharp saw blade** or trim off with a sharp CNC router to the size required.

- Ensure the sawing machine is properly adjusted and that it is running correctly and absolutely straight.
- If marks of the saw blade or cutter of the trimmer are visible ensure to re-sand the edges by using 180 or 220 (240) grit sandpaper.
- Ensure not to sand the edge round to avoid a bad result of the seam afterwards.
- Prepare the back of the sheet by re-sanding or rebating (by a step of 1-2mm) of the place where the edge will be placed.
- When chips break out during cutting, change saw blade or trim off with an electrical plane or spindle molder.
- To get the best light effect a re-sanding of the back of the Lucent sheet is a must.

For bonding an absolute straight and clean cut is mandatory.



Fig.2 Shows marks from the cut with saw blade

- Ensure the edge is sharp, smooth and cleaned off from dust before starting the bonding process.
- Be aware that any uneven marks or dirt or any left marks of a pencil may show up in the seam after-wards.

■ 2. Bonding

- In case of bonding – clean edges as usual and press the work pieces as standards.
- Use the recommended translucent adhesive colours. Squeeze and press out the first couple of cm of glue line and control if the color and color pigments of adhesive are proper mixing. Then proceed with the usual bonding process and procedure of HIMACS adhesive.
- When storing the adhesive don't leave the cartridge in a vertical position but store it horizontal and turn it ones in a while when not using it.

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	ADHESIVE COLOR CODE	ADHESIVE COLOR NAME
S302	Opal		Lucent	T02	Opal
S303	Sapphire		Lucent	T03	Sapphire
S304	Ruby		Lucent	T04	Ruby
S305	Emerald		Lucent	T05	Emerald

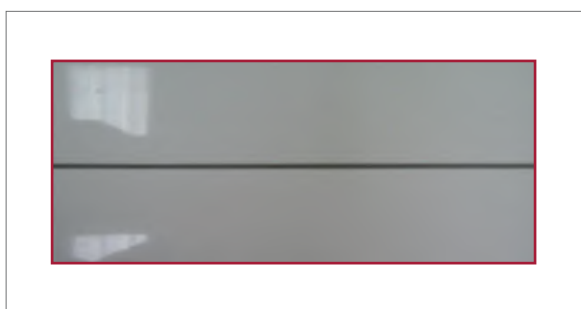


Fig.3 Leaving 2-3mm space when applying adhesive

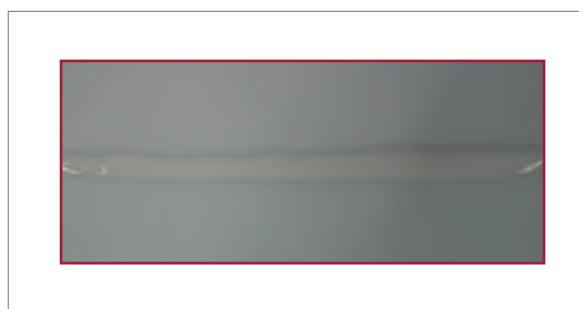


Fig.4 After applying adhesive – put pressure to the seam

3. Application Use

Hint:

When using translucent sheet color for backlight application the back of the sheet supposed to be re-sanded as the delivery conditions do may show sanding marks and different prints.

It is strongly recommend using sequential sheet numbering and following the installation according to the production flow by simply making your own mark before taking off the back print. The back print indicates the way of production flow. This is absolutely mandatory when even bonding two pieces together and obliged a very accurate fabrication with proper clean off and from the back as well.

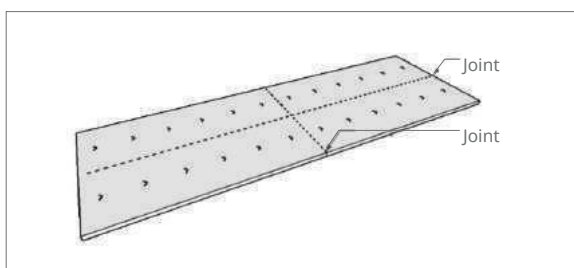


Fig.5 Sample of sheet assembling

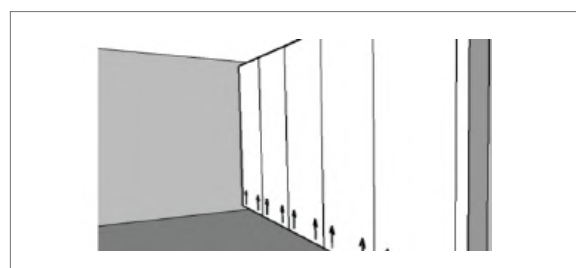


Fig.6 Job assembling – here: wall cladding

As light has different light spectra, ensure to use always the same light temperature and check the backlight floe effect.
 As there are many different light equipment's available in the market we strongly recommend to check first the opportunities and run a prototype to avoid a later surprise of difference in expectation, like light effect. Ensure that the lightening used does not create much heat and if so create a functioning air circulation.

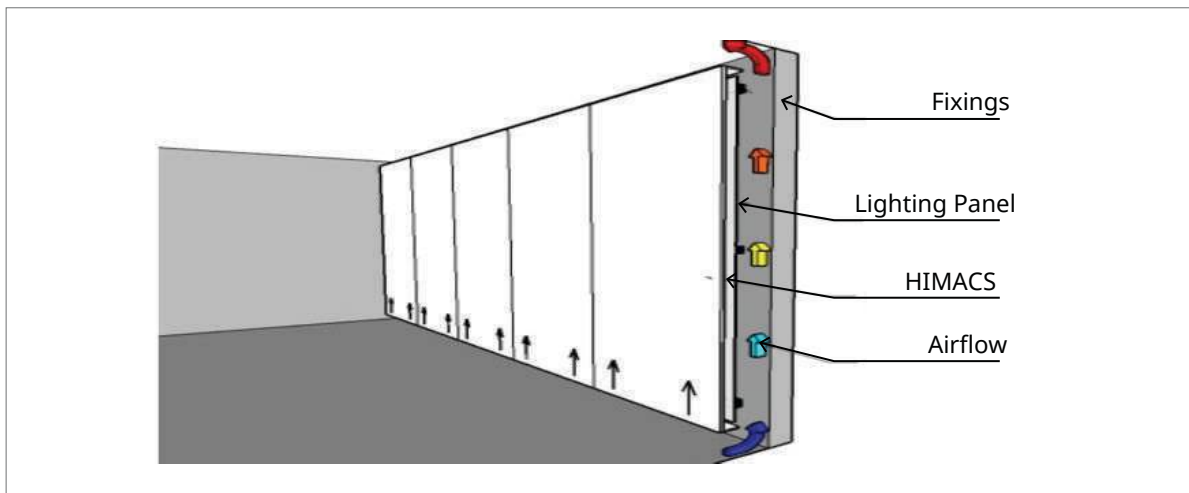


Fig.7

Be aware that the fabrication has to become very precise as any mark can show some shadows later on; especially when thermoforming the sheets. A also precise record and accuracy of heat temperature, pressure and mould conditions have to be taken care of. Any mistaken may influence the result of your project.

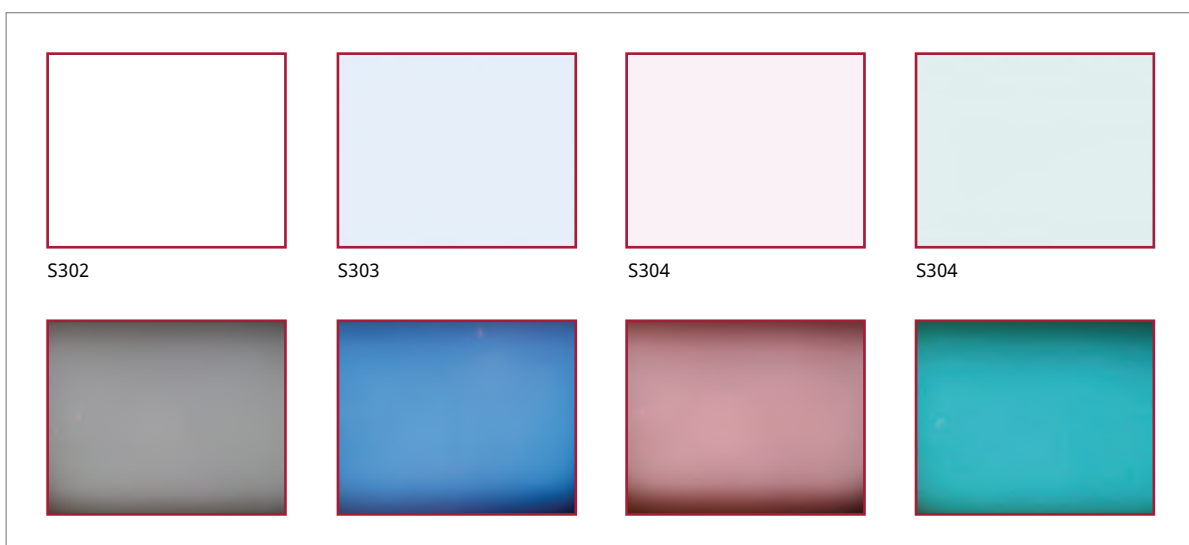


Fig.8 Lucent colours without and with back light

4. Edge Bonding

To keep the edge bonding as non-visible as possible we recommend using following edge details

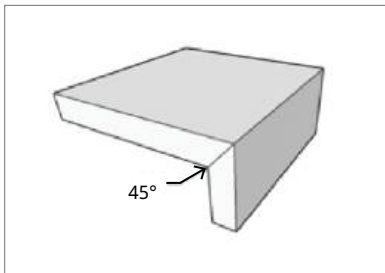


Fig.9

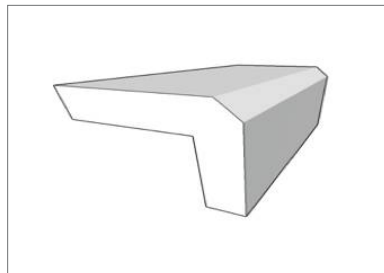


Fig.10

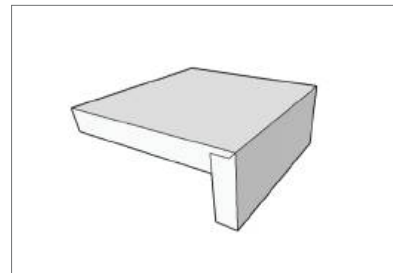


Fig.11

We recommend preparing samples of edge details to agree by specifier.

5. Edge Preparation & Build Up

HIMACS sheets are delivered with a sanded backside of the sheet where it is highly recommended to sand smooth or to trim the edge making a rebate.

Turn the sheet over so that the back of the sheet is upside-down and you can work comfortably.

Ensure the HIMACS sheet does not sag and the sheet is properly supported at each position and do not round the edge of the bonding area.

Using a rebate at the back of the sheet for the edge treatment also has the advantage to:

- take away the rough sanding marks and
- allows stopping the edge on a fine line
- to avoid using gluing blocks or
- Any kind of ruler or gluing templates.

Check all edges carefully before bonding. Ensure that no chips are broken out and no heavy marks of the saw blade or any whitening of the edge is visible.

Create the rebate that approximately 0,5mm of the sheet will hang over to trim off later after the adhesive cured.

Put all necessary materials and tools in place which you will need for bonding:

- Clean, white cloth
- Denatured Alcohol (or Acetone)
- HIMACS- Adhesive (check the right color) (small or large cartridge)
- Adhesive dispenser and mixer-tips
- Clamps (C-clamps or best use "Klemsia")

► Further details, please find under TDS "Drop Edges & Downturns"

6. Sanding

The sanding process is similar to the standard sanding process.

When sanding with hand tools or alternative with stationary equipment ensure not to create heat on the surface to avoid any unexpected unevenness of the surface.

Depending on available tools and equipment sanding time will be within the same range as with HIMACS standard products.

							Standard recommendation	
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH			
HIMACS colour family	for all colours		for all colours		for all colours			
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper		
Step 1	100/80 μ	150/180	100/80 μ	150/180	100/80 μ	150/180		
	take dust away		take dust away		take dust away			
Step 2	60 μ	220	60 μ	220	60 μ	220		
	take dust away		take dust away		take dust away			
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 μ	280/320	30 μ	280/320		
	take dust away		take dust away		take dust away			
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 μ	380/400		
	take dust away		take dust away		take dust away			
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 μ	600/800		
			take dust away		take dust away			
Step 6				industrial paper towel	Finesse-it™ Finish-component	1200		
					take dust away			
Step 7						1500		
							1800	
							2500	

HIMACS Surface Sanding Process

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Matt	P 60/100	3M Hookit dust remove
	P 120 / 150	3M Hookit dust remove
	P 180	3M Hookit dust remove
	Scotch-Brite	Marron dust remove

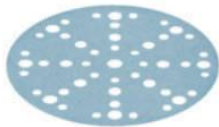
FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Semi gloss	P 240	3M Hookit dust remove
	P 320	3M Hookit dust remove
	P 400	3M Hookit dust remove
	Scotch-Brite	Grey dust remove

Dust remove	3M Scotch-Brite MS-DC 150x8mm type T white
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FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
High gloss	P 600	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1200	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1000	3M Trizact
	Cleanup / dry	Wipe off
	P 3000	3M Trizact
Cleanup / dry	Wipe off	
Finesse-it	Polish paste with felt-disk	
Wipe off	With cotton cloth	

Festool

Granat



Ø 150

Matte Finish

Light colored material - Granat or Titan II- 120, 150, 180, Vlies 280

Dark colored material - Granat or Titan II – 120, 150, 180, 220, Vlies 800

Satin Finish

Light colored material - Granat or Titan II – 120, 150, 180, 220, 320, Vlies 800

Dark colored material - Granat or Titan II – 120, 150, 180, 220, 320, 400, Platin 500

Semi Gloss Finish

Light colored material - Granat or Titan II – 120, 150, 180, 220, 320, 400, Platin 500

Dark colored material - Granat or Titan II – 120, 150, 180, 220, 320, 400, Platin 500, 1000 Page 1 of 2

Gloss Finish

Light and dark colored material - Granat or Titan II – 120, 150, 180, 220, 320, 400, Platin 500, 1000, 2000, 4000

High Gloss Finish

Same grit sequence as the Gloss finish above. Follow sanding process by applying compounds with felt pads mounted on the polishing pad. Use sander in the gear driven Rotex mode on high speed for coarse sanding and polishing and move to low to medium speed (1-3) using the following pads and compounds: • Hard felt – Rubbing compound (Marine grade) • Soft felt – 3M Finess-It II • Wool pad – Liquid glass

► Further details, please find under TDS "Sanding"

7. Spec Data Sheet

TEST	UNIT	RESULT	TEST
Specific Gravity (23 / 23°C)	#	1.686	ASTM D 792: 2000 (Method A)
Rockwell Hardness	#	91	ASTM D 785: 2003 (Procedure A)
Tensile Strength	MPa	35.6	ASTM D 738: 2003 (*)
Tensile Modulus of Elasticity	GPa	9.84	ASTM D 738: 2003 (*)
Flexural Strength	MPa	66.1	ASTM D790: 2003 (**)
Flexural Modulus of Elasticity	GPa	8.18	ASTM D790: 2003 (**)
Izod Impact Strength	kJ/m ²	5.8	ISO 180 : 2000 (Notch Type: unnotched)
Water Absorption	%	0.028	ASTM D 570: 1998 (24h immersion)
Density (23°C)	g/cm ³	1.681	ASTM D 792: 2000 (Method A)
Appearance (Discolouration) after Heat Resistance [(170 ±2)°C 1 h]	#	No defect	By client
Hot Water Resistance	#	No defect	JIS K 6902: 1998
Deflection Temperature Under Load (1.82Mpa)	°C	108	ASTM D 648: 2007(Method B)
Thermal Expansion	1/°C	30.0x10-6	JIS K 6911: 1995

(*) Speed of Testing: 5 mm/min test specimen:type I (**) Speed of test 5mm/min support span: 190mm Usage: Quality Control

Fig.12

8. LRV results of Lucent

LUCENT	COLOUR CODE	COLOR NAME	LRV
33	S302	Opal	77.45
34	S303	Sapphire	57.05
35	S304	Ruby	69.70
36	S305	Emerald	65.87

Fig.13

9. Colour reference to RAL Design – NCS – Pantone

LUCENT	COLOUR CODE	COLOR NAME	RAL DESIGN	RAL CLASSIC	NCS	Pantone
29	S302	Opal	000 90 00	-	S 0502-B	11-4800TPX
30	S303	Sapphire	240 90 05	-	S 1010-R90B	544M
31	S304	Ruby	010 90 05	-	S 0510-R30B	373M
32	S305	Emerald	180 90 10	-	S 0520-B70G	317M

Fig.14

10. Colour Light Translucency Data

When light (100%) is going through sheet, 10.3% can go through out of S302 12mm – or 26.02% can go through out of 6mm material S302 OPAL.

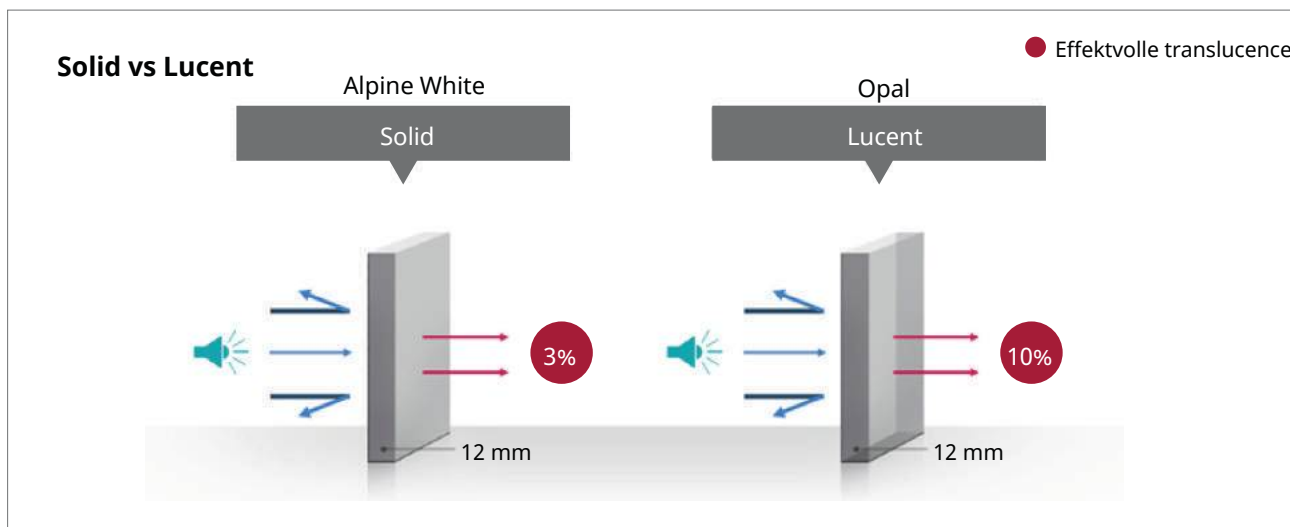


Fig.15

COLOR FAMILY SUBJECT	COLOR CODE	SHEET THICKNESS	TRANSLUCENCY IN %
Lucent	S302	12 mm	10.30
Lucent	S303	12 mm	3.20
Lucent	S304	12 mm	6.90
Lucent	S305	12 mm	4.20

COLOR FAMILY SUBJECT	COLOR CODE	SHEET THICKNESS	TRANSLUCENCY IN %
Lucent	S302	6 mm	26.02

COLOR FAMILY SUBJECT	COLOR CODE	SHEET THICKNESS	TRANSLUCENCY IN %
Solid	S28	12 mm	0.1

Fig.16

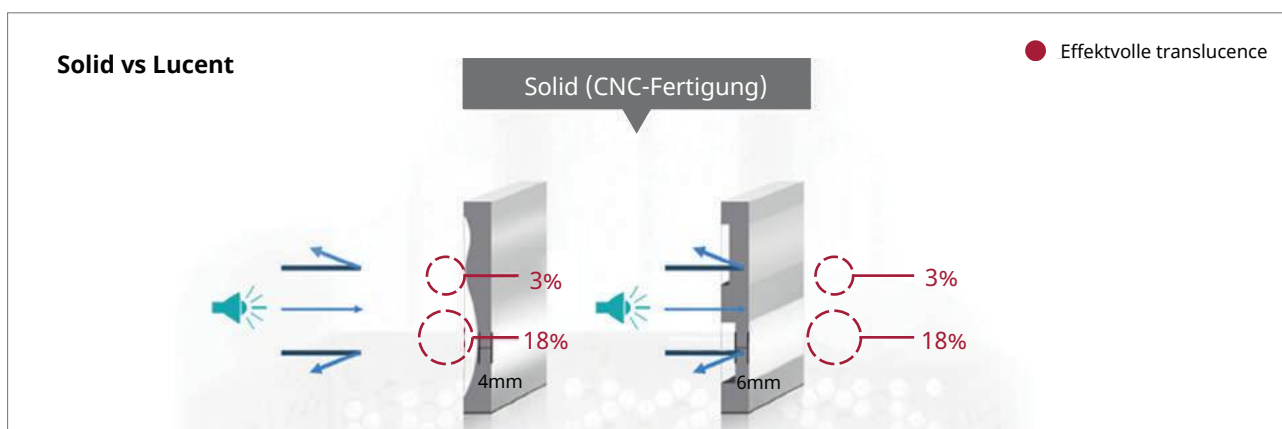


Fig.17

11. HIMACS Other Sheet Products With Lucent-effect

Color Family Marmo: Sheet "PAVIA" M603

Veining effect by backlight

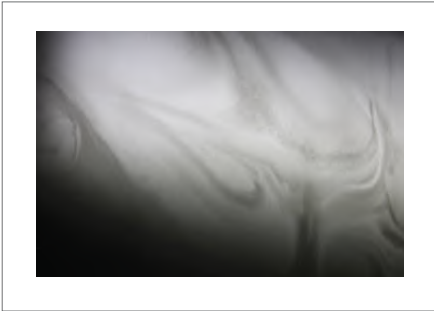


Fig.18



Fig.19

13. Light Transmittance Value

According to test method ASTM D1003 * Measuring Device: NDH-5000 Hazemeter.



Fig.22

	M603 PAVIA 12MM	S0 "- 1* / & 8) *5& .	S028 ALPINE WHITE 6MM	S006 ARCTIC WHITE 12MM	S006 ARCTIC WHITE 6MM	S302 OPAL LUCENT 12MM	S009 SOLID CREAM 12MM	S005 SOLID GREY 12MM
Transmittance Value (in %)	5.68	0.03	1	3.23	9.02	9.64	4.89	0.42
Haze	88.57	100	87.35	89.55	87.9	89.97	89.16	90.43

Haze: Transmitted light can be divided into straight transmitted light and diffused transmitted light. Diffused transmitted light causes an opaque cloudy appearance, so high Haze reduces transparency.

$$\text{Haze} = \frac{\text{Diffraction transmittance}}{\text{Total transmittance}}$$

14. Expansion

One of the main characteristics of the material is the importance of the material's expansion and contraction due to temperature change. This means: always allow the material to expand or to shrink without any possible barrier.

Expansion coefficient HIMACS according to norm DIN EN 14581:

$$\Delta t = 48 \times 10^{-6} /K$$

Allow **1.5 mm** per linear meter for expansion and contraction.

15. Thermoforming

Thermoforming can be done in a similar way to the standard solid colour family.

12mm → R50 / R= 85

R 85 alternative by highly pigmented may do show a better color performance and meets customer expectations better.

The radius listing below is showing the standard minimum radius of each HIMACS thickness based on a white color.

Be aware that due to highly pigmented formulation easily whitening can appear in the radius – but always should become agreed with the customer if this may be acceptable or a wider radius has to be chosen. Therefore we suggest making customer sign off the sample you prepare for the project and keep this for further records.

Ri ≥ 85 mm →



Fig.23



Fig.24 Shows comparison between S028 and S303

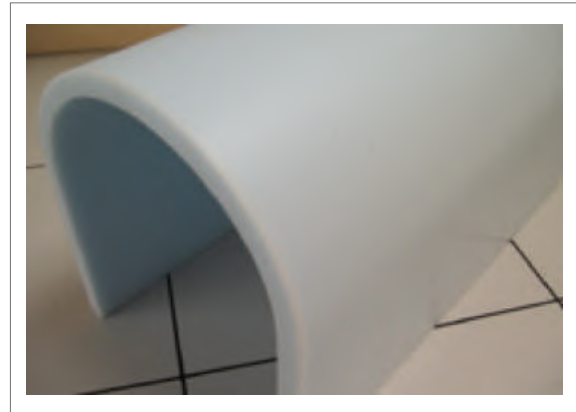


Fig.25 Shows thermoformed S303 in R=85mm with perfect color consistency

Be aware when thermoforming highly pigmented colours like, blue, rose and emerald or others, more whitening can be visible when under cutting the limits or clamping the sheets under stress.

16. Quality Check

- Check any fabricated item on quality aspects before leaving the workshop.
- In case of any mistakes it easily can be repaired in the workshop and keeps the time of re-work very low.
- Any damage or any mistakes which will be recognized at a later time will make the fixing much more expensive.
- When backlighting check the light transmittance to avoid later claims.

The 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes neither any misuse of product recommendations.

Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs our approval for Warranty. This Technical Document is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since we cannot anticipate all variations in actual end-use conditions, We make no warranties and assume no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

TECHNICAL DATA SHEET SAND & PEARLS COLLECTION



Sheet Fabrication

Sheet color family: Sand & Pearls "G"

Sheet Offering : Sand



Fig.1

Sheet Offering : Pearl



Fig.2

This Technical information summarizes specific characteristics and properties of HIMACS material which have to be taken into consideration when fabricating or installing HIMACS products. This Technical Information gives a basis to ensure the correct use of this high performance material and meet customers' and end-consumers' expectations whilst building an additional cornerstone for our HIMACS Warranty Program (15 years).

Hint:

Before starting any fabrication: take note of the printed sheet-number of each sheet. Ensure to work with sequential sheet numbers and mark always the production flow even and best when assembling any kind of project.

1. Material Preparation

- When fabricating Sand or Pearl colours of HIMACS there is almost no difference from the standard HIMACS products in fabricating or installing. There is even no difference to the smell during the fabrication process due to the acrylic based material where the formulation has been changed slightly but composed of the same ingredients.
- Always handle the material with care to avoid any additional uncontrolled scratching from the top or the back of the sheet.
- When cutting HIMACS translucent material always use a **new and sharp saw blade** or trim off with an sharp CNC router to the size required.
- Ensure the sawing machine is properly adjusted and that it is running correctly and absolutely straight.
- If marks of the saw blade or cutter of the trimmer are visible ensure to re-sand the edges by using 180 or 220 (240) grit sandpaper.
- Ensure not to sand the edge round to avoid a bad result of the seam afterwards.
- Prepare the back of the sheet by re-sanding or rebating (by a step of 1-2mm) of the place where the edge will be placed.
- When chips break out during cutting, change saw blade or trim off with an electrical plane or spindle moulder.

Note and be aware of the disclaimer(*) colours of the Sand colour family:

- Black Sand (G009)*

Note and be aware of the disclaimer(*) colours of the Pearl colour family:

- Brown Pearl (G105)*
- Midnight Pearl (G15)*
- Black Pearl (G10)*

2. Bonding

- In case of bonding – clean edges as usual and press the work pieces as standards.
- Use the recommended adhesive colours. Squeeze and press out the first couple of cm of glue line and control if the color and color pigments of adhesive are proper mixing. Then proceed with the usual bonding process and procedure of HIMACS adhesive.
- When storing the adhesive don't leave the cartridge in a vertical position but store it horizontal and turn it ones in a while when not using it.

■ 3. Edge Preparation & Build Up

HIMACSR sheets are delivered with a sanded backside of the sheet where it is highly recommended to sand smooth or to trim the edge making a rebate.

Turn the sheet over so that the back of the sheet is upside-down and you can work comfortably.

Ensure the HIMACSR sheet does not sag and the sheet is properly supported at each position and do not round the edge of the bonding area.

Using a rebate at the back of the sheet for the edge treatment also has the advantage to

- take away the rough sanding marks and
- allows stopping the edge on a fine line
- to avoid using gluing blocks or
- Any kind of ruler or gluing templates.

Check all edges carefully before bonding. Ensure that no chips are broken out and no heavy marks of the saw blade or any whitening of the edge is visible.

Create the rebate that approximately 0,5mm of the sheet will hang over to trim off later after the adhesive cured.

Put all necessary materials and tools in place which you will need for bonding:

- Clean, white cloth
- Denatured Alcohol (or Acetone)
- HIMACSR - Adhesive (check the right color) (small or large cartridge)
- Adhesive dispenser and mixer-tips
- Clamps (C-clamps or best use "Klemsia")

► Further details, please find under TDS "Edge Treatments & Downturns"

4. Sanding

The sanding process is similar to the standard sanding process.

When sanding with hand tools or alternative with stationary equipment ensure not to create heat on the surface to avoid any unexpected unevenness of the surface.

Depending on available tools and equipment sanding time will be within the same range.

							Standard recommendation	
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH			
HIMACS colour family	for all colours		for all colours		for all colours			
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper		
Step 1	100/80 μ	150/180	100/80 μ	150/180	100/80 μ	150/180		
	take dust away		take dust away		take dust away			
Step 2	60 μ	220	60 μ	220	60 μ	220		
	take dust away		take dust away		take dust away			
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 μ	280/320	30 μ	280/320		
	take dust away		take dust away		take dust away			
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 μ	380/400		
	take dust away		take dust away		take dust away			
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 μ	600/800		
				take dust away	take dust away			
Step 6				industrial paper towel	Finesse-it™ Finish- component	1200		
					take dust away			
Step 7						1500		
						1800		
						2500		

HI-MACS® Surface Sanding Process

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Matt	P 60/100	3M Hookit dust remove
	P 120 / 150	3M Hookit dust remove
	P 180	3M Hookit dust remove
	Scotch-Brite	Marron dust remove

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Semi gloss	P 240	3M Hookit dust remove
	P 320	3M Hookit dust remove
	P 400	3M Hookit dust remove
	Scotch-Brite	Grey dust remove
Dust remove	3M Scotch-Brite MS-DC 150x8mm type T white	

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
High gloss	P 600	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1200	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1000	3M Trizact
	Cleanup / dry	Wipe off
	P 3000	3M Trizact
Cleanup / dry	Wipe off	
	Finesse-it	Polish paste with felt-disk
	Wipe off	With cotton cloth

useit-abrasives® - Schleifsysteme für Mineralwerkstoffe useit-abrasives® - for Solid Surface Materials

Bearbeiten von Mineralwerkstoffen wolkenfrei, schattenfrei, staubfrei, schnell und kostensparend mit den patentierten useit®-Schleifmitteln.

Finishing of Solid Surface Materials cloudless, shadeless, dust-free, quick and cost-saving with the patented useit-abrasives®.

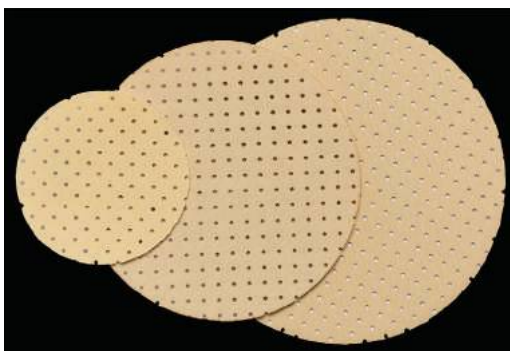


useit®-Superpad P

useit®-Superfinishing-Pad SG

	matt	seidenmatt semigloss	Hochglanz high gloss
useit®-Superpad P 220	x	x	x
useit®-Superpad P 400	x		
useit®-Superfinishing-Pad SG 600		x	x
useit®-Superfinishing-Pad SG 1500			x
useit®-Superfinishing-Pad SG 3000 für Spiegelglanz (nass schleifen) <i>for high gloss (wet sanding)</i>			x

(Kratzer und sonstige Fehler in der Oberfläche mit Korn 80, 120, 150 oder 180 ausschleifen)
(useit®-Superpad P grit 120, 150 or 180 to remove deep sanding marks or other surface defects!)



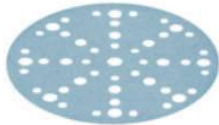
Joest Superpad P Gold

Available in different grits and different sizes

► Further details, please find under TDS "Sanding"

5. Festool

Granat



Ø 150

Matte Finish

Light colored material - Granat or Titan II- 120, 150, 180, Vlies 280

Dark colored material - Granat or Titan II – 120, 150, 180, 220, Vlies 800

Satin Finish

Light colored material - Granat or Titan II – 120, 150, 180, 220, 320, Vlies 800

Dark colored material - Granat or Titan II – 120, 150, 180, 220, 320, 400, Platin 500

Semi Gloss Finish

Light colored material - Granat or Titan II – 120, 150, 180, 220, 320, 400, Platin 500

Dark colored material - Granat or Titan II – 120, 150, 180, 220, 320, 400, Platin 500, 1000 Page 1 of 2

Gloss Finish

Light and dark colored material - Granat or Titan II – 120, 150, 180, 220, 320, 400, Platin 500, 1000, 2000, 4000

High Gloss Finish

Same grit sequence as the Gloss finish above. Follow sanding process by applying compounds with felt pads mounted on the polishing pad. Use sander in the gear driven Rotex mode on high speed for coarse sanding and polishing and move to low to medium speed (1-3) using the following pads and compounds: • Hard felt – Rubbing compound (Marine grade) • Soft felt – 3M Finess-It II • Wool pad – Liquid glass

► Further details, please find under TDS "Sanding"

Sand: Sheet Color / Adhesive Color

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	ADHESIVE COLOR CODE	ADHESIVE COLOR NAME
G001	Desert Sand		S & P	H04	Peanut
G002	Grey Sand		S & P	H03	Grey
G009	Black Sand	X	S & P	H42	Meraphi
G048	Beach Sand		S & P	H04	Peanut
G106	Riviera Sand		S & P	H04	Peanut
G108	Lunar Sand		S & P	H36	Silver

Fig.3

Pearl: Sheet Color / Adhesive Color

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	ADHESIVE COLOR CODE	ADHESIVE COLOR NAME
G010	Black Pearl	X	S & P	H07	Black
G015	Midnight Pearl	X	S & P	H10	Blue
G050	Tapioca Pearl		S & P	H36	Silver
G105	Brown Pearl	X	S & P	H35	Dark
G107	Pebble Pearl		S & P	H03	Grey

Fig.4

6. LRV results of Sand

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	LRV
G001	Desert Sand		S & P	31.10
G002	Grey Sand		S & P	47.69
G009	Black Sand	X	S & P	10.45
G048	Beach Sand		S & P	50.49
G106	Riviera Sand		S & P	61.57
G108	Lunar Sand		S & P	71.86

Fig.5

7. LRV results of Pearl

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	LRV
G010	Black Pearl	X	S & P	7.01
G015	Midnight Pearl	X	S & P	10.77
G050	Tapioca Pearl		S & P	71.21
G105	Brown Pearl	X	S & P	8.68
G107	Pebble Pearl		S & P	53.29

Fig.6

8. Assembling

Following the production direction

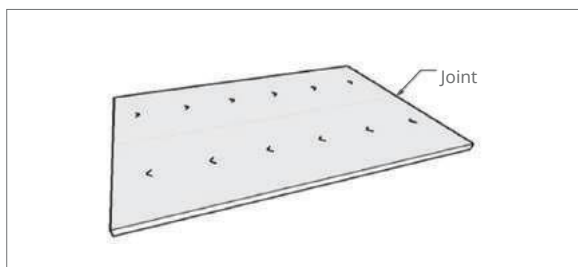


Fig.7 Sample of sheet assembling

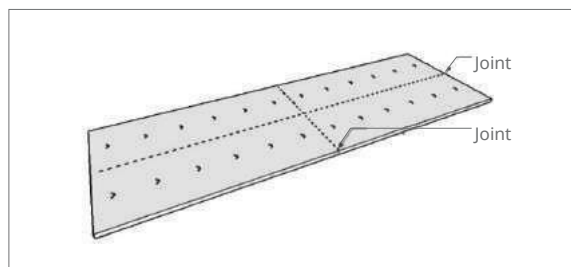


Fig.8 Sample of sheet assembling

9. Expansion

One of the main characteristics of the material is the importance of the material's expansion and contraction due to temperature change. This means: always allow the material to expand or to shrink without any possible barrier.

Expansion coefficient HIMACS according to norm DIN EN 14581:

$$\Delta t = 48 \times 10^{-6} / K$$

Allow **1.5 mm** per linear meter for expansion and contraction.

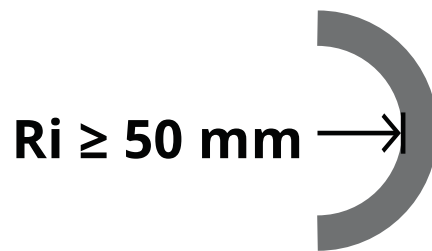
10. Thermoforming

The radius listing below is showing the standard smallest radius of each 12mm HIMACS thickness based on a white color.

Be aware that due to highly pigmented formulation easily whitening can appear in the radius, when forming on the limits – but always should become agreed with the customer if this may be acceptable or a wider radius has to be chosen.

Therefore we suggest to make customer sign off the sample you prepare for the project and keep this for further records.

For Sand & Pearl



11. Quality Check

- Check any fabricated item on quality aspects before leaving the workshop.
- In case of any mistakes it easily can be repaired in the workshop and keeps the time of re-work very low.
- Any damage or any mistakes which will be recognized at a later time will make the fixing much more expensive.
- When backlighting check the light transmittance to avoid later claims.

The 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes neither any misuse of product recommendations.

Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs our approval for Warranty.

This Technical Document is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since we cannot anticipate all variations in actual end-use conditions,

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TECHNICAL DATA SHEET QUARTZ COLLECTION



© Petr Krejčí

Sheet Fabrication

Sheet color family: Quartz "G"

Sheet Offering 2020: Quartz



Fig.1

This Technical information summarizes specific characteristics and properties of HIMACS material which have to be taken into consideration when fabricating or installing HIMACS products. This Technical Information gives a basis to ensure the correct use of this high performance material and meet customers' and end-consumers' expectations whilst building an additional cornerstone for HIMACS 15-year limited Warranty Program.

Hint:

Before starting any fabrication: take note of the printed sheet-number of each sheet. Ensure to work with sequential sheet numbers and mark always the production flow even and best when assembling any kind of project.

1. Material Preparation

- When fabricating Quartz colours of HIMACS there is almost no difference from the standard HIMACS products in fabricating or installing. There is even no difference to the smell during the fabrication process due to the acrylic based material where the formulation has been changed slightly but composed of the same ingredients.
- Always handle the material with care to avoid any additional uncontrolled scratching from the top or the back of the sheet.
- When cutting HIMACS translucent material always use a **new and sharp saw blade** or trim off with a sharp CNC router to the size required.

- Ensure the sawing machine is properly adjusted and that it is running correctly and absolutely straight.
- If marks of the saw blade or cutter of the trimmer are visible ensure to re-sand the edges by using 180 or 220 (240) grit sandpaper.
- Ensure not to sand the edge round to avoid a bad result of the seam afterwards.
- Prepare the back of the sheet by re-sanding or rebating (by a step of 1-2mm) of the place where the edge will be placed.
- When chips break out during cutting, change saw blade or trim off with an electrical plane or spindle moulder.

2. Bonding

- In case of bonding – clean edges as usual and press the work pieces as standards.
- Use the recommended translucent adhesive colours. Squeeze and press out the first couple of cm of glue line and control if the color and color pigments of adhesive are proper mixing. Then proceed with the usual bonding process and procedure of HIMACS adhesive.
- When storing the adhesive don't leave the cartridge in a vertical position but store it horizontal and turn it ones in a while when not using it.

Use of Adhesive Color Recommendation

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	ADHESIVE COLOR CODE	ADHESIVE COLOR NAME
G004	White Quartz		Quartz	H36	Silver
G038	Sea Oat Quartz		Quartz	H04	Peanut
G058	Moonscape Quartz		Quartz	H04	Peanut
G063	Allspice Quartz		Quartz	H14	Sephia

Fig.2

3. Bonding Surface to Surface

Due to the Quartz ingredients used larger chips a continuous natural flow during the manufacturing process should be realized. Those chips have a special position of direction which could cause a certain colour difference when turning the sheets during fabrication process into different directions of assembling.

Therefore when bonding two sheets together it is important to ensure to bond the pieces best in one direction but never in opposite – see Fig.5 & Fig.6. Do not turn around a second sheet by 180°. This eventually avoids a certain colour difference you may see after the sanding process only

Always follow the continuous production flow by ensuring the printing on the back side of the sheets (Fig.5&7) always follows one direction – never going in opposite directions (Fig.6).

On an application such as an L- or U- shaped counter top or a big conference table always ensure the underside printing is going in one direction.

4. Assembling

Following the production direction

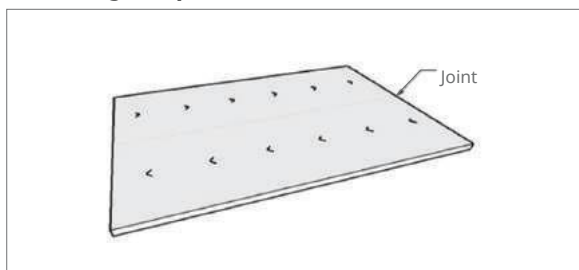


Fig.3 Sample of sheet assembling

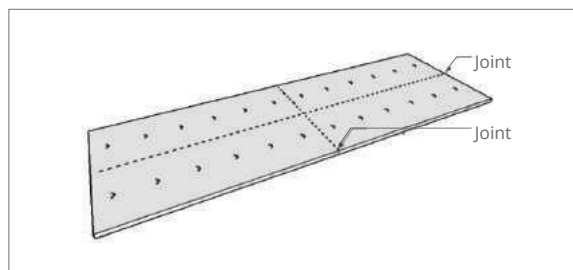


Fig.4 Sample of sheet assembling

5. Quartz family pattern

When preparing a curved upstand (Fig.8) or downturn, customers may not accept the final result. However, one may not compare, though with Solid colours used in the kitchen market.

A downturn or an upstand are best achieved with a 45° angle or a profiled folding option – see Fig. 6 & 7 (V-grooving).

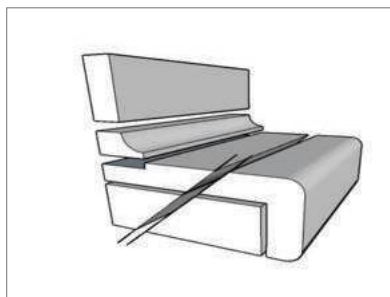


Fig.5

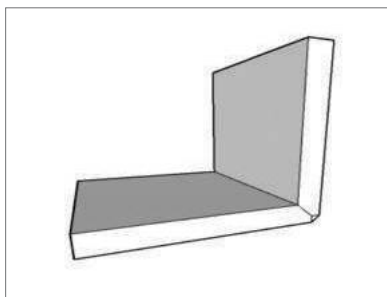


Fig.6

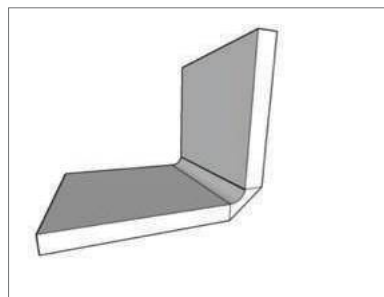


Fig.7

► Further details, please find under TDS "Edge Treatments & Downturns"

6. Edge Bonding

To let the pattern flow around the edges a 45° angled cut off the edge or an alternative rebate is one of the best solutions.

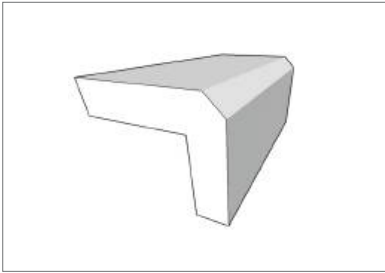


Fig.8

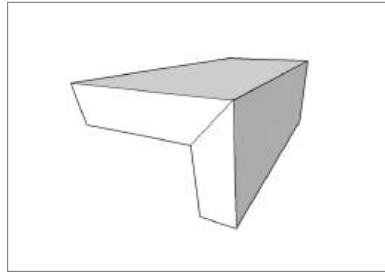


Fig.9

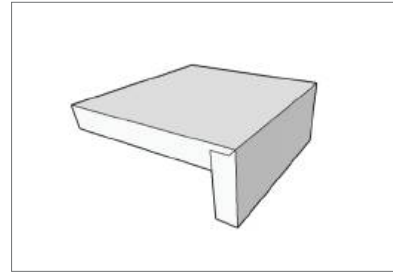


Fig.10

For the bonding process of the edges please follow the instructions above or check further on TDS Edge Treatments & Downturns".

Always make a "Quality Check" before handing over the project to the customer.

7. Edge Preparation & Build Up

HIMACS sheets are delivered with a sanded backside of the sheet where it is highly recommended to sand smooth or to trim the edge making a rebate.

Turn the sheet over so that the back of the sheet is upside-down and you can work comfortably.

Ensure the HIMACS sheet does not sag and the sheet is properly supported at each position and do not round the edge of the bonding area.

Using a rebate at the back of the sheet for the edge treatment also has the advantage to:

- take away the rough sanding marks and
- allows stopping the edge on a fine line
- to avoid using gluing blocks or
- Any kind of ruler or gluing templates.

Check all edges carefully before bonding. Ensure that no chips are broken out and no heavy marks of the saw blade or any whitening of the edge is visible.

Create the rebate that approximately 0,5mm of the sheet will hang over to trim off later after the adhesive cured.

Put all necessary materials and tools in place which you will need for bonding:

- Clean, white cloth
- Denatured Alcohol (or Acetone)
- HIMACS- Adhesive (check the right color) (small or large cartridge)
- Adhesive dispenser and mixer-tips
- Clamps (C-clamps or best use "Klemsia")

► Further details, please find under TDS "Drop Edges & Downturns"

8. Sanding

The sanding process is similar to the standard sanding process.

When sanding with hand tools or alternative with stationary equipment ensure not to create heat on the surface to avoid any unexpected unevenness of the surface.

Depending on available tools and equipment sanding time will be within the same range as with HIMACS standard products.

		Standard recommendation				
FINISH-LEVEL	MATT-FINISH	SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH		
HIMACS colour family	for all colours		for all colours		for all colours	
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper
Step 1	100/80 µ	150/180	100/80 µ	150/180	100/80 µ	150/180
	take dust away		take dust away		take dust away	
Step 2	60 µ	220	60 µ	220	60 µ	220
	take dust away		take dust away		take dust away	
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 µ	280/320	30 µ	280/320
	take dust away		take dust away		take dust away	
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 µ	380/400
	take dust away		take dust away		take dust away	
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 µ	600/800
				take dust away	take dust away	
Step 6				industrial paper towel	Finesse-it™ Finish- component	1200
					take dust away	
Step 7						1500
						1800
						2500

HIMACS Surface Sanding Process

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Matt	P 60/100	3M Hookit dust remove
	P 120 / 150	3M Hookit dust remove
	P 180	3M Hookit dust remove
	Scotch-Brite	Marron dust remove

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Semi gloss	P 240	3M Hookit dust remove
	P 320	3M Hookit dust remove
	P 400	3M Hookit dust remove
	Scotch-Brite	Grey dust remove

Dust remove	3M Scotch-Brite MS-DC 150x8mm type T white
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FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
High gloss	P 600	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1200	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1000	3M Trizact
	Cleanup / dry	Wipe off
	P 3000	3M Trizact
	Cleanup / dry	Wipe off
	Finess-it	Polish paste with felt-disk
	Wipe off	With cotton cloth

► Further details, please find under TDS "Sanding"

9. LRV results of Quartz

COLOUR CODE	COLOUR CODE	COLOUR NAME	LRV
56	G004	White Quartz	68.87
57	G038	Sea Oat Quartz	52.18
58	G058	Moonscape Quartz	51.54
59	G063	Allspice Quartz	11.93
60	G101	Crystal Beige	68.88

Fig.6

10. Expansion

One of the main characteristics of the material is the importance of the material's expansion and contraction due to temperature change. This means: always allow the material to expand or to shrink without any possible barrier.

Expansion coefficient HIMACS according to norm DIN EN 14581:

$$\Delta t = 48 \times 10^{-6} / K$$

Allow **1.5 mm** per linear meter for expansion and contraction.

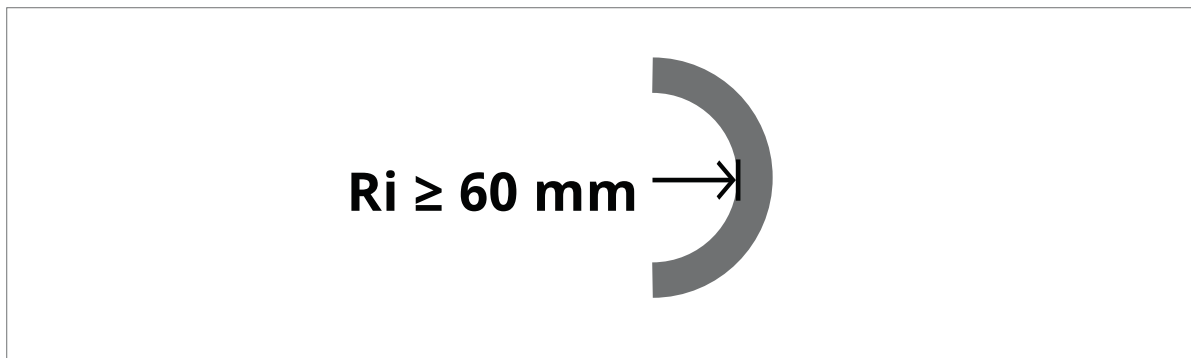
11. Thermoforming

The radius listing below is showing the standard smallest radius of each 12mm HIMACS thickness based on a white color.

Be aware that due to highly pigmented formulation easily whitening can appear in the radius, when forming on the limits - but always should become agreed with the customer if this may be acceptable or a wider radius has to be chosen.

Therefore we suggest to make customer sign off the sample you prepare for the project and keep this for further records.

For Quartz



► Further Technical Information's see TDS "Thermoforming"

12. Quality Check

- Check any fabricated item on quality aspects before leaving the workshop.
- In case of any mistakes it easily can be repaired in the workshop and keeps the time of re-work very low.
- Any damage or any mistakes which will be recognized at a later time will make the fixing much more expensive.
- When backlighting check the light transmittance to avoid later claims.

The 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes neither any misuse of product recommendations.

Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs our approval for Warranty.

This Technical Document is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since we cannot anticipate all variations in actual end-use conditions, We make no warranties and assume no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

TECHNICAL DATA SHEET GRANITE COLLECTION



Sheet Fabrication

Sheet color family: Granite "G"

Sheet Offering 2018: Granite

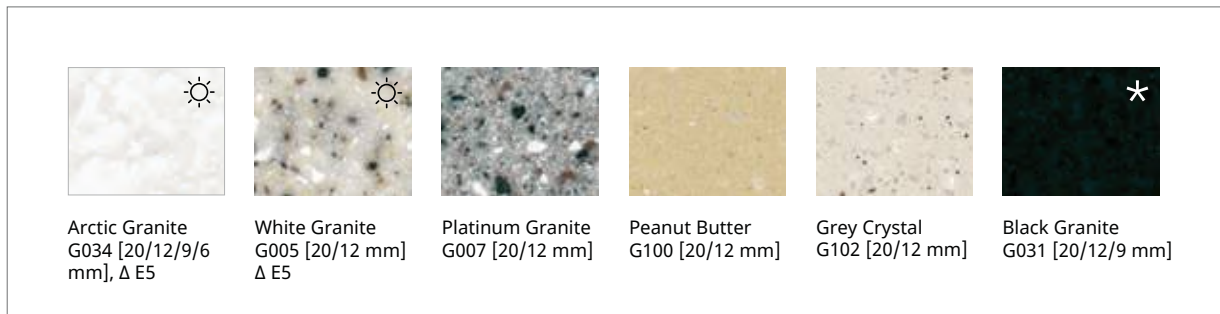


Fig.1

This Technical information summarizes specific characteristics and properties of HIMACS material which have to be taken into consideration when fabricating or installing HIMACS products. This Technical Information gives a basis to ensure the correct use of this high performance material and meet customers' and end-consumers' expectations whilst building an additional cornerstone for HIMACS 15-year limited Warranty Program.

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Before starting any fabrication: take note of the printed sheet-number of each sheet. Ensure to work with sequential sheet numbers and mark always the production flow even and best when assembling any kind of project.

■ . >COC>I 1OBM>O>OLK

- When fabricating Granite colours of HIMACS there is almost no difference from the standard HIMACS products in fabricating or installing. There is even no difference to the smell during the fabrication process due to the acrylic based material where the formulation has been changed slightly but composed of the same ingredients.
- Always handle the material with care to avoid any additional uncontrolled scratching from the top or the back of the sheet.
- When cutting HIMACS translucent material always use a KBT >KA FE>OMP>T ?I>AB or trim off with a sharp CNC router to the size required.

- Ensure the sawing machine is properly adjusted and that it is running correctly and absolutely straight.
- If marks of the saw blade or cutter of the trimmer are visible ensure to re-sand the edges by using 180 or 220 (240) grit sandpaper.
- Ensure not to sand the edge round to avoid a bad result of the seam afterwards.
- Prepare the back of the sheet by re-sanding or rebating (by a step of 1-2mm) of the place where the edge will be placed.
- When chips break out during cutting, change saw blade or trim off with an electrical plane or spindle moulder.

2. Bonding

- In case of bonding – clean edges as usual and press the work pieces as standards.
- Use the recommended adhesive colours. Squeeze and press out the first couple of cm of glue line and control if the color and color pigments of adhesive are proper mixing. Then proceed with the usual bonding process and procedure of HIMACS adhesive.
- When storing the adhesive don't leave the cartridge in a vertical position but store it horizontal and turn it ones in a while when not using it.

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	ADHESIVE COLOR CODE	ADHESIVE COLOR NAME
G005	White Granite		Granite	H03	Grey
G007	Platinum Granite		Granite	H03	Grey
G031	Black Granite	X	Granite	H07	Black
G034	Arctic Granite		Granite	H36	Silver
G100	Peanut Granite		Granite	H04	Peanut
G102	Grey Granite		Granite	H03	Grey

Fig.2

3. Bonding Surface to Surface

Due to the Granite ingredients used larger chips a continuous natural flow during the manufacturing process should be realized. Those chips have a special position of direction which could cause a certain colour difference when turning the sheets during fabrication process into different directions of assembling.

Therefore when bonding two sheets together it is important to ensure to bond the pieces best in one direction but never in opposite – see Fig.5 & Fig.6. Do not turn around a second sheet by 180°. This eventually avoids a certain colour difference you may see after the sanding process only

Always follow the continuous production flow by ensuring the printing on the back side of the sheets (Fig.5&7) always follows one direction – never going in opposite directions (Fig.6).

On an application such as an L- or U- shaped counter top or a big conference table always ensure the underside printing is going in one direction.

4. Assembling

Following the production direction

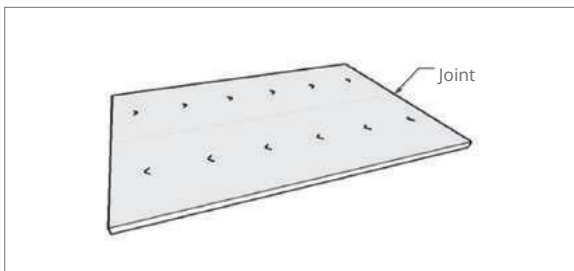


Fig.3 Sample of sheet assembling

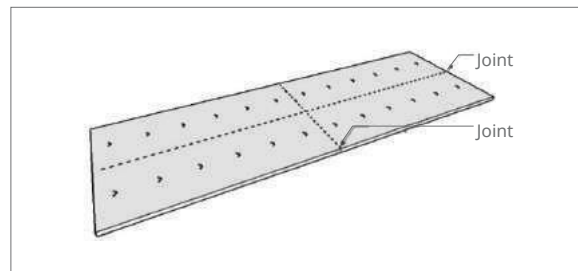


Fig.4 Sample of sheet assembling

5. Quartz family pattern

When preparing a curved upstand (Fig.8) or downturn, customers may not accept the final result.

However, one may not compare, though with Solid colours used in the kitchen market.

A downturn or an upstand are best achieved with a 45° angle or a profiled folding option – see Fig. 6 & 7 (V-grooving).

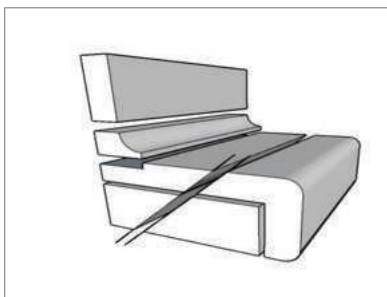


Fig.5

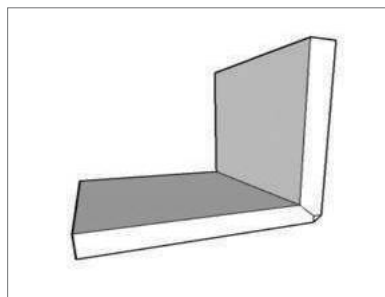


Fig.6

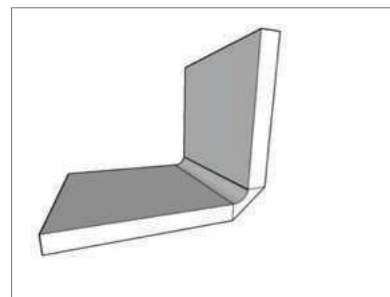


Fig.7

► Further details, please find under TDS "Edge Treatments & Downturns"

6. Edge Bonding

To let the pattern flow around the edges a 45° angled cut off the edge or an alternative rebate is one of the best solutions.

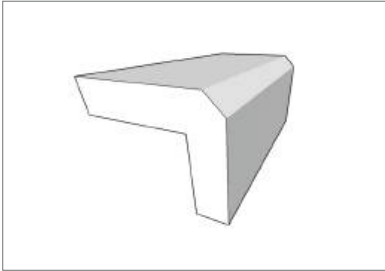


Fig.8

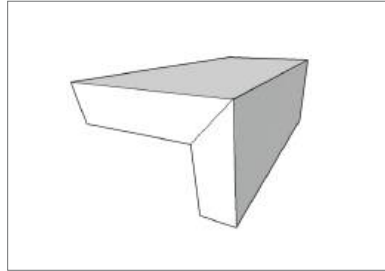


Fig.9

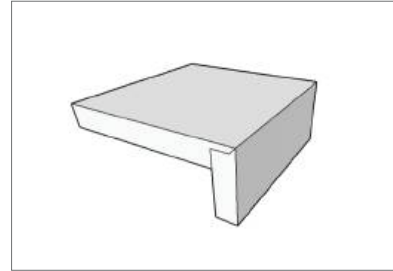


Fig.10

For the bonding process of the edges please follow the instructions above or check further on TDS Edge Treatments & Downturns".

Always make a "Quality Check" before handing over the project to the customer.

7. Edge Preparation & Build Up

HIMACS sheets are delivered with a sanded backside of the sheet where it is highly recommended to sand smooth or to trim the edge making a rebate. Turn the sheet over so that the back of the sheet is upside-down and you can work comfortably.

Ensure the HIMACS sheet does not sag and the sheet is properly supported at each position and do not round the edge of the bonding area.

Using a rebate at the back of the sheet for the edge treatment also has the advantage to:

- take away the rough sanding marks and
- allows stopping the edge on a fine line
- to avoid using gluing blocks or
- Any kind of ruler or gluing templates.

Check all edges carefully before bonding. Ensure that no chips are broken out and no heavy marks of the saw blade or any whitening of the edge is visible.

Create the rebate that approximately 0,5mm of the sheet will hang over to trim off later after the adhesive cured.

Put all necessary materials and tools in place which you will need for bonding:

- Clean, white cloth
- Denatured Alcohol (or Acetone)
- HIMACS- Adhesive (check the right color) (small or large cartridge)
- Adhesive dispenser and mixer-tips
- Clamps (C-clamps or best use "Klemsia")

► Further details, please find under TDS "Drop Edges & Downturns"

8. Sanding

The sanding process is similar to the standard sanding process.

When sanding with hand tools or alternative with stationary equipment ensure not to create heat on the surface to avoid any unexpected unevenness of the surface.

Depending on available tools and equipment sanding time will be within the same range as with HIMACS standard products.

		Standard recommendation				
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH	
HIMACS colour family	for all colours		for all colours		for all colours	
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper
Step 1	100/80 µ	150/180	100/80 µ	150/180	100/80 µ	150/180
	take dust away		take dust away		take dust away	
Step 2	60 µ	220	60 µ	220	60 µ	220
	take dust away		take dust away		take dust away	
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 µ	280/320	30 µ	280/320
	take dust away		take dust away		take dust away	
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 µ	380/400
	take dust away		take dust away		take dust away	
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 µ	600/800
				take dust away	take dust away	
Step 6				industrial paper towel	Finesse-it™ Finish- component	1200
					take dust away	
Step 7						1500 1800 2500

HIMACS Surface Sanding Process

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Matt	P 60/100	3M Hookit dust remove
	P 120 / 150	3M Hookit dust remove
	P 180	3M Hookit dust remove
	Scotch-Brite	Marron dust remove

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Semi gloss	P 240	3M Hookit dust remove
	P 320	3M Hookit dust remove
	P 400	3M Hookit dust remove
	Scotch-Brite	Grey dust remove

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
High gloss	P 600	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1200	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1000	3M Trizact
	Cleanup / dry	Wipe off
	P 3000	3M Trizact
Cleanup / dry	Wipe off	
Finesse-it	Polish paste with felt-disk	
Wipe off	With cotton cloth	

► Further details, please find under TDS "Sanding"

Dust remove	3M Scotch-Brite MS-DC 150x8mm type T white
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9. LRV results of Granite

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	LRV
G005	White Granite		Granite	45.30
G007	Platinum Granite		Granite	24.98
G031	Black Granite	X	Granite	5.64
G034	Arctic Granite		Granite	76.69
G100	Peanut Granite		Granite	43.42
G102	Grey Granite		Granite	49.78

Fig.6

10. Expansion

One of the main characteristics of the material is the importance of the material's expansion and contraction due to temperature change. This means: always allow the material to expand or to shrink without any possible barrier.

Expansion coefficient HIMACS according to norm DIN EN 14581:

$$\Delta t = 48 \times 10^{-6} / K$$

Allow **1.5 mm** per linear meter for expansion and contraction.

11. Thermoforming

The radius listing below is showing the standard smallest radius of each 12mm HIMACS thickness based on a white color.

Be aware that due to highly pigmented formulation easily whitening can appear in the radius, when forming on the limits – but always should become agreed with the customer if this may be acceptable or a wider radius has to be chosen.

Therefore we suggest to make customer sign off the sample you prepare for the project and keep this for further records.

For Granite



► Further Technical Information's see TDS "Thermoforming"

12. Quality Check

- Check any fabricated item on quality aspects before leaving the workshop.
- In case of any mistakes it easily can be repaired in the workshop and keeps the time of re-work very low.
- Any damage or any mistakes which will be recognized at a later time will make the fixing much more expensive.
- When backlighting check the light transmittance to avoid later claims.

The 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes neither any misuse of product recommendations.

Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs our approval for Warranty.

This Technical Document is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since we cannot anticipate all variations in actual end-use conditions, We make no warranties and assume no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

TECHNICAL DATA SHEET ASTER COLLECTION



Sheet Fabrication

Sheet color family: Aster "T"

Sheet Offering 2018: Aster



Fig.1

This Technical information summarizes specific characteristics and properties of HIMACS material which have to be taken into consideration when fabricating or installing HIMACS products. This Technical Information gives a basis to ensure the correct use of this high performance material and meet customers' and end-consumers' expectations whilst building an additional cornerstone for HIMACS 15-year limited Warranty Program.

Hint:

Before starting any fabrication: take note of the printed sheet-number of each sheet. Ensure to work with sequential sheet numbers and mark always the production flow even and best when assembling any kind of project.

1. Material Preparation

- When fabricating Aster colours of HIMACS there is almost no difference from the standard HIMACS products in fabricating or installing. There is even no difference to the smell during the fabrication process due to the acrylic based material where the formulation has been changed slightly but composed of the same ingredients.
- Always handle the material with care to avoid any additional uncontrolled scratching from the top or the back of the sheet.
- When cutting HIMACS translucent material always use a **new and sharp saw blade** or trim off with an sharp CNC router to the size required.

- Ensure the sawing machine is properly adjusted and that it is running correctly and absolutely straight.
- If marks of the saw blade or cutter of the trimmer are visible ensure to re-sand the edges by using 180 or 220 (240) grit sandpaper.
- Ensure not to sand the edge round to avoid a bad result of the seam afterwards.
- Prepare the back of the sheet by re-sanding or rebating (by a step of 1-2mm) of the place where the edge will be placed.
- When chips break out during cutting, change saw blade or trim off with an electrical plane or spindle moulder.

2. Bonding

- In case of bonding – clean edges as usual and press the work pieces as standards.
- Use the recommended translucent adhesive colours. Squeeze and press out the first couple of cm of glue line and control if the color and color pigments of adhesive are proper mixing. Then proceed with the usual bonding process and procedure of HIMACS adhesive.
- When storing the adhesive don't leave the cartridge in a vertical position but store it horizontal and turn it ones in a while when not using it.

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	ADHESIVE COLOR CODE	ADHESIVE COLOR NAME
T010	Nebula		Aster	H02	Arctic White
T011	Venus		Aster	H01	Satin White
T017	Andromeda		Aster	H16	Alpine White
T018	Carina		Aster	H02	Arctic White
T019	New Moon		Aster	H01	Satin White
T020	Hercules	X	Aster	H22	Perna Grey

Fig.2

3. Bonding Surface to Surface

Due to the Quartz ingredients used larger chips a continuous natural flow during the manufacturing process should be realized. Those chips have a special position of direction which could cause a certain colour difference when turning the sheets during fabrication process into different directions of assembling.

Therefore when bonding two sheets together it is important to ensure to bond the pieces best in one direction but never in opposite – see Fig.5 & Fig.6. Do not turn around a second sheet by 180°. This eventually avoids a certain colour difference you may see after the sanding process only

Always follow the continuous production flow by ensuring the printing on the back side of the sheets (Fig.5&7) always follows one direction – never going in opposite directions (Fig.6). On an application such as an L- or U- shaped counter top or a big conference table always ensure the underside printing is going in one direction.

4. Assembling

Following the production direction

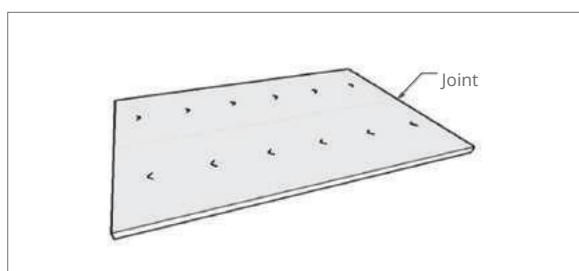


Fig.3 Sample of sheet assembling

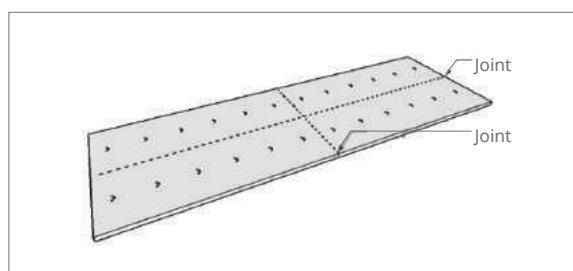


Fig.4 Sample of sheet assembling

5. Aster Family Pattern

When preparing a curved upstand (Fig.8) or downturn, customers may not accept the final result. However, one may not compare, though with Solid colours used in the kitchen market. A downturn or an upstand are best achieved with a 45° angle or a profiled folding option – see Fig. 6 & 7 (V-grooving).

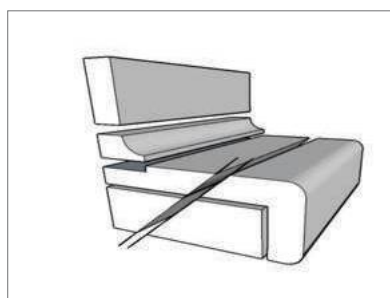


Fig.5

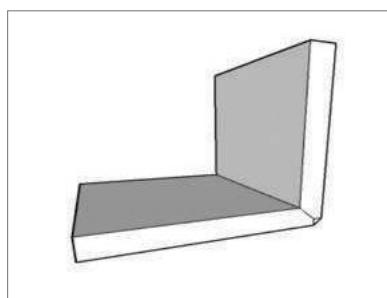


Fig.6

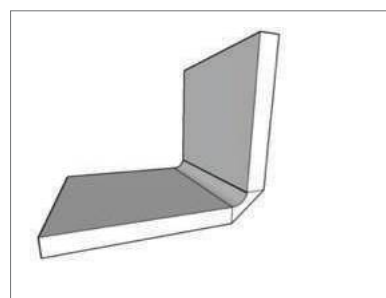


Fig.7

► Further details, please find under TDS "Edge Treatments & Downturns"

6. Edge Bonding

To let the pattern flow around the edges a 45° angled cut off the edge or an alternative rebate is one of the best solutions.

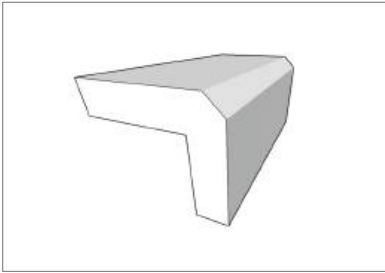


Fig.8

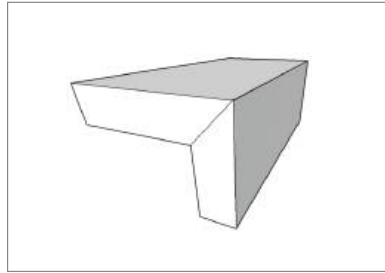


Fig.9

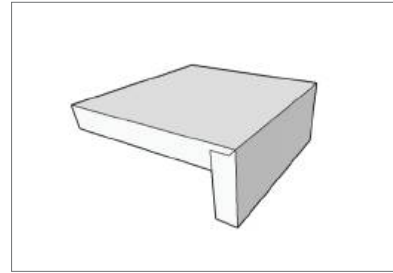


Fig.10

For the bonding process of the edges please follow the instructions above or check further on TDS "Edge Treatments & Downturns".

Always make a "Quality Check" before handing over the project to the customer.

7. Edge Preparation & Build Up

HIMACS sheets are delivered with a sanded backside of the sheet where it is highly recommended to sand smooth or to trim the edge making a rebate.

Turn the sheet over so that the back of the sheet is upside-down and you can work comfortably.

Ensure the HIMACS sheet does not sag and the sheet is properly supported at each position and do not round the edge of the bonding area.

Using a rebate at the back of the sheet for the edge treatment also has the advantage to:

- take away the rough sanding marks and
- allows stopping the edge on a fine line
- to avoid using gluing blocks or
- Any kind of ruler or gluing templates.

Check all edges carefully before bonding. Ensure that no chips are broken out and no heavy marks of the saw blade or any whitening of the edge is visible.

Create the rebate that approximately 0,5mm of the sheet will hang over to trim off later after the adhesive cured.

Put all necessary materials and tools in place which you will need for bonding:

- Clean, white cloth
- Denatured Alcohol (or Acetone)
- HIMACS- Adhesive (check the right color) (small or large cartridge)
- Adhesive dispenser and mixer-tips
- Clamps (C-clamps or best use "Klemsia")

► Further details, please find under TDS "Drop Edges & Downturns"

8. Sanding

The sanding process is similar to the standard sanding process. When sanding with hand tools or alternative with stationary equipment ensure not to create heat on the surface to avoid any unexpected unevenness of the surface. Depending on available tools and equipment sanding time will be within the same range as with HIMACS standard products.

		Standard recommendation				
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH	
HIMACS colour family	for all colours		for all colours		for all colours	
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper
Step 1	100/80 µ	150/180	100/80 µ	150/180	100/80 µ	150/180
	take dust away		take dust away		take dust away	
Step 2	60 µ	220	60 µ	220	60 µ	220
	take dust away		take dust away		take dust away	
Step 3	"useit@" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 µ	280/320	30 µ	280/320
	take dust away		take dust away		take dust away	
Step 4	industrial paper towel	"useit@" Superpad S/G Scotch Brite™ Maroon 7447	"useit@" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 µ	380/400
	take dust away		take dust away		take dust away	
Step 5		industrial paper towel	industrial paper towel	"useit@" Superpad S/G Scotch Brite™ Maroon 7447	9 µ	600/800
				take dust away	take dust away	
Step 6				industrial paper towel	Finesse-it™ Finish- component	1200
					take dust away	
Step 7						1500
						1800
						2500

HIMACS Surface Sanding Process

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Matt	P 60/100	3M Hookit dust remove
	P 120 / 150	3M Hookit dust remove
	P 180	3M Hookit dust remove
	Scotch-Brite	Marron dust remove

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Semi gloss	P 240	3M Hookit dust remove
	P 320	3M Hookit dust remove
	P 400	3M Hookit dust remove
	Scotch-Brite	Grey dust remove

Dust remove	3M Scotch-Brite MS-DC 150x8mm type T white
-------------	---

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
High gloss	P 600	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1200	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1000	3M Trizact
	Cleanup / dry	Wipe off
	P 3000	3M Trizact
	Cleanup / dry	Wipe off
Finesse-it	Polish paste with felt-disk	
Wipe off	With cotton cloth	

► Further details, please find under TDS "Sanding"

■ 9. LRV results of Aster

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	LRV
T010	Nebula		Aster	83.37
T011	Venus		Aster	61.78
T017	Andromeda		Aster	85.37
T018	Carina		Aster	66.34
T019	New Moon		Aster	63.73
T020	Hercules	X	Aster	28.46

Fig.6

■ 10. Expansion

One of the main characteristics of the material is the importance of the material's expansion and contraction due to temperature change. This means: always allow the material to expand or to shrink without any possible barrier.

Expansion coefficient HIMACS according to norm DIN EN 14581:

$$\Delta t = 48 \times 10^{-6} / K$$

Allow **1.5 mm** per linear meter for expansion and contraction.

11. Thermoforming

The radius listing below is showing the standard smallest radius of each 12mm HIMACS thickness based on a white color.

Be aware that due to highly pigmented formulation easily whitening can appear in the radius, when forming on the limits – but always should become agreed with the customer if this may be acceptable or a wider radius has to be chosen.

Therefore we suggest to make customer sign off the sample you prepare for the project and keep this for further records.

For Aster



► Further Technical Information's see TDS "Thermoforming"

12. Quality Check

- Check any fabricated item on quality aspects before leaving the workshop.
- In case of any mistakes it easily can be repaired in the workshop and keeps the time of re-work very low.
- Any damage or any mistakes which will be recognized at a later time will make the fixing much more expensive.
- When backlighting check the light transmittance to avoid later claims.

The 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes neither any misuse of product recommendations.

Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs our approval for Warranty.

This Technical Document is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since we cannot anticipate all variations in actual end-use conditions, We make no warranties and assume no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

TECHNICAL DATA SHEET VOLCANICS COLLECTION



© Petr Krejčí

Sheet Fabrication

Sheet color family: Volcanics "V"

Sheet Offering 2018: Aster

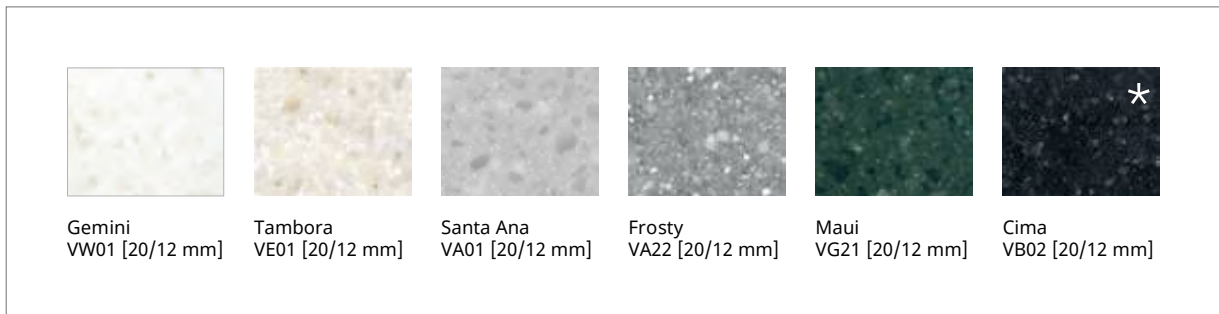


Fig.1

This Technical information summarizes specific characteristics and properties of HIMACS material which have to be taken into consideration when fabricating or installing HIMACS products. This Technical Information gives a basis to ensure the correct use of this high performance material and meet customers' and end-consumers' expectations whilst building an additional cornerstone for HIMACS 15-year limited Warranty Program.

Hint:

Before starting any fabrication: take note of the printed sheet-number of each sheet. Ensure to work with sequential sheet numbers and mark always the production flow even and best when assembling any kind of project.

1. Material Preparation

- When fabricating Volcanics colours of HIMACS there is almost no difference from the standard HIMACS products in fabricating or installing. There is even no difference to the smell during the fabrication process due to the acrylic based material where the formulation has been changed slightly but composed of the same ingredients.
- Always handle the material with care to avoid any additional uncontrolled scratching from the top or the back of the sheet.
- When cutting HIMACS translucent material always use a **new and sharp saw blade** or trim off with a sharp CNC router to the size required.

- Ensure the sawing machine is properly adjusted and that it is running correctly and absolutely straight.
- If marks of the saw blade or cutter of the trimmer are visible ensure to re-sand the edges by using 180 or 220 (240) grit sandpaper.
- Ensure not to sand the edge round to avoid a bad result of the seam afterwards.
- Prepare the back of the sheet by re-sanding or rebating (by a step of 1-2mm) of the place where the edge will be placed.
- When chips break out during cutting, change saw blade or trim off with an electrical plane or spindle moulder.

2. Bonding

- In case of bonding – clean edges as usual and press the work pieces as standards.
- Use the recommended translucent adhesive colours. Squeeze and press out the first couple of cm of glue line and control if the color and color pigments of adhesive are proper mixing. Then proceed with the usual bonding process and procedure of HIMACS adhesive.
- When storing the adhesive don't leave the cartridge in a vertical position but store it horizontal and turn it ones in a while when not using it.

Use of HIMACS Adhesive Color Recommendation for Volcanics

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	ADHESIVE COLOR CODE	ADHESIVE COLOR NAME
VA001	Santa Ana		Volcanics	H03	Grey
VE001	Tambora		Volcanics	H20	Cream
VB002	Cima	X	Volcanics	H45	V/Black
VA022	Frosty		Volcanics	H03	Grey
VG021	Maui		Volcanics	H49	Maui
VW001	Gemini		Volcanics	H36	Silver

Fig.2

3. Bonding Surface to Surface

Due to the Quartz ingredients used larger chips a continuous natural flow during the manufacturing process should be realized. Those chips have a special position of direction which could cause a certain colour difference when turning the sheets during fabrication process into different directions of assembling.

Therefore when bonding two sheets together it is important to ensure to bond the pieces best in one direction but never in opposite – see Fig.5 & Fig.6. Do not turn around a second sheet by 180°. This eventually avoids a certain colour difference you may see after the sanding process only

Always follow the continuous production flow by ensuring the printing on the back side of the sheets (Fig.5&7) always follows one direction – never going in opposite directions (Fig.6). On an application such as an L- or U- shaped counter top or a big conference table always ensure the underside printing is going in one direction.

4. Assembling

Following the production direction

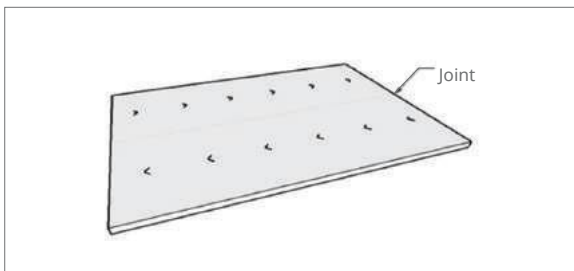


Fig.3 Sample of sheet assembling

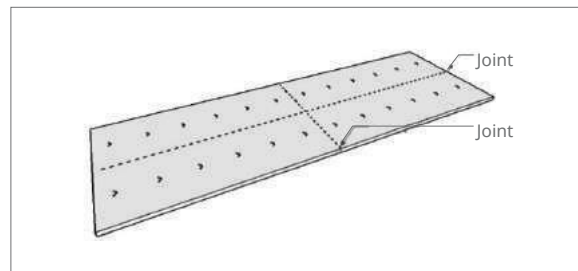


Fig.4 Sample of sheet assembling

5. Volcanics Family Pattern

When preparing a curved upstand (Fig.8) or downturn, customers may not accept the final result. However, one may not compare, though with Solid colours used in the kitchen market. A downturn or an upstand are best achieved with a 45° angle or a profiled folding option – see Fig. 6 & 7 (V-grooving).

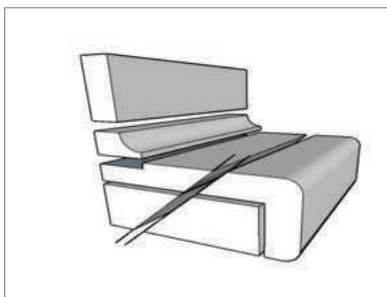


Fig.5

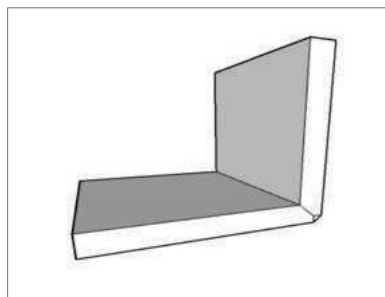


Fig.6

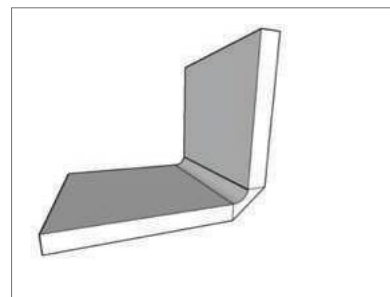


Fig.7

► Further details, please find under TDS "Edge Treatments & Downturns"

6. Edge Bonding

To let the pattern flow around the edges a 45° angled cut off the edge or an alternative rebate is one of the best solutions.

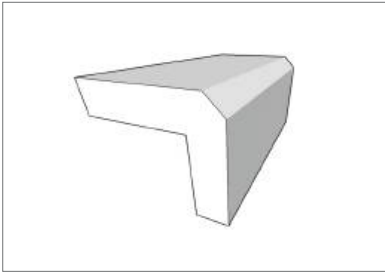


Fig.8

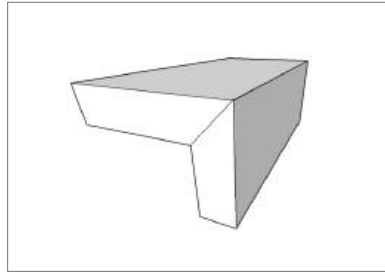


Fig.9

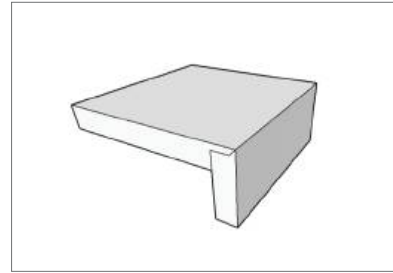


Fig.10

For the bonding process of the edges please follow the instructions above or check further on TDS "Edge Treatments & Downturns".

Always make a "Quality Check" before handing over the project to the customer.

7. Edge Preparation & Build Up

HIMACS sheets are delivered with a sanded backside of the sheet where it is highly recommended to sand smooth or to trim the edge making a rebate.

Turn the sheet over so that the back of the sheet is upside-down and you can work comfortably.

Ensure the HIMACS sheet does not sag and the sheet is properly supported at each position and do not round the edge of the bonding area.

Using a rebate at the back of the sheet for the edge treatment also has the advantage to:

- take away the rough sanding marks and
- allows stopping the edge on a fine line
- to avoid using gluing blocks or
- Any kind of ruler or gluing templates.

Check all edges carefully before bonding. Ensure that no chips are broken out and no heavy marks of the saw blade or any whitening of the edge is visible.

Create the rebate that approximately 0,5mm of the sheet will hang over to trim off later after the adhesive cured.

Put all necessary materials and tools in place which you will need for bonding:

- Clean, white cloth
- Denatured Alcohol (or Acetone)
- HIMACS- Adhesive (check the right color) (small or large cartridge)
- Adhesive dispenser and mixer-tips
- Clamps (C-clamps or best use "Klemsia")

► Further details, please find under TDS "Drop Edges & Downturns"

8. Sanding

The sanding process is similar to the standard sanding process. When sanding with hand tools or alternative with stationary equipment ensure not to create heat on the surface to avoid any unexpected unevenness of the surface. Depending on available tools and equipment sanding time will be within the same range as with HIMACS standard products.

		Standard recommendation				
FINISH-LEVEL	MATT-FINISH	SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH		
HIMACS colour family	for all colours	for all colours		for all colours		
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper
Step 1	100/80 µ	150/180	100/80 µ	150/180	100/80 µ	150/180
	take dust away		take dust away		take dust away	
Step 2	60 µ	220	60 µ	220	60 µ	220
	take dust away		take dust away		take dust away	
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 µ	280/320	30 µ	280/320
	take dust away		take dust away		take dust away	
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 µ	380/400
	take dust away		take dust away		take dust away	
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 µ	600/800
				take dust away	take dust away	
Step 6				industrial paper towel	Finesse-it™ Finish- component	1200
					take dust away	
Step 7						1500 1800 2500

HIMACS Surface Sanding Process

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:	FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:	FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Matt	P 60/100	3M Hookit dust remove	Semi gloss	P 240	3M Hookit dust remove	High gloss	P 600	3M Hookit 51156
	P 120 / 150	3M Hookit dust remove		P 320	3M Hookit dust remove		Cleanup / dry	Wipe off
	P 180	3M Hookit dust remove		P 400	3M Hookit dust remove		P 1200	3M Hookit 51156
	Scotch-Brite	Marron dust remove		Scotch-Brite	Grey dust remove		Cleanup / dry	Wipe off
							P 1000	3M Trizact
							Cleanup / dry	Wipe off
							P 3000	3M Trizact
							Cleanup / dry	Wipe off
						Finesse-it	Polish paste with felt-disk	
						Wipe off	With cotton cloth	
			Dust remove	3M Scotch-Brite MS-DC 150x8mm type T white				

► Further details, please find under TDS "Sanding"

9. LRV results of Volcanics

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	LRV
VA001	Santa Ana		Volcanics	44.35
VE001	Tambora		Volcanics	59.15
VB002	Cima	X	Volcanics	15.24
VA022	Frosty		Volcanics	39.31
VG021	Maui		Volcanics	18.38
VW001	Gemini		Volcanics	84.32

Fig.6

10. Expansion

One of the main characteristics of the material is the importance of the material's expansion and contraction due to temperature change. This means: always allow the material to expand or to shrink without any possible barrier.

Expansion coefficient HIMACS according to norm DIN EN 14581:

$$\Delta t = 48 \times 10^{-6} / K$$

Allow **1.5 mm** per linear meter for expansion and contraction.

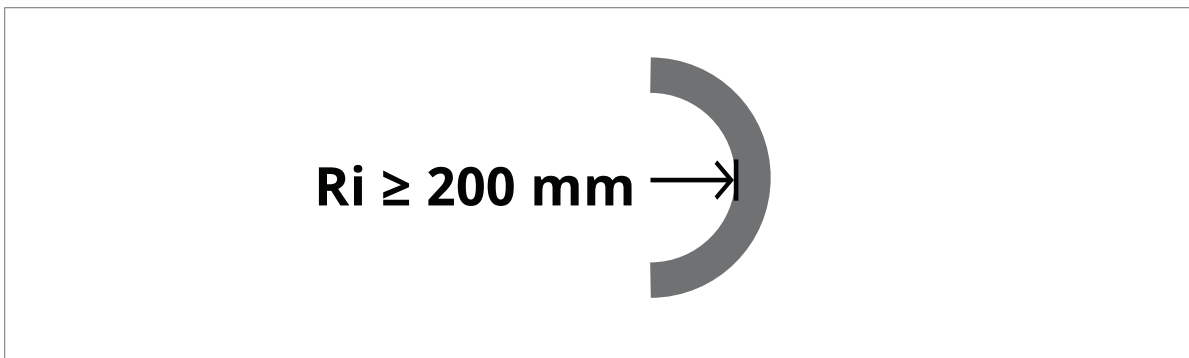
11. Thermoforming

The radius listing below is showing the standard smallest radius of each 12mm HIMACS thickness based on a white color.

Be aware that due to highly pigmented formulation easily whitening can appear in the radius, when forming on the limits – but always should become agreed with the customer if this may be acceptable or a wider radius has to be chosen.

Therefore we suggest to make customer sign off the sample you prepare for the project and keep this for further records.

For Granite



► Further Technical Information's see TDS "Thermoforming"

12. Quality Check

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CERTIFICATE OF COMPLIANCE



LG Hausys America, Inc.

LG Hausys HI-MACS® Volcanics

Restrictions: with or without LG HI-MACS® joint adhesive

4009-420

Certificate Number

08/13/2007 - 08/13/2019

Certificate Period

Certified

Status

UL 2818 - 2013 Gold Standard for Chemical Emissions for Building Materials, Finishes and Furnishings

Building products and interior finishes are determined compliant in accordance with California Department of Public Health (CDPH) Standard Method V1.2-2012 using an Office and Classroom Environment. Product tested in accordance with UL 2818 test method to show compliance to emission limits on UL 2818, Section 7.1 and 7.2.



Environment

UL Environment investigated representative samples of the Identified Product(s) to the Identified Standard(s) or other requirements in accordance with the agreement and any applicable program service terms in place between UL Environment and the Certificate Holder (collectively "Agreement"). The Certificate Holder is authorized to use the UL Environment Mark for the Identified Product(s) manufactured at the production site(s) covered by the UL Test Report, in accordance with the terms of the Agreement. This Certificate is valid for the identified sites unless there is non-compliance with the Agreement.

GREENGUARD Gold Certification Criteria for Building Products and Interior Finishes

Criteria	CAS Number	Maximum Allowable Predicted Concentration	Units
TVOC ^(a)	-	0.22	mg/m ³
Formaldehyde	50-00-0	9 (7.3 ppb)	µg/m ³
Total Aldehydes ^(b)	-	0.043	ppm
4-Phenylcyclohexene	4994-16-5	6.5	µg/m ³
Particle Matter less than 10 µm ^(c)	-	20	µg/m ³
1-Methyl-2-pyrrolidinone ^(d)	872-50-4	160	µg/m ³
Individual VOCs ^(e)	-	1/2 CREL or 1/100th TLV	-

^(a) Defined to be the total response of measured VOCs falling within the C₆ - C₁₄ range, with responses calibrated to a toluene surrogate. Maximum allowable predicted TVOC concentrations for GREENGUARD Gold (0.22 mg/m³) fall in the range of 0.5 mg/m³ or less, as specified in CDPH Standard Method v1.2.

^(b) The sum of all measured normal aldehydes from formaldehyde through nonanal, plus benzaldehyde, individually calibrated to a compound specific standard. Heptanal through nonanal are measured via TD/GC/MS analysis and the remaining aldehydes are measured using HPLC/UV analysis.

^(c) Particle emission requirement only applicable to HVAC Duct Products with exposed surface area in air streams (a forced air test with specific test method) and for wood finishing (sanding) systems.

^(d) Based on the CA Prop 65 Maximum Allowable Dose Level for inhalation of 3,200 µg/day and an inhalation rate of 20 m³/day.

^(e) Allowable levels for chemicals not listed are derived from the lower of 1/2 the California Office of Environmental Health Hazard Assessment (OEHHA) Chronic Reference Exposure Level (CREL) as required per the CDPH/EHLB/Standard Method v1.2 and BIFMA level credit 7.6.2 and 1/100th of the Threshold Limit Value (TLV) industrial work place standard (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, and Cincinnati, OH 45211-4438).



Environment

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The original document is available on our website: www.himacs.eu for download

Disclaimer

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Interior Solid Surface Material

HI·MACS

■ TECHNICAL DATA SHEET MARMO COLLECTION



Photo: studio podrini

01 |

Last Revision Year: 2022
HIMACS Technical Data Sheet

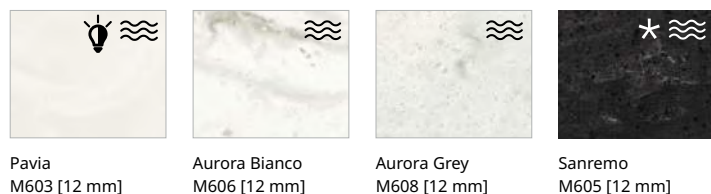
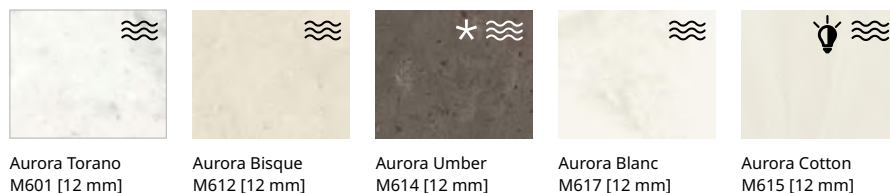
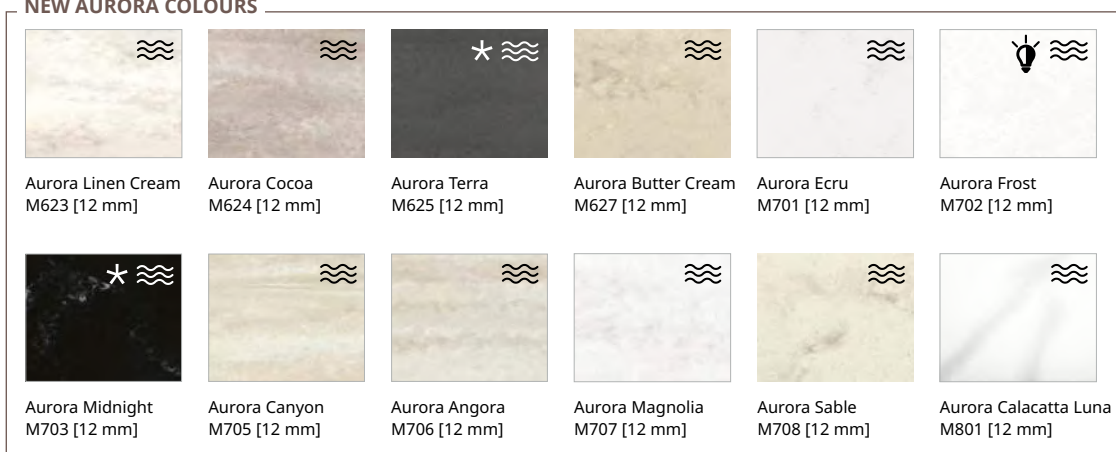
 LX Hausys

Colours belonging to the Marmo collection exhibit a greater variation in colour, shading, and pattern than is apparent in small size samples. Even A4-size samples and full-sheet photographic images can't fully capture these variations. If possible, allow the customer to view the actual material together with seaming layout examples and have the customer sign a "declaration of understanding" to help assure that the finished counter-top is consistent with customer expectations.

When fabricating Marmo colours it's important to use consecutive sheets whenever there will be a field seam or a seam creating a "U"- or "L"-shaped countertop. Even with consecutive sheets it's important to visually verify alignments before beginning fabrication. In some cases rotating one sheet 180-degrees may deliver the desired consistent or uniform alignment. In other cases it may be necessary to sacrifice some material in order to join areas that are similar. Either approach can not only deliver a more pleasing appearance but will minimise the visibility of seams and joints.

1 Product Specifications

NEW AURORA COLOURS



* The basic HIMACS material is identical for every colour but it is important to note that darker and more heavily pigmented colours will show dust, scratches, haziness, marks left by hard water and other ordinary wear and tear more noticeably than lighter textured colours. Therefore colours marked with a * are less suitable for applications that are exposed to extensive surface contact such as worktops located in heavy traffic area.

There may be deviations between the illustrated and actual colours owing to printing techniques. To receive the detailed colour range, please contact us at himacs.eu.

≈ Marmo is a randomly veined product, specific fabrication guidelines need to be followed. Ask your sales partner for more information or visit himacs.eu.

💡 Colours with this mark have a semi-translucent effect, evident when combined with light sources.

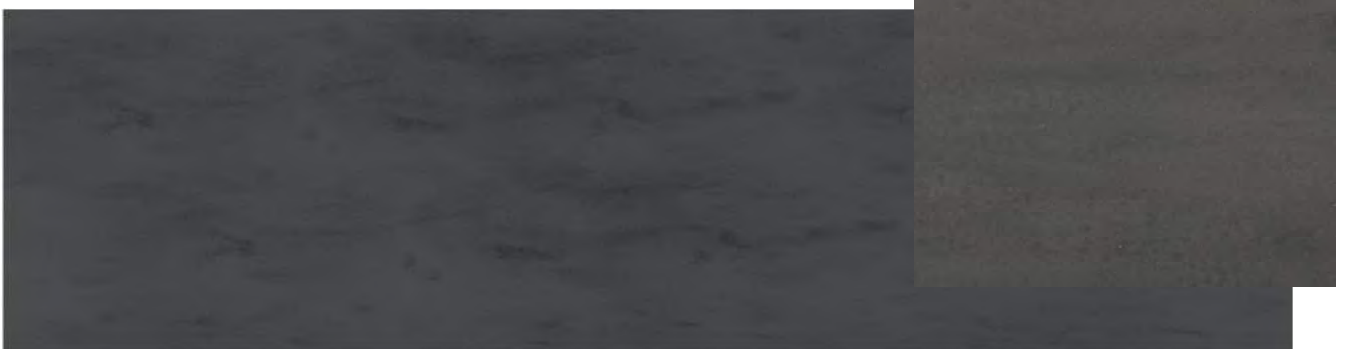
M623 Aurora Linen Cream



M624 Aurora Cocoa



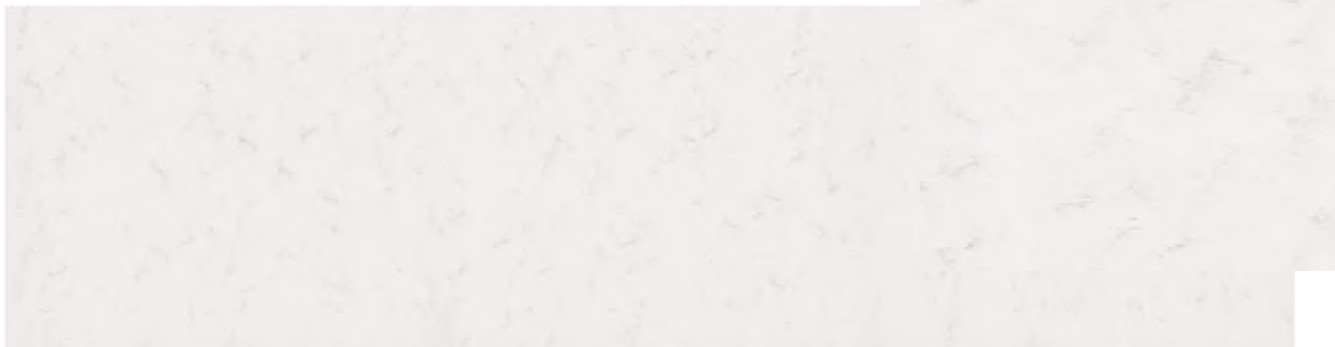
M625 Aurora Terra



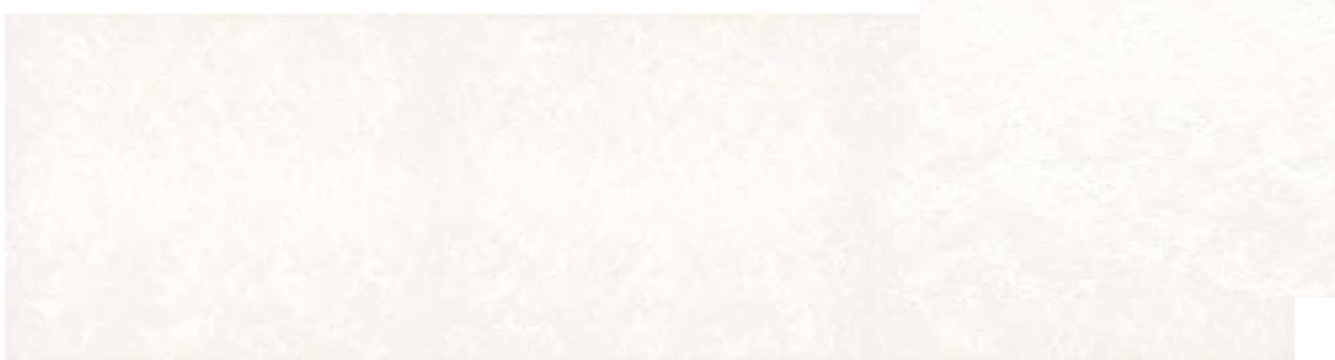
M627 Aurora Butter Cream



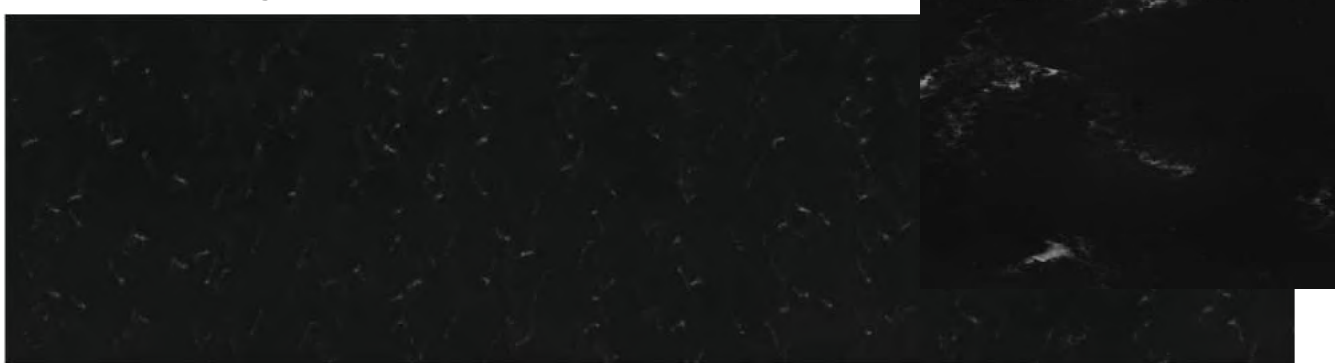
M701 Aurora Ecrú



M702 Aurora Frost



M703 Aurora Midnight



M705 Aurora Canyon



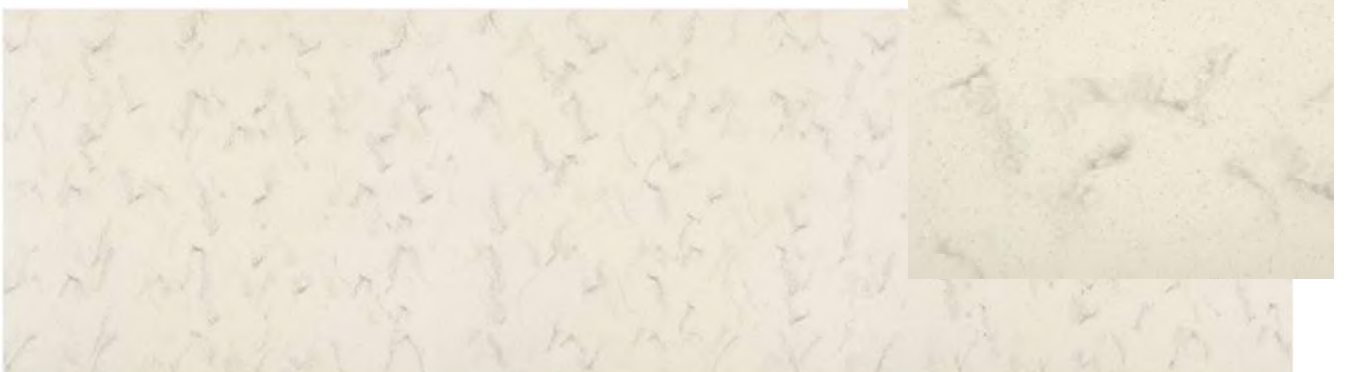
M706 Aurora Angora



M707 Aurora Magnolia



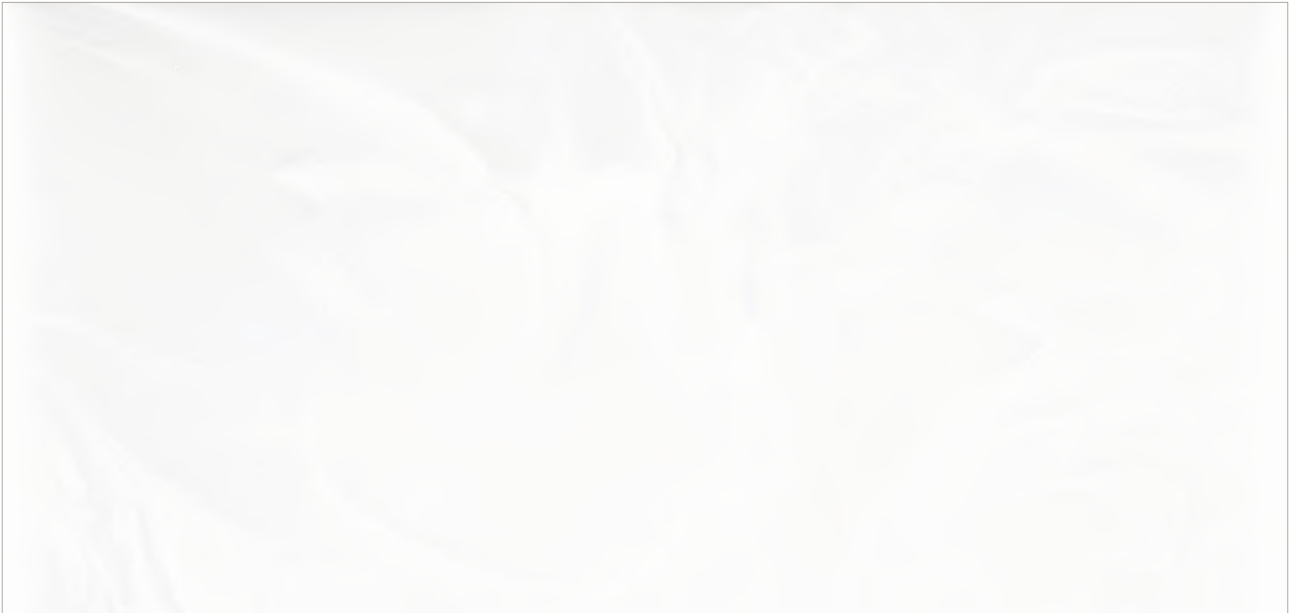
M708 Aurora Sable



M801 Aurora Calacatta Luna



M603 Pavia

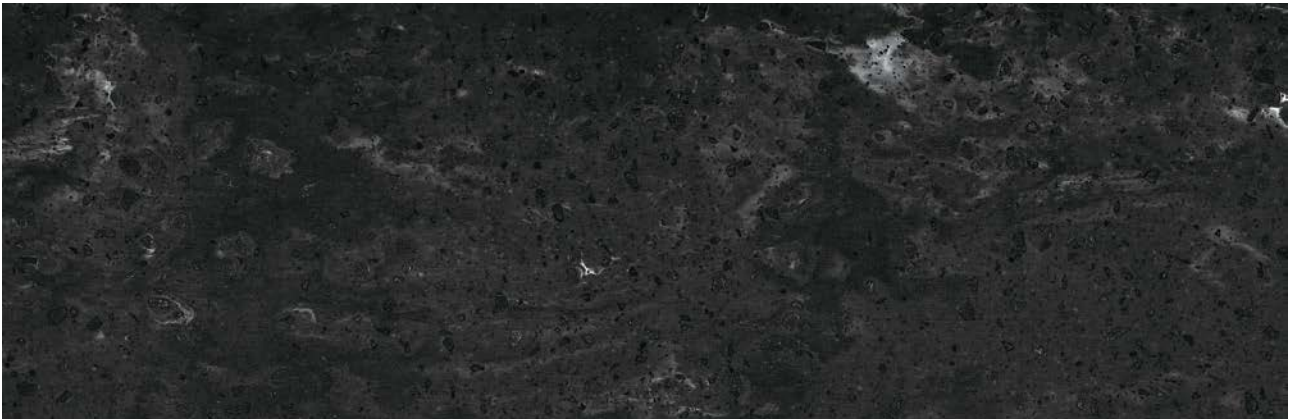


M603 Pavia does show a special translucent effect when place light behind.

Be aware of additional fabrication care and follow the instructions of HIMACS Lucent colour family in our TDS Lucent.



M605 San Remo*



*does include some copper glitter particles in specific chips. But those are very small and distributed through the whole material thickness

M606 Aurora Bianco



M608 Aurora Grey**

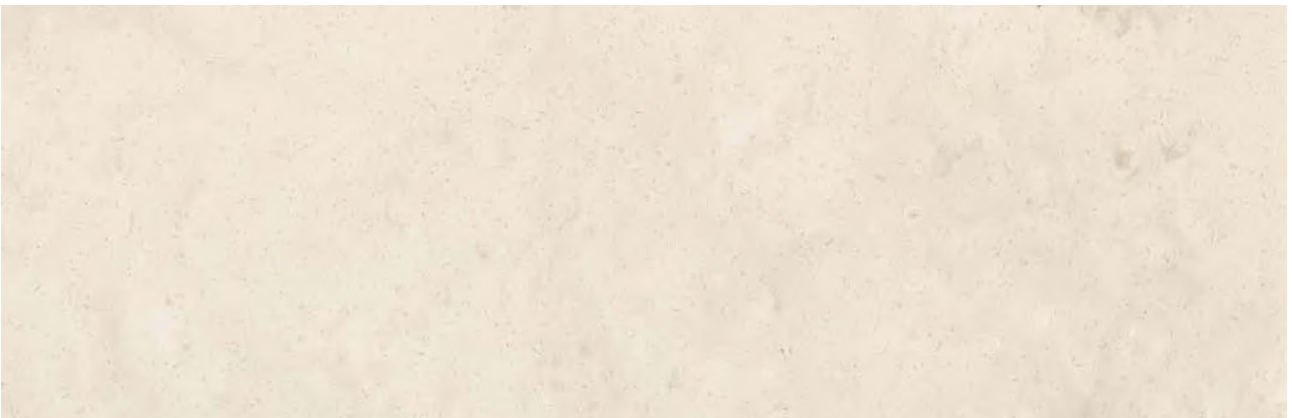


**does include some glitter particles. But those are very small and distributed through the whole material thickness

M601 Aurora Torano



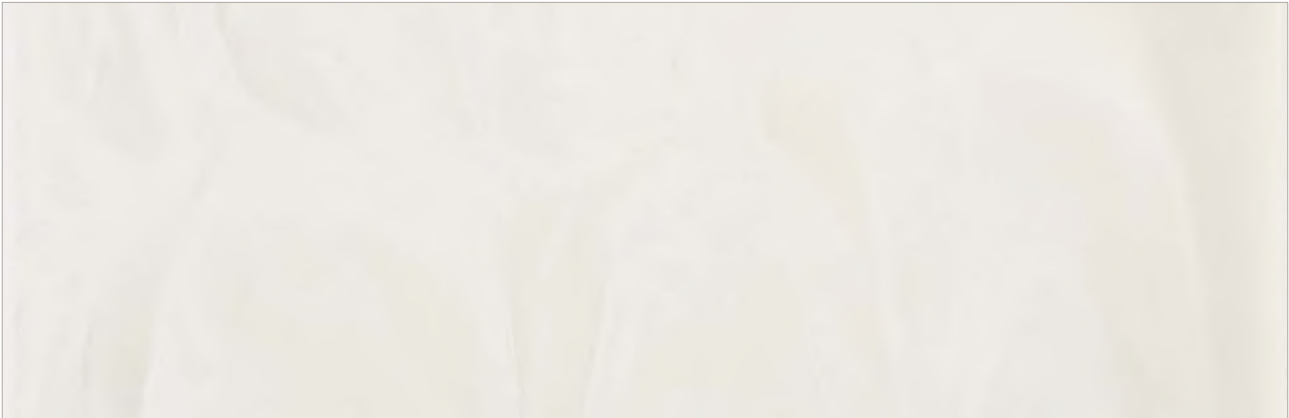
M612 Aurora Bisque



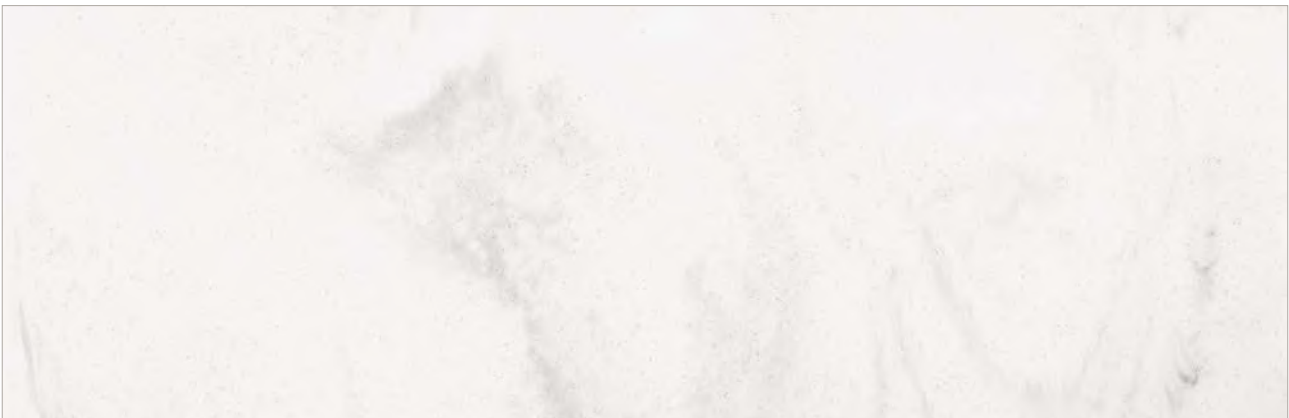
M614 Aurora Umber



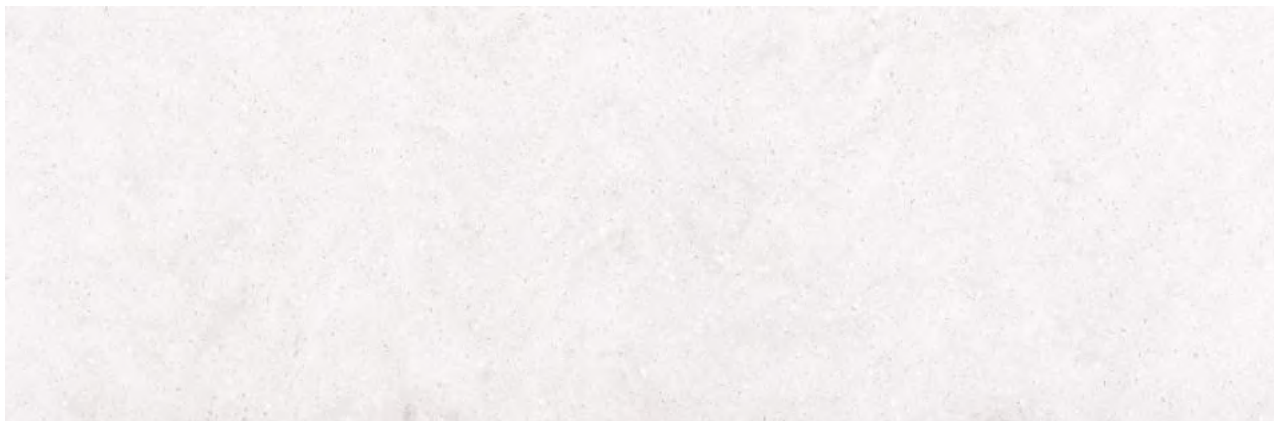
M615 Aurora Cotton



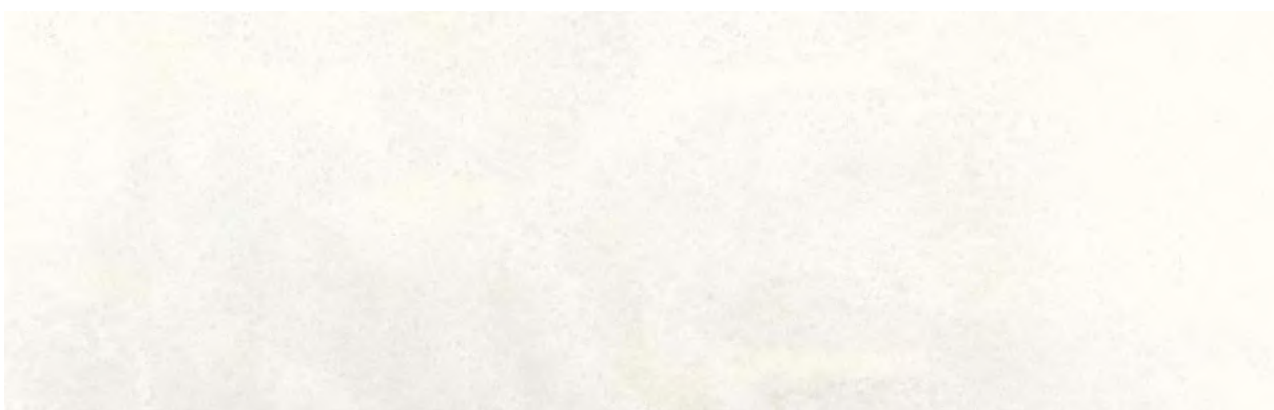
M617 Aurora Blanc



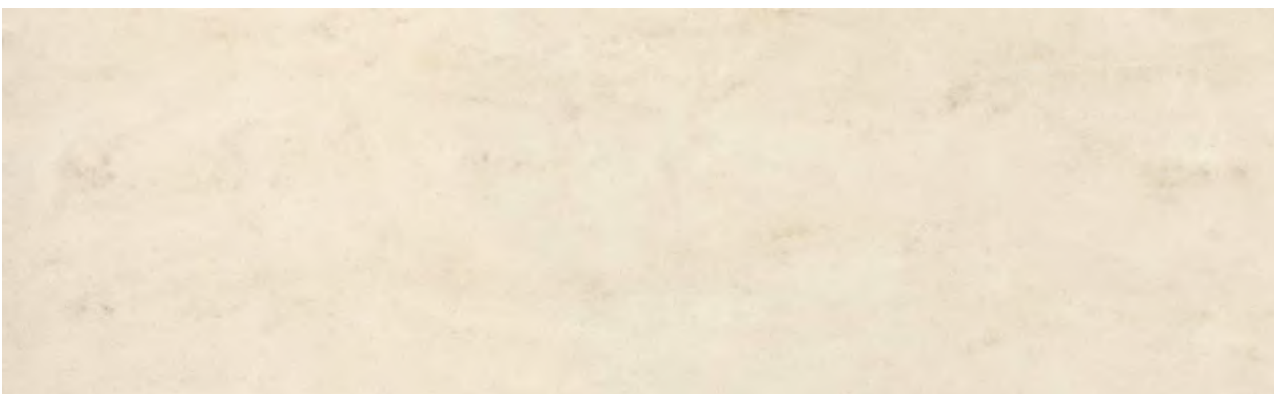
M501 Edessa



M428 Ispani



M427 Bellizzi



M201 Terni



M904 Naples



2 Sheet Specifications

GROUP	SHEET COLOUR CODE	COLOUR NAME	SHEET THICKNESS	SHEET SIZE (WIDTH X LENGTH)	M ² PER SHEET	WEIGHT PER SHEET	WEIGHT PER M ²	SHEETS PER PALLET
Marmo	M603	Pavia	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M605	Sanremo	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M606	Aurora Bianco	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M608	Aurora Grey	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M617	Aurora Blanc	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M615	Aurora Cotton	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M614	Aurora Umber	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M601	Aurora Torano	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M612	Aurora Bisque	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M201	Terni	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M426	Laviano	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M427	Bellizzi	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M428	Ispani	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M501	Edessa	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M904	Naples	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M623	Aurora Linen Cream	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M624	Aurora Cocoa	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M625	Aurora Terra	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M627	Aurora Butter Cream	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M701	Aurora Ecru	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M702	Aurora Frost	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M703	Aurora Midnight	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M705	Aurora Canyon	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M706	Auroa Angora	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M707	Aurora Magnolia	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M708	Aurora Sable	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M801	Aurora Calacatta Luna	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15

3 Sheet & Matching Adhesives

SHEET			ADHESIVE		
GROUP	COLOUR CODE	COLOUR NAME	COLOUR CODE	COLOUR NAME	PACKAGING UNIT
Marmo	M603	Pavia	H21	Pavia White	45 ml / 250 ml
	M605	Sanremo	H35	Dark	45 ml / 250 ml
	M606	Aurora Bianco	H02	Arctic White	45 ml / 250 ml
	M608	Aurora Grey	H139	Aurora Grey	45 ml / 250 ml
	M617	Aurora Blanc	H146	Aurora Blanc	45 ml / 250 ml
	M615	Aurora Cotton	H144	Aurora Cotton	45 ml / 250 ml
	M614	Aurora Umber	H143	Aurora Umber	45 ml / 250 ml
	M601	Aurora Torano	H02	Arctic White	45 ml / 250 ml
	M612	Aurora Bisque	H141	Aurora Bisque	45 ml / 250 ml
	M201	Terni	H68	Terni	45 ml / 250 ml
	M426	Laviano	H03	Grey	45 ml / 250 ml
	M427	Bellizzi	H36	Silver	45 ml / 250 ml
	M428	Ispani	H36	Silver	45 ml / 250 ml
	M501	Edessa	H02	Arctic White	45 ml / 250 ml
	M904	Naples	H107	Marta Grey	45 ml / 250 ml
	M623	Aurora Linen Cream	H140	Aurora Ash	45 ml / 250 ml
	M624	Aurora Cocoa	H126	Beige	45 ml / 250 ml
	M625	Aurora Terra	H39	Latte	45 ml / 250 ml
	M627	Aurora Butter Cream	H52	Babylon Beige	45 ml / 250 ml
	M701	Aurora Ecrú	H139	Aurora Gray	45 ml / 250 ml
	M702	Aurora Frost	H144	Aurora Cotton	45 ml / 250 ml
	M703	Aurora Midnight	H07	Black	45 ml / 250 ml
	M705	Aurora Canyon	H44	Mikeno	45 ml / 250 ml
	M706	Aurora Angora	H44	Mikeno	45 ml / 250 ml
	M707	Aurora Magnolia	H01	Satin White	45 ml / 250 ml
	M708	Aurora Sable	H20	Cream	45 ml / 250 ml
	M801	Aurora Calacatta Luna	H02	Arctic White	45 ml / 250 ml

■ 4 LRV Light Reflective Values and Colour Codes (Pantone - RAL - NCS)

GROUP	Sheet Color Code	Sheet Name	LRV	Pantone	RAL Classic	NCS
Marmo	M623	Aurora Linen Cream	62,39	12-0304 TPG ○ 13-0905 TPG ○ 11-0608 TPG ○ 14-1208 TPG ○	RAL 9001 ○ RAL 1013 △ RAL 1011 △	S 1005-Y20R ○ S 2005-Y40R △ S 3020-Y30R △ S 0500-N △
	M624	Aurora Cocoa	40,71	15-1309 TPG ○ 16-1320 TPG ○ 16-1310 TPG ○ 11-4001 TPG ○	RAL 8025 ▲ RAL 8025 △ RAL 9003 ○	S 3010-Y30R ○ S 4010-Y30R ○ S 5010-Y30R ○ S 0500-N ○
	M625	Aurora Terra	8,74	19-0812 TPG ○ 19-0810 TPG ○ 19-0508 TPG ○	RAL 8019 ○ RAL 9004 ○ RAL 8028 △	S 8000-N ○ S 8000-Y50R ○ S 8500-N ○
	M627	Aurora Butter Cream	38,06	15-1308 TPG ○ 13-5304 TPG ○ 17-1210 TPG ○ 11-1001 TPG ○	RAL 1019 △ RAL 9001 ○ RAL 8025 ▲	S 3005-Y20R △ S 2005-Y20R ○ S 5010-Y30R △ S 1002-Y ○
	M701	Aurora Ecrú	68,16	12-4302 TPG ○ 17-1210 TPG ○ 15-0000 TPG △	RAL 9002 △ RAL 7044 △ RAL 7006 △	S 1000-N △ S 2502-Y ○ S 2502-Y ○
	M702	Aurora Frost	75,21	12-4302 TPG ○ 11-4001 TPG ○ 15-0000 TPG △	RAL 9002 ▲ RAL 9003 ○ RAL 7044 ▲	S 1000-N △ S 1502-Y ○
	M703	Aurora Midnight	6,78	19-4004 TPG ○	RAL 9001 ○	S 9000-N ○
	M705	Aurora Canyon	58,47	12-5202 TPG ○ 15-1218 TPG ○ 16-1212 TPG △ 11-4001 TPG ○	RAL 9001 ○ RAL 1015 △ RAL 1011 △ RAL 9003 ○	S 1005-Y20R ○ S 2005-Y20R △ S 3020-Y20R ○ S 0500-N ○
	M706	Aurora Angora	57,08	12-5202 TPG ○ 15-1218 TPG ○ 16-1212 TPG △ 11-4001 TPG ○	RAL 9001 ○ RAL 1015 △ RAL 1011 △ RAL 9003 ○	S 1005-Y20R ○ S 2005-Y20R △ S 3020-Y20R ○ S 0500-N ○
	M707	Aurora Magnolia	65,92	12-4302 TPG ○ 14-1208 TPG ○ 13-0907 TPG △ 14-0002 TPG ○	RAL 9003 ▲ RAL 1019 △ RAL 1011 △ RAL 7047 △	S 1002-Y △ S 3010-Y30R ○ S 2502- △
	M708	Aurora Sable	56,43	13-0905 TPG ○ 17-1105 TPG ○ 13-0607 TPG △	RAL 1013 △ RAL 1019 △ RAL 7006 △	S 1005-Y20R △ S 1002-Y △ S 2005- ○ S 5005- Y20R ○
	M801	Calacatta Luna	81,89	11-0601 TPG ○ 12-4302 TPG △	RAL 9003 ○ RAL 9002 ○ RAL 7044 △	S 0502-G ○ S 1002-Y ○ S 1502-Y △

GROUP	SHEET COLOUR CODE	COLOUR NAME	LRV	PANTONE	RAL	NCS
Marmo	M603	Pavia	77.22	11-0601 TPX 11-4800 TPX	RAL 9003 ○	
	M605	Sanremo	8.49	19-4006 TPX 19-0000 TPX	RAL 8019 ○ RAL 9005 ○ RAL 9010 ○ RAL 8017 ○	
	M606	Aurora Bianco	78.35	11-0601 TPX 13-4403 TPX	RAL 9003 ○ RAL 7045 ○ RAL 9002 ○	
	M608	Aurora Grey	58.52	13-4403 TPX 12-0404 TPX	RAL 7047 △	
	M617	Aurora Blanc	77.12	11-4800TPG ○ 11-0601TPG ○ 16-4703TPG ○	RAL 9003 ○ RAL 7047 ○ RAL 7042 ○	S 0500-N ○ S 0300-N △ S 4000-N ○
	M615	Aurora Cotton	73.51	11-4202 TPG ○ 11-4001TPG △ 11-4301TPG △	RAL 9003 △	S 0500-N ○ S 0300-N △ S 1002-Y ○
	M614	Aurora Umber	13.03	19-0808TPG ○ 13-0000TPG ○ 19-3901TPG ○	RAL 7039 △ RAL 7044 ○ RAL 8019 △	S 7005-Y50B ○ S 1502-Y50R ○ S 7005-R50B ○
	M601	Aurora Torano	71.82	11-4800TPG ○ 16-0000TPG ○	RAL 9003 ○ RAL 7047 ○ RAL 7036 ○	S 0500-N ○ S 3502-R ○
	M612	Aurora Bisque	53.48	12-5202TPG ○ 12-4301TPG ○ 16-1210TPG ○	RAL 085 85 10 △ RAL 080 80 10 ○ RAL 070 70 10 ○	S 1005-Y30R ○ S 1505-Y30R ○ S 3010-Y60R ○
	M201	Terni	33.18	16-1212 TPG	~ RAL 1001 ▲ ~ RAL 1011 ▲	S 3010-Y30R ○ S 0500-N ○
	M206	Monza	9.14	19-1101 TPG	RAL 8019 ○ RAL 9005 ○ RAL 9010 ○ RAL 8017 ○	S 8000-N ○ S 8500-N ○ S 1000-N ○ S 9010-Y50R ○
	M303	Capri	67.54	19-0812 TPG 19-5708 TPG 17-1052 TPG 17-4405 TPG	RAL 8019 ○ RAL 8024 ○ RAL 7011 ○ RAL9005 ○	S 8005-Y50R ○ S 8500-N ○ S 6030-Y30R ○ S 5005-R80B ○
	M306	Breeze White	78.57	11-4800 TPG	RAL 9003 ○	S 0500-N ○ S 3000-N ○
	M422	Cremona	54.73	12-5202 TPG	RAL 9001 △ RAL 7030 △ RAL 1014 △	S 1005-Y10R ○ S 0500-N ○ S 2005-Y20R ○ S 2002-Y ○
	M426	Laviano	45.14	14-4107 TPG	RAL 7047 ○ RAL 7004 ○ RAL 7030 ○	S 2500-N ○ S 0300-N ○ S 6000-N ○ S 2002-Y20R ○
	M427	Bellizzi	8.37	11-1001 TPG	RAL 9001 △ RAL 9016 △	S 1002-Y50R ○ S 0500-N ○ S 1505-Y20R ○
	M428	Ispani	89.56	11-0601 TPG	RAL 9003	S0500-N
	M501	Edessa	75.75	11-4800 TPG 16-3802 TPG	RAL 9003 △ RAL 7047 △	S 0500-N ○ S 1000-N ○ S 3000-N ○
	M904	Naples	20.22	17-1500 TPG		S 5502-Y

- Most similar
- △ Somewhat similar
- ▲ Least similar

LRV and Colour Code, such as NCS, Pantone or RAL are only meaningful values for solid colours. The values provided by other colours are for reference only.

■ 5 Light Transmittance Value

According to test method ASTM D1003
 * Measuring Device: NDH-5000 Hazemeter



	M603 PAVIA 12 MM	S028 ALPINE WHITE 12 MM	S028 ALPINE WHITE 6 MM	S006 ARCTIC WHITE 12 MM	S006 ARCTIC WHITE 6 MM	S302 OPAL LUCENT 12MM	S009 SOLID CREAM 12MM	S005 SOLID GREY 12MM
Transmittance Value (in %)	5.68	0.03	1	3.23	9.02	9.64	4.89	0.42
Haze	88.57	100	87.35	89.55	87.9	89.97	89.16	90.43

Haze:

Transmitted light can be divided into straight transmitted light and diffused transmitted light. Diffused transmitted light causes an opaque cloudy appearance, so high Haze reduces transparency.

$$\text{Haze} = \frac{\text{Diffraction transmittance}}{\text{Total transmittance}}$$

6 Fabrication

6.1 Special Sheet Characteristics

Customer expectations are best managed by fully educating the customer about product characteristics. For instance, the “motion” or “veining” that appears on the surface doesn’t continue directly through the sheet thickness. The top of a Marmo sheet looks nothing like the bottom of that sheet and the cross-section looks nothing like either surface. Some of these differences are shown below:



The colour and pattern distribution on the top surface changes to random layers of colours and stripes distributed through the material’s thickness.

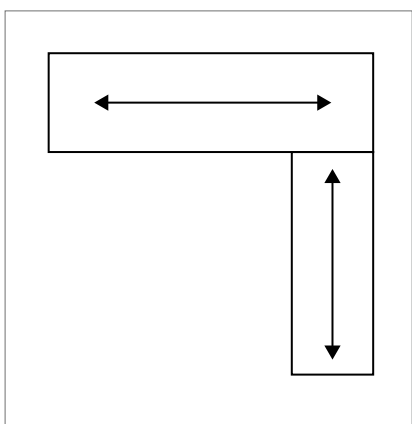


Conventional “stacked” or “built-up” edges generally can not be used due to the dramatic colour and pattern differences as seen in this image.

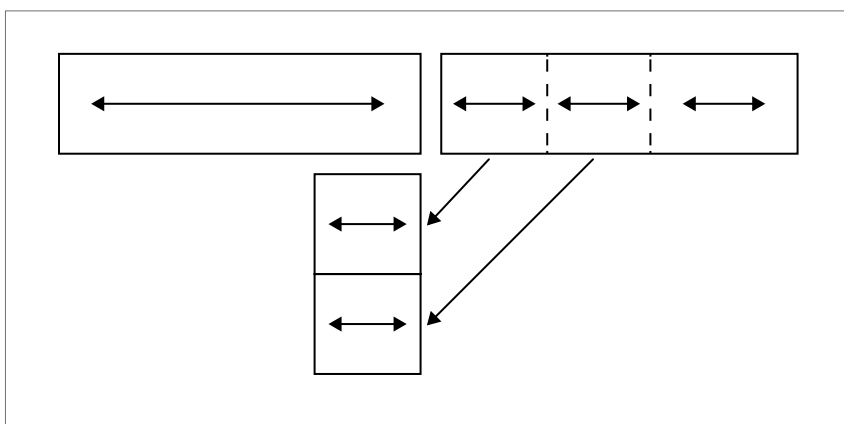
Note: Marmo is the same material as any other HIMACS product, but it requires special consideration in order to fabricate an aesthetically pleasing finished product. We strongly advise the fabricator to confirm that the purchaser and the end user understand these considerations before proceeding.

6.2. Sheet to Sheet bonding flow

Fabricating an “L-shape” or “U-shape” countertop presents other challenges. Depending on the character of the HIMACS material, in some cases you may wish to have the “extension(s)” placed perpendicular to the primary surface (Example 1) . In other cases you may find that placing the “extension(s)” on the same plane as the primary surface works best (Example 2). There’s no way to determine which method will work best with any particular colour other than to visually evaluate the configurations.

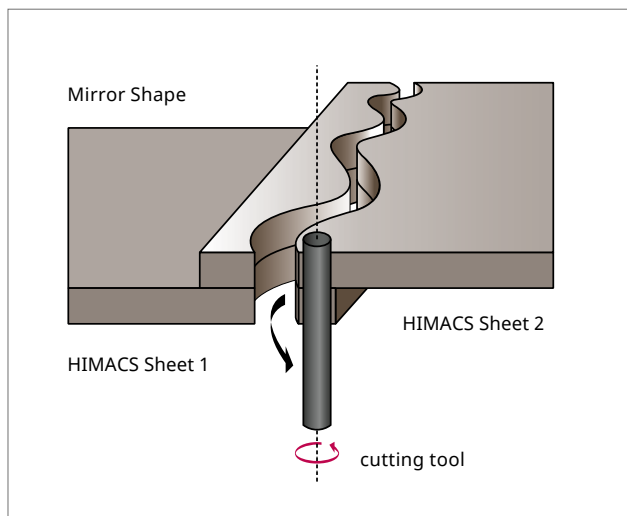
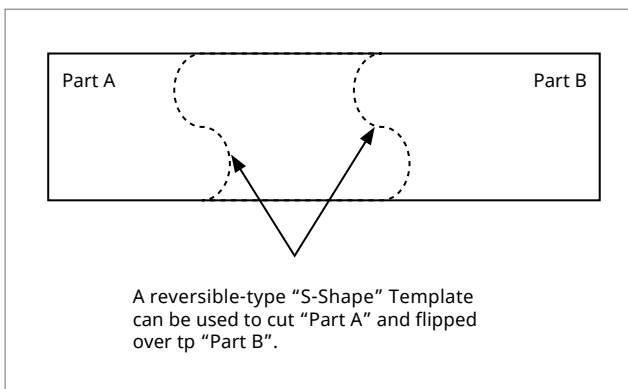


Example 1

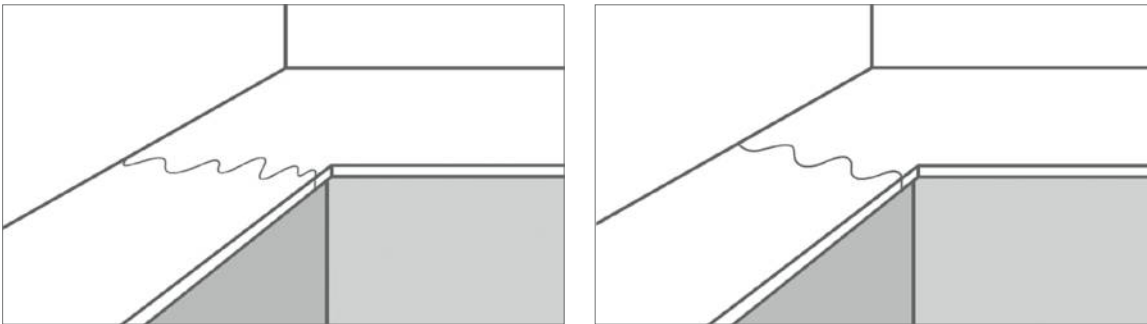


Example 2

Fabricating field seams using an “S” seam can help make those seams less visible. “Inconspicuous” seams are extremely difficult to create, but creating the seam in an “S” shape will help to reduce the visual impact when two pieces of material with random patterns and colour distribution are joined.



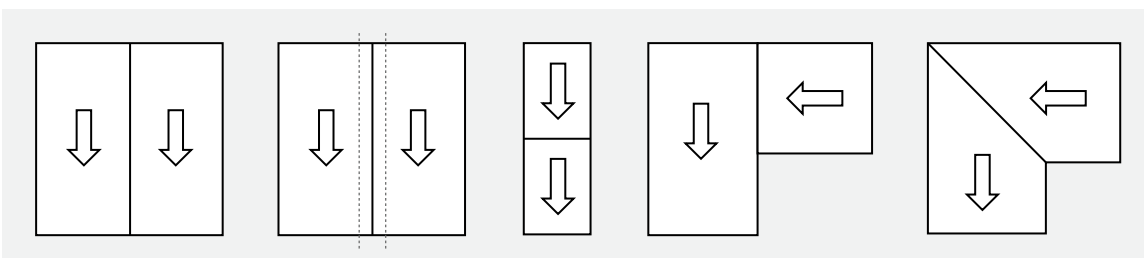
To achieve the best result of the visible pattern direction, particularly with the Marmo colours: an irregular seam flow may be more effective and shows less pattern chip/structure cut between one to the other sheet.



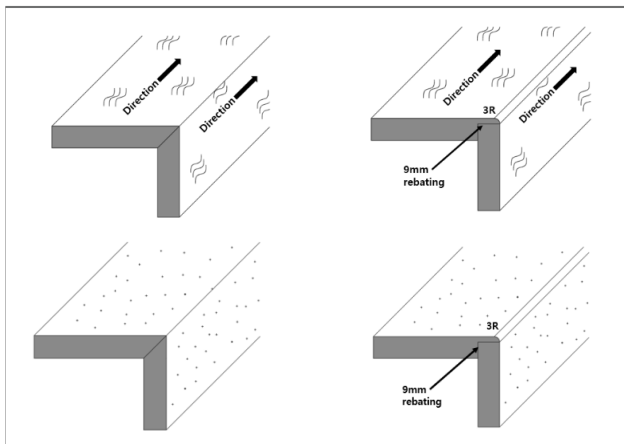
An even more irregularly directed cut has to be prepared absolutely straight and also parallel. Then re-sand with sandpaper of approx. 180grit (or 60 micron). Always clean the cut edges with a white cloth and use denatured alcohol or acetone. Ensure the edge is absolutely straight when making a “butt”-seam. Better still, make a profile, such as a tongue and groove. Ensure always to fabricate a re-enforcement strip (for kitchen worktops a 45° angled edge and smooth the adhesive line) from underneath. Always tighten pressure – but do not over tighten the pressure to the seam.

The adhesive is not developed as a filler for repairs. In the case of damage to the surface it is strongly recommended to make a plug repair if possible (tools are available on the market – please contact your local technical support).

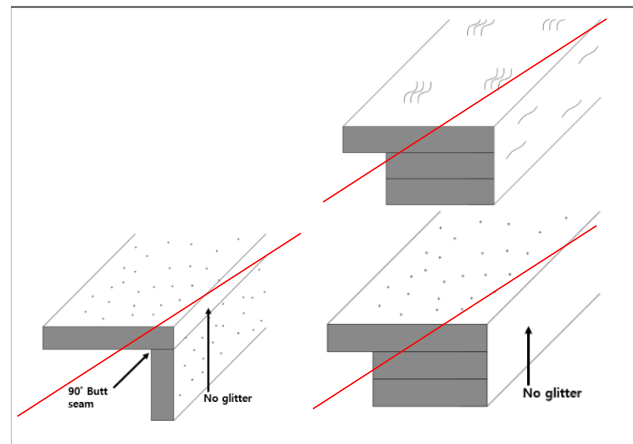
When bonding sheet to sheet double check the best veining possibility according its veining flowing look. There’s no way to determine which method will work best with any particular colour other than to visually evaluate the configurations. Again, We strongly advise the fabricator to confirm that the purchaser and the end user under-stand these considerations before proceeding.



Recommended Edge design



Not Recommended Edge design



Note:

Due to the design of veins in M801 Aurora Calacatta Luna, a continuous creation of veining will be not possible to arrange and the view will be as samples below:



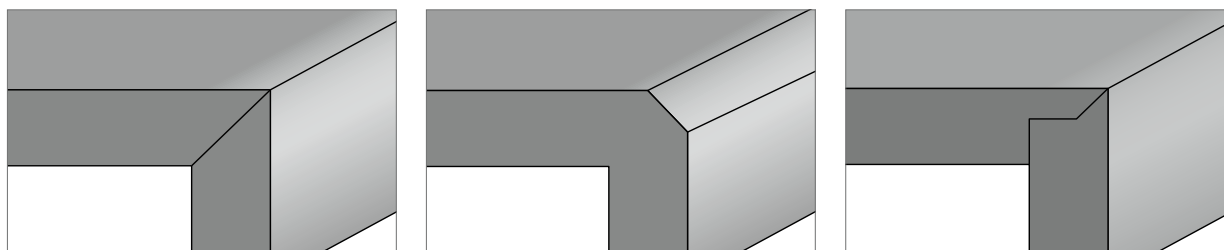
Vertical view of full sheets of M801



horizontal view of full sheets of M801

6.3 Edge bonding flow

To let the pattern flow around the edges a 45° angled cut of the edge or an alternative rebate is one of the best solutions.



Standard V-grooved

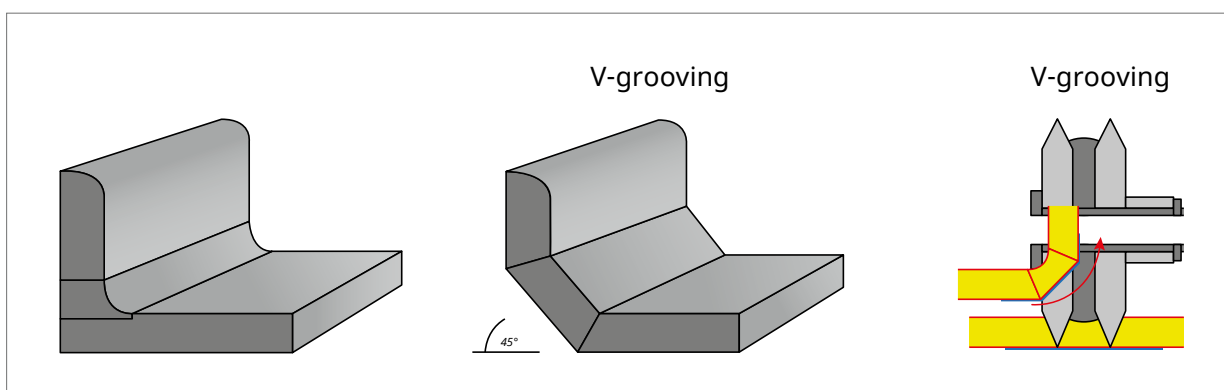
Standard with bevel

Standard V-grooved and angled

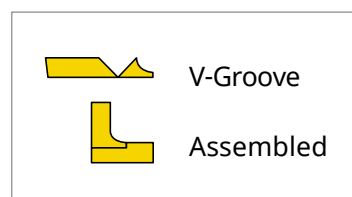
For the bonding process of the edges please follow the instructions of edge treatments. We would recommend the fabricator prepare a sample for the client and make sure that they understand all the considerations before commencing work.

6.4 Backsplash flow

To let the pattern flow around the edges a 45° angled cut of the edge or an alternative rebate is one of the best solutions.



When preparing a curved upstand or downturn, customers may not accept the final result. One may not compare, though with UNI colours used in the kitchen market. A downturn or an upstand are best achieved with a 45° angle or a profiled folding option – see picture 3 (V-grooving).



7 Sanding (Finishing)

- The reference is as recommended with our standard products:
- For further details: **See TDS-no.4 Sanding.**

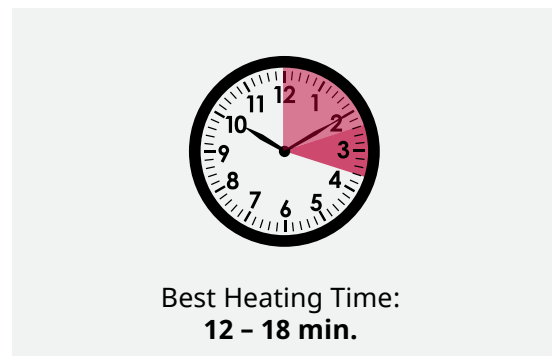
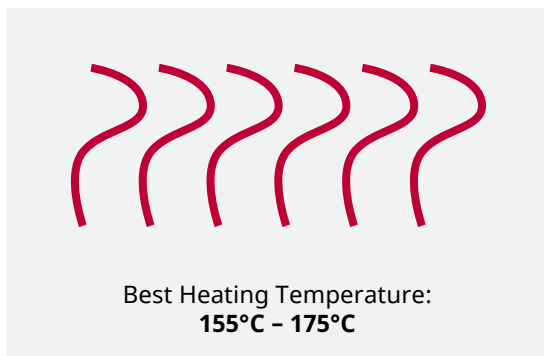


		Standard recommendation				
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH	
HIMACS colour family	for all colours		for all colours		for all colours	
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper
Step 1	100/80 μ	150/180 μ	100/80 μ	150/180 μ	100/80 μ	150/180 μ
	take dust away		take dust away		take dust away	
Step 2	60 μ	220	60 μ	220	60 μ	220
	take dust away		take dust away		take dust away	
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 μ	280/320	30 μ	280/320
	take dust away		take dust away		take dust away	
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 μ	380/400
	take dust away		take dust away		take dust away	
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 μ	600/800
			take dust away		take dust away	
Step 6				industrial paper towel	Finesse-it™ Finish-component	1200
			take dust away		take dust away	
Step 7						1500
					1800	
					2500	

8 Thermoforming

To prepare the workpieces, follow the standard thermoforming process.

For the Thermoforming process we recommend using a pre-heating oven with double sided heating plates.

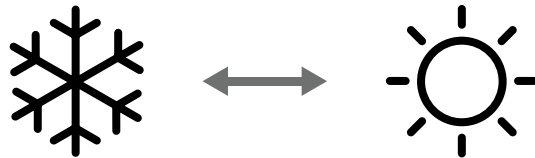


The heating time is similar to the general heating time of HIMACS products for the thermoforming process. The classification of a minimum radius for MARMO is approx. ≥ 100 mm. Be aware that any undertaking of recommended radii can cause some colour change or create some cracks. For any technical enquiry contact your local technical support.

For more detailed thermoforming equipment or any thermoforming accessories please contact global@nabuurs.com or visit the website: www.globalvacuumpresses.com

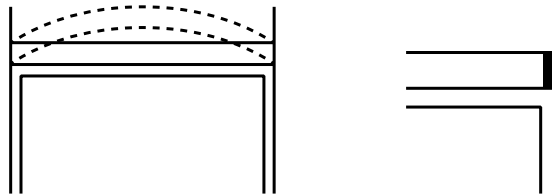


9 Thermal Expansion



Sufficient space should be given to compensate for expansion or contraction at the time of installation since this product may expand or contract depending on the temperature.

Allow 1.5 mm per linear meter for expansion and contraction.



Expansion coefficient HIMACS according to norm DIN EN 14851:

$$\Delta t = \text{ca. } 38 \times 10^{-6} / \text{K}$$

■ 10 Quality Check

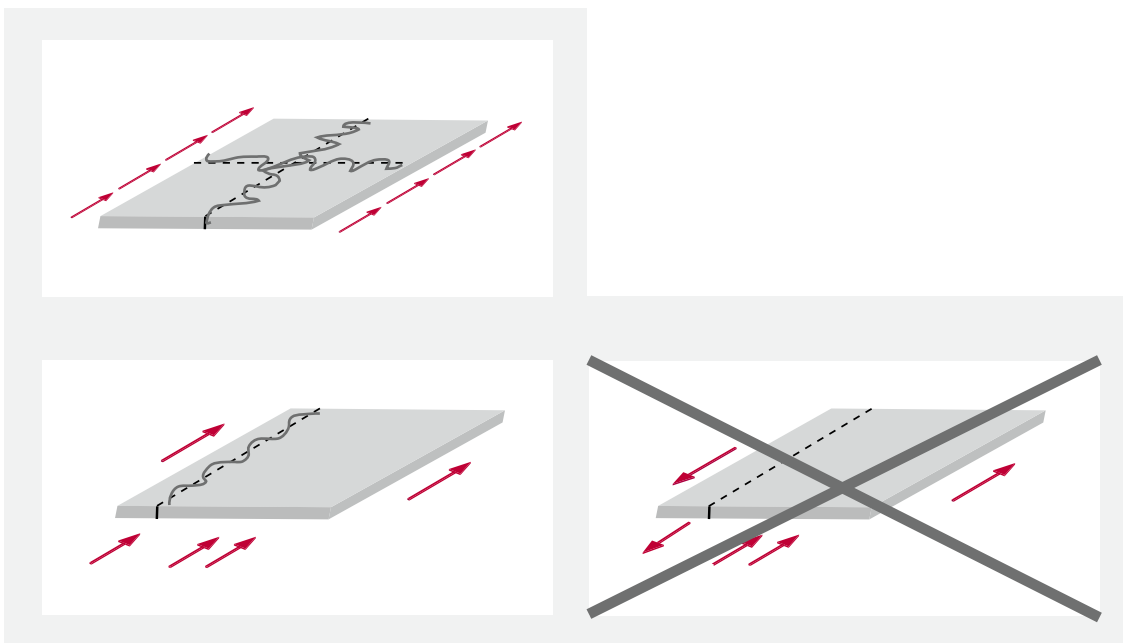
- Check any fabricated item on quality aspects before leaving the workshop.
- Any mistakes can be repaired in the workshop at the time of fabrication.
Repairs needed at a later date will be more costly and time consuming.

Important:

Remember that the 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes.

11 Summary of Hints

When using several sheets for doing one job ensure a continuous flow of sequential numbers as well as the same production flow.
Do not turn one sheet into a different direction from the next or opposite side (**no turn** of any sheet by 90°, 180° or 270°).



Marmo is the same material as any other HIMACS product, but it requires special consideration in order to fabricate an aesthetically pleasing finished product. We strongly advise the fabricator to confirm that the purchaser and the end user understand these considerations before proceeding.

The adhesive is not developed as filler for repairs. In the case of damage to the surface it is strongly recommended to make a plug repair if possible (tools are available on the market – please contact your local technical support).

Remember that the 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes.

It is Fabricators responsibility to find the best assembling arrangement of the veining layout.

Be aware that the veining may change in size when turning into a curve. As smaller the radius becomes as wider the veins gets but even more cautions to be taken, when using dark colors to avoid unexpected whitening.

12 Material Fire Performance

Marmo Sheet Pavia M603

Fire performance test according to EN 13501 carried out by EN 13823 & ISO 11925-2



Classification report No. 210643-K1 issued 27.08.2021

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3 Classification and range of application

3.1 Reference

The classification was carried out according to the chapter 11 of DIN EN 13501-1

3.2 Classification

The tested material is incorporated regarding its behaviour in case of fire into the class **B**. Concerning the smoke development the tested material is incorporated into the class **s1**. Concerning the dripping off behaviour the tested material is incorporated into the class **d0**.

The classification of the tested material reads thus:

B – s1, d0

3.3 Area of application

The classification is only valid for the material described in chapter one, in the tested colour, thickness and surface weight in free standing / free hanging configuration. The distance to other plane material must be more or equal to 80 mm.

4 Reservation

This classification report replaces not a possible required type admittance or type certification of the product.

Frankfurt 27th August 2020

R. Berger / H. Anders
Tester in charge

P. Scheinkönig
Technical Lab Leader construction product regulations



Dieser Entwurf bringt keine Rechtswirkung mit sich und kann nicht als Beweis Dritten gegenüber angewandt werden.

For the complete test to download, please visit our website: www.himacs.eu or send your request to your local HIMACS supplier.

Marmo Sheet Verona (Colour out of order)

Fire performance test according to DIN 4102-1

Test-nr.: 302710-001

Material tested: MARMO Verona

Substrate: none, freely suspended

Results from tests in the fire shaft "Brandschacht-Prüfung":

Specifications acc. DIN 4102-1		Value	Req.
Maximum of average Flue gas temperature	°C	235	≤ 200
	min:s	9:58	
Maximal flame height	cm	100	-
Time	min	9	-
Residual length	sample 1	38	≥ 0
	sample 2	35	
	sample 3	34	
	sample 4	37	
	average	cm	36
Smoke density	%*min	6,0	-

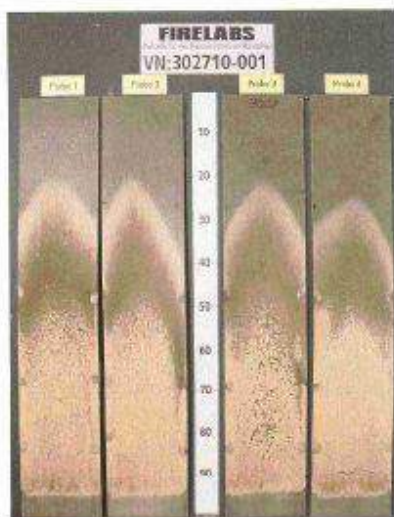
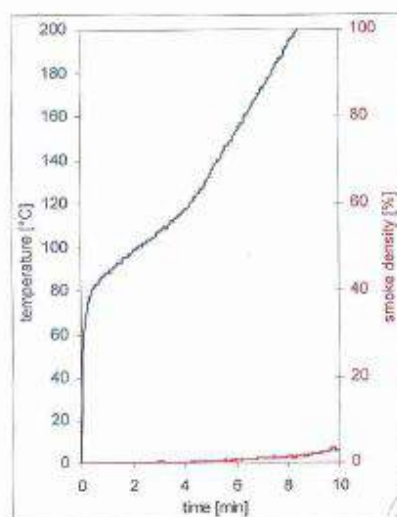


Photo of the test specimen after the test



Graphs of the flue gas temperature and the smoke density



For the complete test to download, please visit our website: www.himacs.eu or send your request to your local HIMACS supplier.

Interior Solid Surface Material

HI·MACS

TECHNICAL DATA SHEET EDEN COLOURS

1. Products

Eden



Pause
R009 [12 mm]
6% Recycled Content



Ripe Cotton
G518R [12 mm]
10% Recycled Content



Simplicity
R943 [12 mm]
6% Recycled Content



Lemongrass
G503R [12 mm]
10% Recycled Content



Honeysuckle
G504R [12 mm]
10% Recycled Content



Portland
GT945 [12 mm]
6% Recycled Content

Volcanics



Gemini
VW01 [12 mm]
Minimum 14%
Recycled Content



Tambora
VE01 [12 mm]
Minimum 16%
Recycled Content

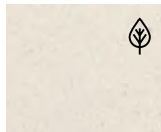


Santa Ana
VA01 [12 mm]
Minimum 13%
Recycled Content

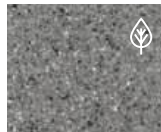
Granite



Gemini
VW01 [20/12 mm]
Minimum 14%
Recycled Content



Tambora
VE01 [20/12 mm]
Minimum 13%
Recycled Content



Santa Ana
VA01 [20/12 mm]
Minimum 12%
Recycled Content



Pic.1

HIMACS Eden Plus helps your project score points in the following categories:

- MR BPDO – Environmental Product Declaration – Option 1: Environmental Product Declaration.
- MR BPDO – Sourcing of Raw Materials – Option 1: Raw Material Source and Extraction Reporting
- MR BPDO – Material Ingredients – Option 2: Material Ingredient Optimization
- MR BPDO – Material Ingredients – Option 3: Supply Chain Optimization
- EQ Crédit: Low-Emitting Materials

This Technical information summarizes specific characteristics and properties of HIMACS material which have to be taken into consideration when fabricating or installing HIMACS products. This Technical Information gives a basis to ensure the correct use of this high performance material and meet customers' and end-consumers' expectations whilst building an additional cornerstone for LX Hausys Europe GmbH HIMACS 15-year limited Warranty Program.

Hint:

Before starting any fabrication: take note of the printed sheet-number of each sheet. Ensure to work with sequential sheet numbers and mark always the production flow even and best when assembling any kind of project.

■ 2. Fabrication

2.1 Material preparation

When fabricating Eden colours of HIMACS there is almost no difference from the standard HIMACS products in fabricating or installing. There is even no difference to the smell during the fabrication process due to the acrylic based material where the formulation has been changed slightly but composed of the same ingredients.

Always handle the material with care to avoid any additional uncontrolled scratching from the top or the back of the sheet.

When cutting HIMACS translucent material always use a new and sharp saw blade or trim off with a sharp CNC router to the size required.

Ensure the sawing machine is properly adjusted and that it is running correctly and absolutely straight.

If marks of the saw blade or cutter of the trimmer are visible ensure to re-sand the edges by using 180 or 220 (240) grit sandpaper.

Ensure not to sand the edge round to avoid a bad result of the seam afterwards.

Prepare the back of the sheet by re-sanding or rebating (by a step of 1-2mm) of the place where the edge will be placed.

When chips break out during cutting, change saw blade or trim off with an electrical plane or spindle moulder.

2.2 Bonding

In case of bonding – clean edges as usual and press the work pieces as standards.

Use the recommended translucent adhesive colours. Squeeze and press out the first couple of cm of glue line and control if the colour and colour pigments of adhesive are proper mixing. Then proceed with the usual bonding process and procedure of HIMACS adhesive.

When storing the adhesive don't leave the cartridge in a vertical position but store it horizontal and turn it ones in a while when not using it.

Use of Adhesive Colour Recommendation

EDEN PLUS COLOURS WITH RECYCLED CONTENT				
COLLECTION / COLOUR FAMILY	COLOUR CODE	COLOUR NAME	RECYCLED CONTENT IN %	ADHESIVE 45ML / 250ML COLOUR CODE / COLOUR NAME
Eden Plus	G504R	Honeysuckle	10%	H004 Peanut
	G503R	Lemongrass	10%	H046 Hekla
	G518R	Ripe Cotton	10%	H085 Light Gray
	GT945	Portland	6%	H046 Hekla
	R009	Pause	6%	H032 Ivory
	R943	Simplicity	6%	H020 Cream

Pic.2

COLOURS WITH RECYCLED CONTENT				
COLLECTION / COLOUR FAMILY	COLOUR CODE	COLOUR NAME	RECYCLED CONTENT IN %	ADHESIVE 45ML / 250ML COLOUR CODE / COLOUR NAME
Granite (recycled)	G180	Cotton field	min. 14%	H02 Alpine White
	G181	Windy Hill	min. 13%	H01 Satin White
	G183	Highland	min. 12%	H123 Semi transparent
Volcanics	VA01	Santa Ana	min. 13%	H03 Grey
	VE01	Tambora	min. 16%	H20 Cream
	VW01	Gemini	min. 14%	H36 Silver

Pic.3

HIMACS holds the following certifications:



Greenguard certification guarantees that products for indoor use do not exceed the upper limits for chemical emissions.



The Environmental Product Declaration (EPD) marks and documents the ecological assessment of the entire life cycle of a product.



The Finnish M1 classification presents emission requirements for building materials used in office and residential buildings with respect to good indoor air quality***.

- HIMACS has no VOC emissions* and is formaldehyde free.
- HIMACS is free from nanoparticles.
- HIMACS comes in well below the minimum occupational health and safety LCI** levels.
- Renowned institutes confirm that the material provides a high indoor air quality.

Pic.4

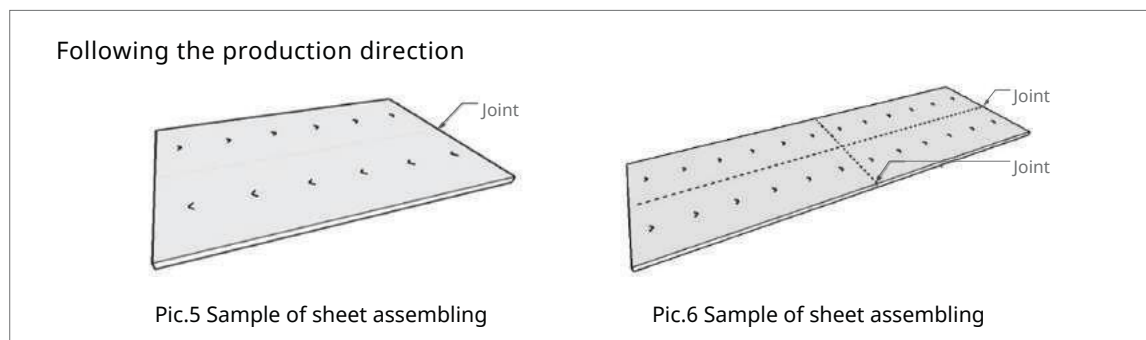
2.2 Bonding surface to surface

Due to the Quartz ingredients used larger chips a continuous natural flow during the manufacturing process should be realized. Those chips have a special position of direction which could cause a certain colour difference when turning the sheets during fabrication process into different directions of assembling.

Therefore when bonding two sheets together it is important to ensure to bond the pieces best in one direction but never in opposite – see pic.5 & pic.6. Do not turn around a second sheet by 180°. This eventually avoids a certain colour difference you may see after the sanding process only

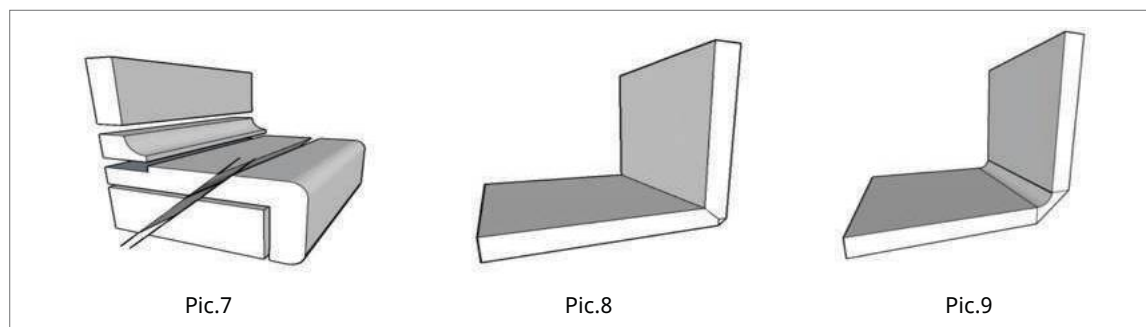
Always follow the continuous production flow by ensuring the printing on the back side of the sheets (pic.5&6) always follows one direction – never going in opposite directions (pic.6). On an application such as an L- or U- shaped counter top or a big conference table always ensure the underside printing is going in one direction.

2.3 Assembling:



2.4 Granite family pattern

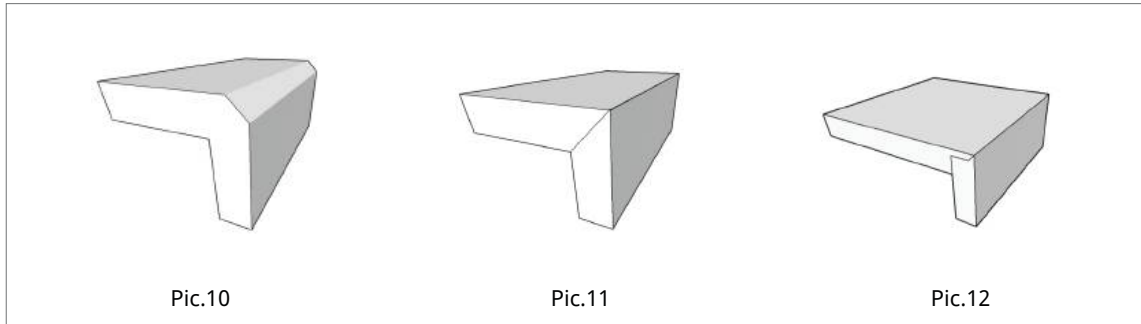
When preparing a curved upstand (pic.8) or downturn, customers may not accept the final result. However, one may not compare, though with Solid colours used in the kitchen market. A downturn or an upstand are best achieved with a 45° angle or a profiled folding option – see picture 8 & 9 (V-grooving).



► Further details, please find under Section 7.8 “Drop Edges & Downturns”

2.5 Edge Bonding

To let the pattern flow around the edges a 45° angled cut off the edge or an alternative rebate is one of the best solutions.



Pic.10

Pic.11

Pic.12

For the bonding process of the edges please follow the instructions above or check further on TDS "Drop Edges & Downturns".

Always make a "Quality Check" before handing over the project to the customer.

2.6 Edge preparation & build up

HIMACS sheets are delivered with a sanded backside of the sheet where it is highly recommended to sand smooth or to trim the edge making a rebate.

Turn the sheet over so that the back of the sheet is upside-down and you can work comfortably.

Ensure the HIMACS sheet does not sag and the sheet is properly supported at each position and do not round the edge of the bonding area.

Using a rebate at the back of the sheet for the edge treatment also has the advantage to:

- take away the rough sanding marks and
- allows stopping the edge on a fine line
- to avoid using gluing blocks or
- Any kind of ruler or gluing templates.

Check all edges carefully before bonding. Ensure that no chips are broken out and no heavy marks of the saw blade or any whitening of the edge is visible.

Create the rebate that approximately 0,5mm of the sheet will hang over to trim off later after the adhesive cured.

Put all necessary materials and tools in place which you will need for bonding:

- Clean, white cloth
- Denatured Alcohol (or Acetone)
- HIMACS- Adhesive (check the right colour) (small or large cartridge)
- Adhesive dispenser and mixer-tips
- Clamps (C-clamps or best use "Klemsia")

► Further details, please find under TDS "Drop Edges & Downturns"

3. Sanding

The sanding process is similar to the standard sanding process.

When sanding with hand tools or alternative with stationary equipment ensure not to create heat on the surface to avoid any unexpected unevenness of the surface.

Depending on available tools and equipment sanding time will be within the same range as with HIMACS standard products.

		Standard recommendation					
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH		
HIMACS colour family	for all colours		for all colours		for all colours		
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	
Step 1	100/80 µ	150/180	100/80 µ	150/180	100/80 µ	150/180	
	take dust away		take dust away		take dust away		
Step 2	60 µ	220	60 µ	220	60 µ	220	
	take dust away		take dust away		take dust away		
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 µ	280/320	30 µ	280/320	
	take dust away		take dust away		take dust away		
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 µ	380/400	
	take dust away		take dust away		take dust away		
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 µ	600/800	
			take dust away		take dust away		
Step 6				industrial paper towel	Finesse-it™ Finish- component	1200	
					take dust away		
Step 7						1500	
						1800	
						2500	

Pic.13

HIMACS Surface Sanding Process

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Matt	P 60/100	3M Hookit dust remove
	P 120 / 150	3M Hookit dust remove
	P 180	3M Hookit dust remove
	Scotch-Brite	Marron dust remove

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Semi gloss	P 240	3M Hookit dust remove
	P 320	3M Hookit dust remove
	P 400	3M Hookit dust remove
	Scotch-Brite	Grey dust remove

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
High gloss	P 600	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1200	3M Hookit 51156
	Cleanup / dry	Wipe off
	P 1000	3M Hookit
	Cleanup / dry	Wipe off
	P 3000	Marron
	Cleanup / dry	Wipe off
	Finess-it	Polish paste with felt-disk
	Wipe off	With cotton cloth

► Further details, please find under TDS "Sanding"

Pic.14

LRV results of Eden:

EDEN PLUS COLOURS WITH RECYCLED CONTENT			
COLLECTION / COLOUR FAMILY	COLOUR CODE	COLOUR NAME	LRV %
Eden Plus	G504R	Honeysuckle	28,57
	G503R	Lemongrass	42,74
	G518R	Ripe Cotton	61,02
	GT945	Portland	23,39
	R009	Pause	65,06
	R943	Simplicity	49,17

Pic.15

LRV results of Granite / Volcanics with Recycled content:

COLOURS WITH RECYCLED CONTENT			
COLLECTION / COLOUR FAMILY	COLOUR CODE	COLOUR NAME	LRV %
Granite (recycled)	G180	Cotton field	77,93
	G181	Windy Hill	61,81
	G183	Highland	20,94
Volcanics	VA01	Santa Ana	44,35
	VE01	Tambora	59,15
	VW01	Gemini	84,32

Pic.16

COLOUR CODE	COLOUR NAME	Disclaimer	Colour Family / Range	LRV
G501R	COCOA	X	EDEN	12.73
G510R	SUGAR MAPLE		EDEN	27.55
G511R	POPLAR		EDEN	41.42
G514R	BIRCH BARK		EDEN	64.99
G515R	PECAN		EDEN	26.81
G516R	HICKORY		EDEN	26.27
G517R	MOUNTAIN ASH		EDEN	37.04
G518R	RIPE COTTON		EDEN	61.06

Not Available

4. Expansion

One of the main characteristics of the material is the importance of the material's expansion and contraction due to temperature change. This means: always allow the material to expand or to shrink without any possible barrier.

Expansion coefficient HIMACS according to norm DIN EN 14581:

$$\Delta t = 48 \times 10^{-6} /K$$

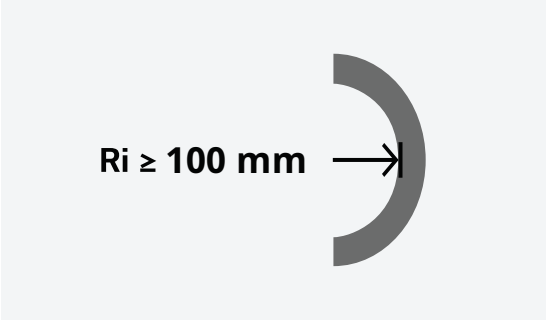

Allow **1.5 mm** per linear meter for expansion and contraction.

5. Thermoforming

The radius listing below is showing the standard smallest radius of each 12mm HIMACS thickness based on a white colour.

Be aware that due to highly pigmented formulation easily whitening can appear in the radius, when forming on the limits – but always should become agreed with the customer if this may be acceptable or a wider radius has to be chosen.

Therefore LX suggest to make customer sign off the sample you prepare for the project and keep this for further records.

For Eden	For Volcanics / Granite
	

► Further Technical Information's see TDS "Thermoforming"

■ 4. Quality Check

- Check any fabricated item on quality aspects before leaving the workshop.
- In case of any mistakes it easily can be repaired in the workshop and keeps the time of re-work very low.
- Any damage or any mistakes which will be recognized at a later time will make the fixing much more expensive.
- When backlighting check the light transmittance to avoid later claims.

Important:

The 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes neither any misuse of product recommendations.

Disclaimer

The information provided in this specific technical data sheet (TDS) or in a Fabrication Manual (FM) or Technical Information (TI) corresponds to our latest findings at the date of publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs our approval for Warranty.

This Technical Document is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since we cannot anticipate all variations in actual end-use conditions.

We make no warranties and assume no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

5. Appendix

The most important product verifications, classifications and certificates.

DGNB

German Sustainable Building Council (DGNB)

HIMACS has achieved quality level 4 of 4 – the best rating – for the local environmental impact of the overall product (2018). The DGNB system is a holistic and unique certification system for sustainable construction.

BREEAM[®]

delivered by bre

Building Research Establishment Environmental Assessment

Method (BREEAM) Among other ratings, the material complies with “Hea 02 Indoor Air Quality” for particularly good air quality. BREEAM is one of the world’s most important global rating methods for sustainable Architecture.



Leadership in Energy and Environmental Design (LEED)

Is a standard voluntary system to certify high performance of buildings, from the US Green Building Council (USGBC). LEED certifies buildings using a credit system. Architects and planners using HIMACS for their project can claim EQ Credit for Low-Emitting Materials with the category Indoor Environmental Quality (EQ).



Environmental Building Certificate - Grade “outstanding”

The Korean Air Cleaning Association certifies that HIMACS complies with the Korean regulations for environmental building materials.

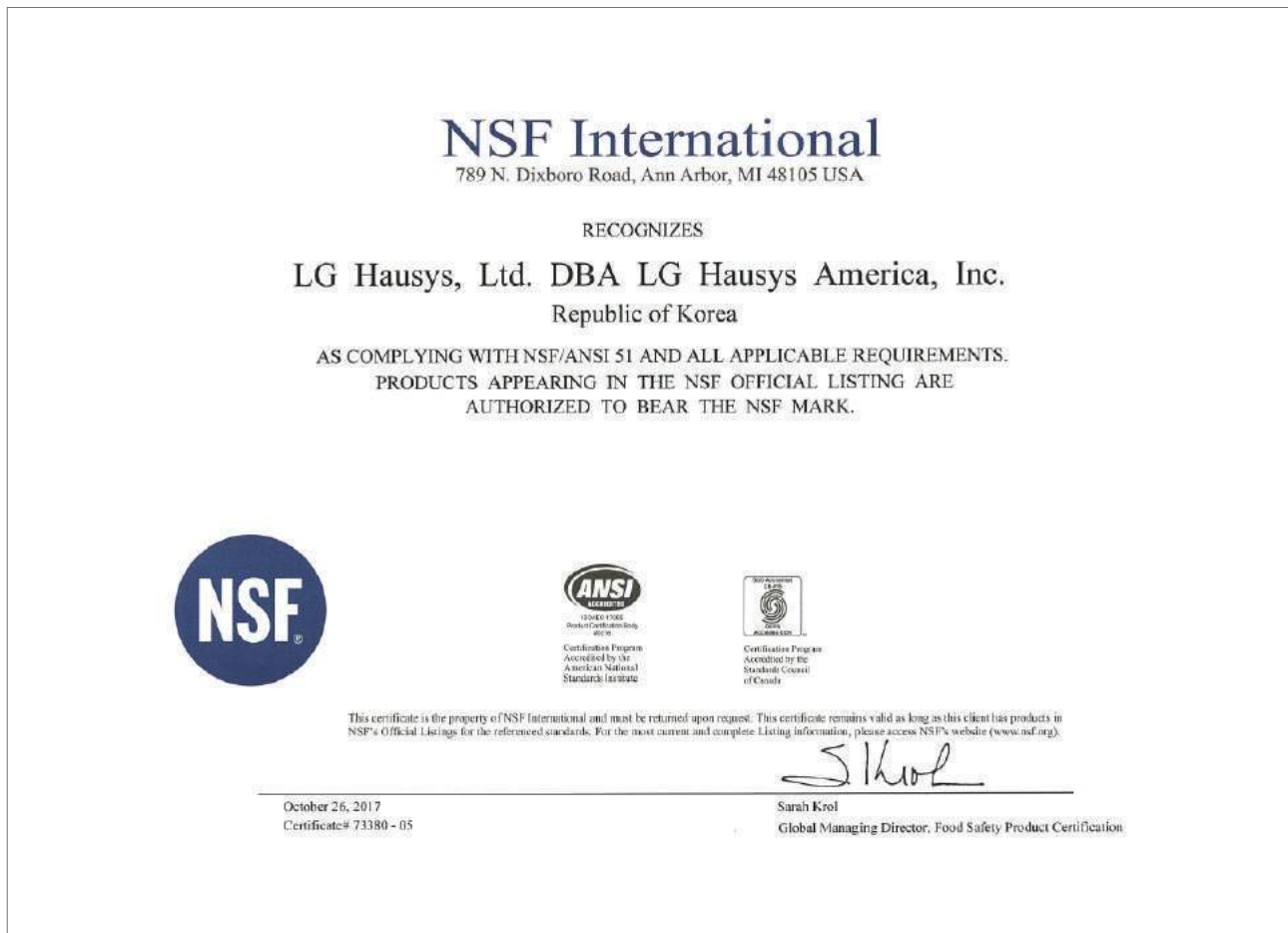
5.1 LEED value

Scoring eco-credits across the board.

The LEED (Leadership in Energy and Environmental Design) seal is a proven classification system for ecological, resource-saving and sustainable construction. The credit-based certification process rates buildings according to different criteria.

Opting for HIMACS Eden in new construction and renovation projects may provide up to 2 credits in the following LEED categories:

- Indoor Environmental Quality (IEQ)
LEED IEQ 4.1: low-emission materials, adhesives and sealants (1 credit)
- Materials & Resources (MR)
LEED MR 4.1: materials with more than 10% recycled content (1 credit)
LEED MR 4.2: materials with more than 20% recycled content (2 credits)



CERTIFICATE OF COMPLIANCE



LG Hausys
HI-MACS® Eden Plus

Restrictions: with or without LG HI-MACS® joint adhesive

4008-410
 Certificate Number
 08/13/2007 - 08/13/2021
 Certificate Period
 Certified
 Status

UL 2818 - 2013 Standard for Chemical Emissions for Building Materials, Finishes and Furnishings

Building materials are determined compliant in accordance with an Office environment with an air change of 0.68 hr⁻¹ and a loading of 3.26 m².
 Products tested in accordance with UL 2818 test method to show compliance to emission limits in UL 2818, Section 7.4.



UL investigated representative samples of the identified products to the identified standards or other requirements in accordance with the agreements and any applicable program service terms in place between UL and the certificate holder (collectively "Agreement"). The Certificate Holder is authorized to use the UL Mark for the identified Products manufactured at the production sites covered by the UL Test Report, in accordance with the terms of the Agreement. This Certificate is valid for the identified sites unless there is non-compliance with the Agreement.

GREENGUARD Certification Criteria for Building Products and Interior Finishes

Criteria	CAS Number	Maximum Allowable Predicted Concentration	Units
TVOC ^(a)	-	0.50	mg/m ³
Formaldehyde	50-00-0	61.3 (50 ppb)	µg/m ³
Total Aldehydes ^(b)	-	0.20	ppm
Particle Matter less than 10 µm ^(c)	-	50	µg/m ³
4-Phenylcyclohexene	4994-16-5	6.5	µg/m ³
Individual VOCs ^(d)	-	1/10th TLV	-

- ^(a) Defined to be the total response of measured VOCs falling within the C₆-C₈ range, with responses calibrated to a toluene surrogate. Maximum allowable predicted TVOC concentrations for GREENGUARD (0.50 mg/m³) fall in the range of 0.5 mg/m³ or less, as specified in CDPH Standard Method v2.1.
- ^(b) The sum of all measured normal aldehydes from formaldehyde through nonanal, plus benzaldehyde, individually calibrated to a compound specific standard. Hexanal through nonanal are measured via TD/GC/MS analysis and the remaining aldehydes are measured using HPLC/UV analysis.
- ^(c) Particle emission requirement only applicable to HVAC Duct Products with exposed surface area in air streams (a forced air test with specific test method) and for wood finishing (sanding) systems.
- ^(d) Allowable levels for chemicals not listed are derived from 1/10th of the Threshold Limit Value (TLV) industrial work place standard (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, and Cincinnati, OH 45221-4438).



UL investigated representative samples of the identified products to the identified standards or other requirements in accordance with the agreements and any applicable program service terms in place between UL and the certificate holder (collectively "Agreement"). The Certificate Holder is authorized to use the UL Mark for the identified Products manufactured at the production sites covered by the UL Test Report, in accordance with the terms of the Agreement. This Certificate is valid for the identified sites unless there is non-compliance with the Agreement.

CERTIFICATE OF COMPLIANCE



LG Hausys
LG Hausys HI-MACS® Volcanics
 Restrictions: with or without LG HI-MACS® joint adhesive

4009-410
 Certificate Number
 08/13/2007 - 08/13/2021
 Certificate Period
 Certified
 Status

UL 2818 - 2013 Standard for Chemical Emissions for Building Materials, Finishes and Furnishings

Building materials are determined compliant in accordance with an Office environment with an air change of 0.68 hr⁻¹ and a loading of 3.25 m².
 Products tested in accordance with UL 2818 test method to show compliance to emission limits in UL 2818, Section 7.1.



UL Investigated representative samples of the identified products to the identified standards or other requirements in accordance with the agreements and any applicable program service terms in place between UL and the certificate holder (collectively "Agreement"). The Certificate holder is authorized to use the UL Mark for the identified products manufactured at the production sites covered by the UL Test Report, in accordance with the terms of the Agreement. This Certificate is valid for the identified sites unless there is non-compliance with the Agreement.

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Formaldehyde	50-00-0	61.3 (50 ppb)	µg/m ³
Total Aldehydes ^(b)	-	0.20	ppm
Particle Matter less than 10 µm ^(c)	-	50	µg/m ³
4-Phenylcyclohexene	4994-16-5	6.5	µg/m ³
Individual VOCs ^(d)	-	1/10th TLV	-

- ^(a) Defined to be the total response of measured VOCs falling within the C₆-C₈ range, with responses calibrated to a toluene surrogate. Maximum allowable predicted TVOC concentrations for GREENGUARD (0.50 mg/m³) fall in the range of 0.5 mg/m³ or less, as specified in CDPH Standard Method v2.1.
- ^(b) The sum of all measured normal aldehydes from formaldehyde through nonanal, plus bisoxaldehyde, individually calibrated to a compound specific standard. Heptanal through nonanal are measured via TDGC/MS analysis and the remaining aldehydes are measured using HPLC/UV analysis.
- ^(c) Particle emission requirement only applicable to HVAC Duct Products with exposed surface area in air streams (a forced air test with specific test method) and for wood finishing (sanding) systems.
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SCS Global Services does hereby certify that an independent assessment has been conducted on behalf of:

LG Hausys America, Inc.

310 LG Drive SE, Adairsville, GA, United States

For the following product(s):

LG Eden Collection:

Awaken, Balance, Barley, Beauty, Enchantment, Energy, Essence, Focus, Harmony, Imagination, Loyalty, Lunar Sand, Mature, Natural, Oatmeal, Pause, Pearl White, Pebble Pearl, Poppy Seed, Portland, Profound, Relieve, Rest, Saddlebow, Serenity, Silence, Simplicity, Stable, Tranquility, and Understanding

The product(s) meet(s) all of the necessary qualifications to be certified for the following claim(s):

SCS RECYCLED CONTENT CERTIFIED

Conforms to SCS Recycled Content Standard V7-0 for a **Minimum 6% Pre-Consumer Recycled Resin Content**. The material quantification and mass-balance calculations are completed on a dry-weight basis.

Registration # SCS-MC-02807

Valid from: February 1, 2020 to January 31, 2021



Stanley Mathuram, PE, Vice President

2000 Powell Street, Ste. 600, Emeryville, CA 94608 USA

SCS Global Services does hereby certify that an independent assessment has been conducted on behalf of:

LG Hausys America, Inc.

310 LG Drive SE, Adairsville, GA, United States

For the following product(s):

LG Eden Collection:

Cocoa, Honeysuckle, Ivy, Lemongrass, and Ripe Cotton

The product(s) meet(s) all of the necessary qualifications to be certified for the following claim(s):

SCS RECYCLED CONTENT CERTIFIED

Conforms to SCS Recycled Content Standard V7-0 for a **Minimum 10% Pre-Consumer Recycled Resin Content**. The material quantification and mass-balance calculations are completed on a dry-weight basis.

Registration # SCS-MC-01491

Valid from: February 1, 2020 to January 31, 2021



Stanley Mathuram, PE, Vice President

2000 Powell Street, Ste. 600, Emeryville, CA 94608 USA

OHSAS 18001 Health & Safety Management System



MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 50958-2009-AHSO-KOR-KAB	Initial certification date: 02 December 1999	Valid: 01 December 2018 - 01 December 2021
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This is to certify that the management system of

LG Hausys, Ltd. Oksan Plant

9, Oksansandan 3-ro, Oksan-myeon, Heungdeok-gu, Cheongju-si, Chungcheongbuk-do, Korea

has been found to conform to the Occupational Health and Safety Management System standard:

OHSAS 18001:2007, K-OHSMS 18001:2007

This certificate is valid for the following scope:

Design and Manufacture of Floor Covering(Wood, Polymer), Tiles(Polymer), Carpet Tiles, Acrylic Solid Surface, Wood Polymer Composite, Insulation Materials, PVC Profiles, PVC Windows, Flexible Sign Faces, PVC Coated Fabric and PVC Laminated Fabric

Place and date:
Seoul, 15 November 2018

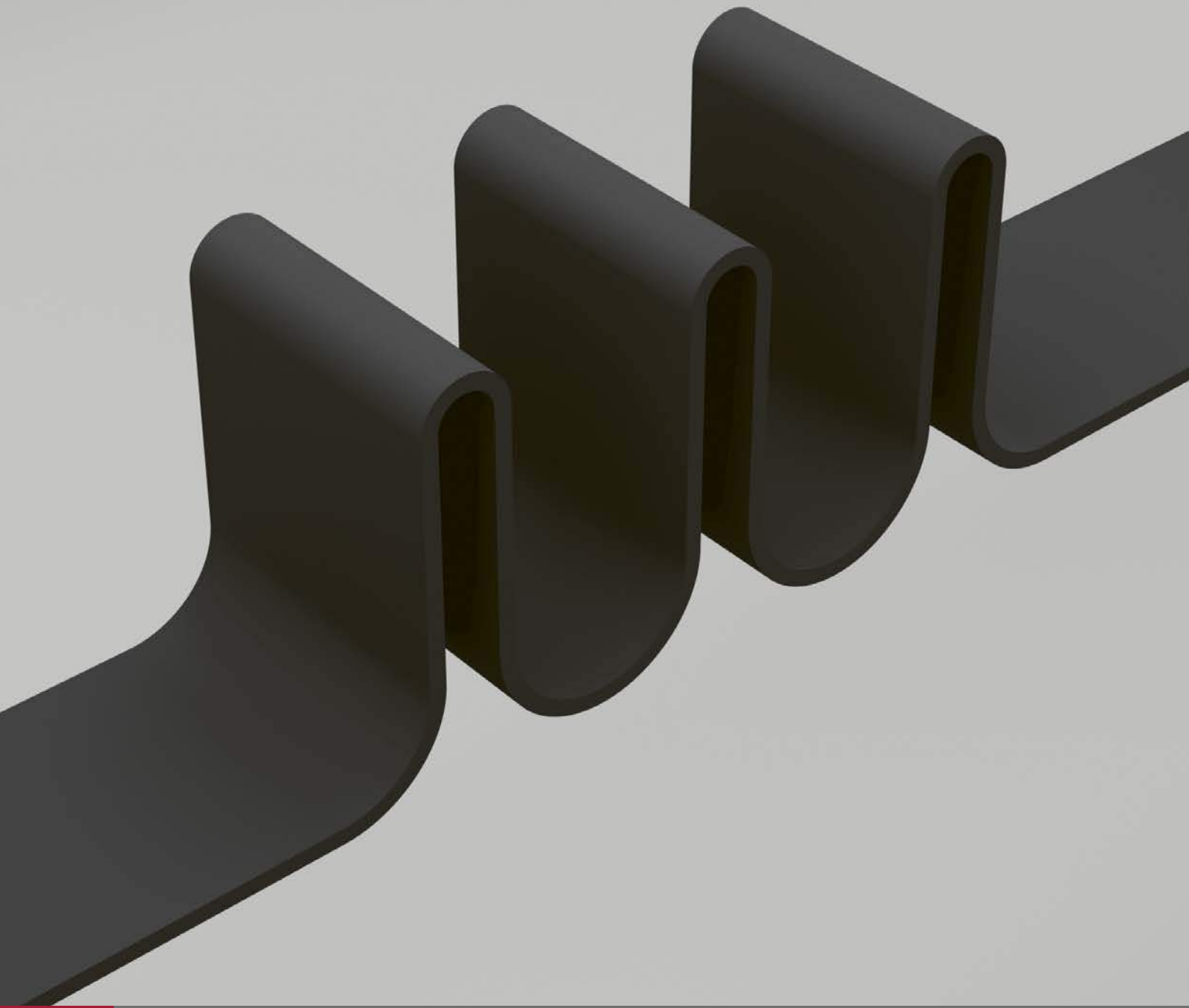


For the issuing office:
DNV GL - Business Assurance
18F, Kyobo Bldg., 1 Jong-ro, Jongno-gu, Seoul, Korea

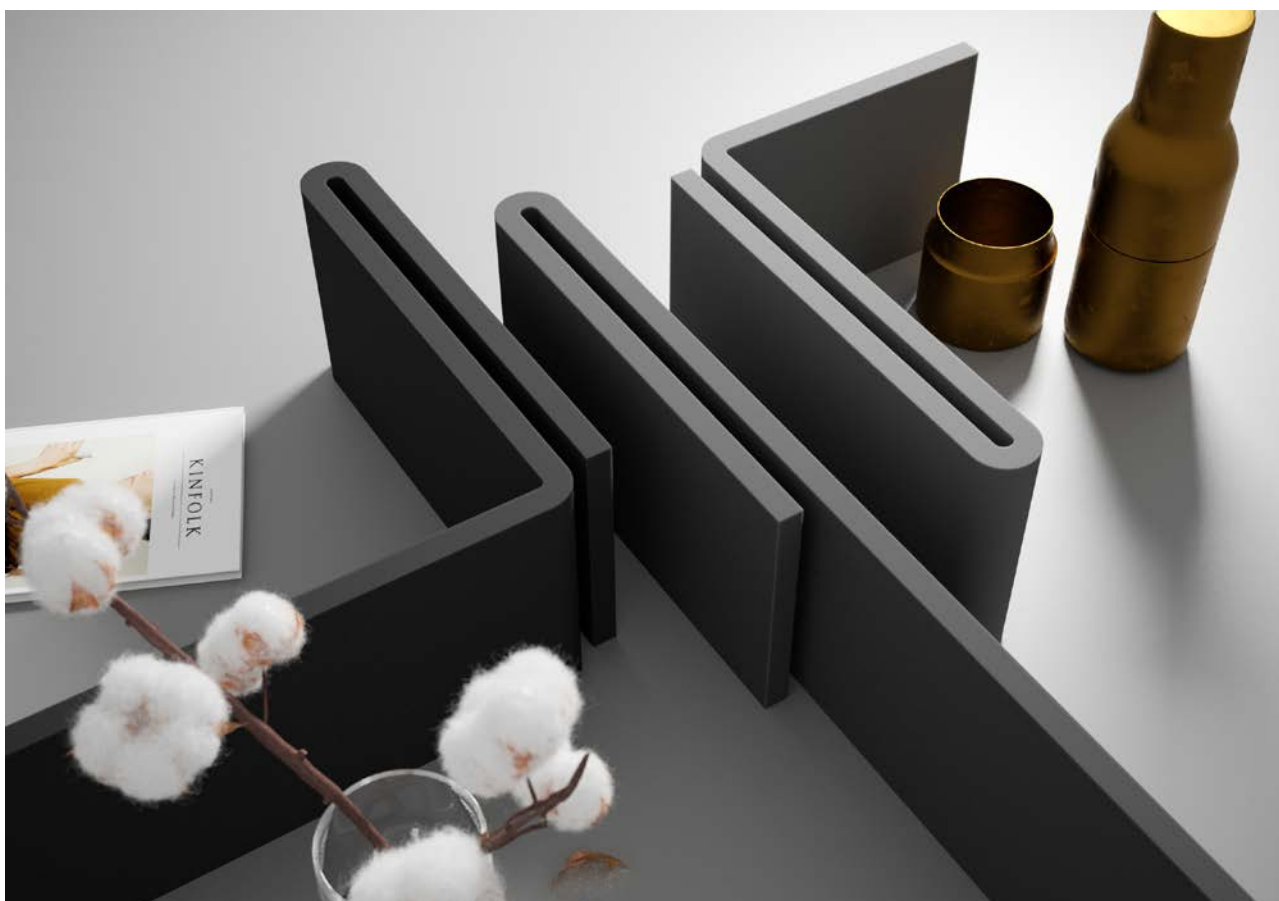
Jang-Sup Lee
Management Representative

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ACCREDITED UNIT: DNV GL Business Assurance Korea Ltd, 18F Kyobo Bldg., 1 Jong-ro, Jongno-gu, Seoul, Republic of Korea. TEL: +82 2 724 8413. dnvgl.kr/assurance

■ TECHNICAL DATA SHEET HIMACS INTENSE ULTRA & HIMACS ULTRA THERMOFORMING



■ HIMACS Intense Ultra. Work with Power.



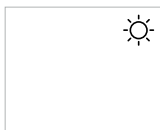
Following the launch of HIMACS Ultra-Thermoforming in its colour Alpine White, the company is now introducing **HIMACS Intense Ultra**, a revolution for the Solid Surface market which opens new possibilities for surface design.

The product range combines the characteristics from two disparate worlds: Intense Colour Technology and Ultra- Thermoforming. Dark colours become more “intense”, darker and also more resistant, with less visible scratches. The new formulation allows for colour consistency during and after fabrication, maintaining the dark colour when worked, producing less sanding dust and leaving fewer sanding marks on the surface and edges.



1. Products

1.1 Sheet Colours



Ultra-Thermoforming
Alpine White
S928 [12 mm]



HIMACS Intense
Ultra Black
S922U [12 mm]



HIMACS Intense
Ultra Dark Grey
S924U [12 mm]



HIMACS Intense
Ultra Grey
S923U [12 mm]

1.2 Product Specification

GROUP	SHEET COLOUR CODE	COLOUR NAME	SHEET THICKNESS	SHEET SIZE (WIDTH X LENGTH)	M ² PER SHEET	WEIGHT PER SHEET	WEIGHT PER M ²	SHEETS PER PALLET
Ultra Thermoforming	S928	Alpine White	12 mm	760 mm x 3680 mm	2.7968	55.38 kg	19.80 kg	15
Intense Ultra	S922U	Intense Ultra Black	12 mm	760 mm x 3680 mm	2.7968	55.38 kg	19.80 kg	15
	S923U	Intense Ultra Grey	12 mm	760 mm x 3680 mm	2.7968	55.38 kg	19.80 kg	15
	S924U	Intense Ultra Dark Grey	12 mm	760 mm x 3680 mm	2.7968	55.38 kg	19.80 kg	15

1.3 Sheets & Adhesive Colour Codes

GROUP	SHEET		ADHESIVE		
	COLOUR CODE	COLOUR NAME	COLOUR CODE	COLOUR NAME	PACKAGING UNIT
Ultra Thermoforming	S928	Alpine White	H16	Alpine White	45 ml / 250 ml
Intense Ultra 2019	S922U	Intense Ultra Black	H134	Intense Black	45 ml / 250 ml
	S923U	Intense Ultra Grey	H54	Concrete Grey	45 ml / 250 ml
	S924U	Intense Ultra Dark Grey	H135	Intense Dark Grey	45 ml / 250 ml

1.4 LRV

SHEET COLOUR CODE	SHEET COLOUR NAME	COLOUR FAMILY	SHEET LRV VALUE
S928	Alpine White	Solid	85.12
S922U	Intense Ultra Black	Solid	
S923U	Intense Ultra Grey	Solid	
S924U	Intense Ultra Dark Grey	Solid	

1.5 Sheets Colour Codes RAL – Pantone

COLOUR CODE	COLOUR NAME	RAL DESIGN	RAL CLASSIC	PANTONE
S928	Alpine White	Solid	9003	11-4201 TPX
S922U	Intense Ultra Black	Solid	9005	19-4007 TPX
S923U	Intense Ultra Grey	Solid	7016	19-4104 TPX
S924U	Intense Ultra Dark Grey	Solid	9017	19-0303 TPX

2. Fabrication

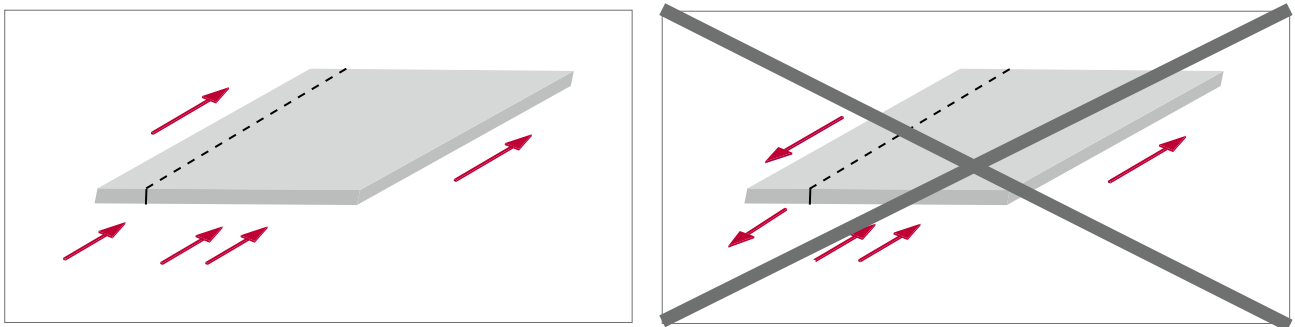
2.1 Quality check cutting

When fabricating the new HIMACS Ultra-Thermoforming, there is almost no difference to the general standard HIMACS products with regards to fabrication and installing.

Always handle the material with care to avoid any additional uncontrolled scratches from the top or the back of the sheet.

When cutting HIMACS material always use a new and sharp saw blade or trim off with CNC router accordingly to size required. Ensure cut is perfectly straight for later bonding.

Check on sheet direction to have the same production flow when assembled:



2.2 Bonding

The bonding/jointing process of the standard fabrication of the HIMACS Ultra-Thermoforming, can be done as recommended for all other available sheet colours.

Follow the Standard bonding procedures:
Fabrication Manual 2019, 72 & 73.



2.2.1 Bonding Sheet to Sheet

It is very important when seaming solids that you thoroughly clean the seams and prepares a precise mirror cut. Seaming with matrix colours, whether it be HIMACS Sands, Pearl, Quartz or granite ranges, are more forgiving, due to the variety of coloured particles. With HIMACS Intense Ultra handle the seaming carefully and straight to avoid any unexpected whitening from the result of a poorly saw blade or irregular cut.

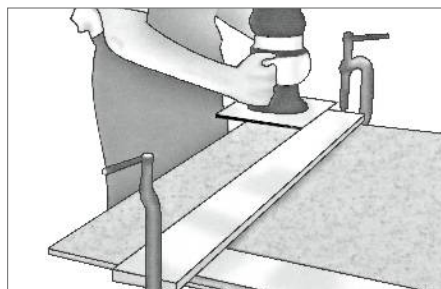
Make the edges smooth and clean before bonding.

Improved colour at cutting surface



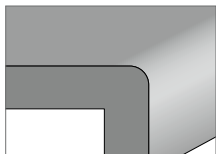
S022
Black

S922
Intense
Ultra Black

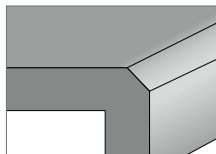


2.2.2 Bonding Edges / Down Turns

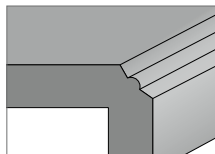
Follow the standard fabrication process as outlined in our Fabrication Manual according the chosen design



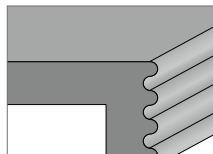
Standard with radius



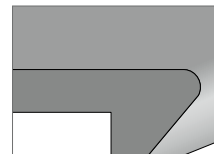
Standard with bevel



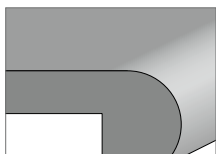
Standard with profile



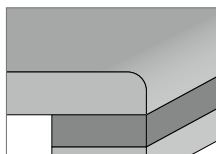
Standard with wave



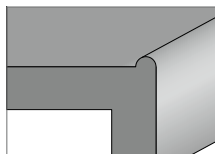
profil Standard with back bevel



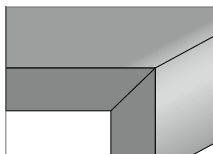
Bull-nose



Sandwich



Waterfall edge



Standard v-grooved

The Ultra-Thermoforming sheets have the material performance allowance of tighten radii, whilst round curves is not an difficult issue anymore



S928 Ultra-Thermoforming Alpine White



S922U Intense Ultra Black



S923U Intense Ultra Grey



S924U Intense Ultra Dark Grey

2.3 Sanding (finishing)

- The reference is as recommended with our standard products:
- For further details: **See TDS-no.4 Sanding.**

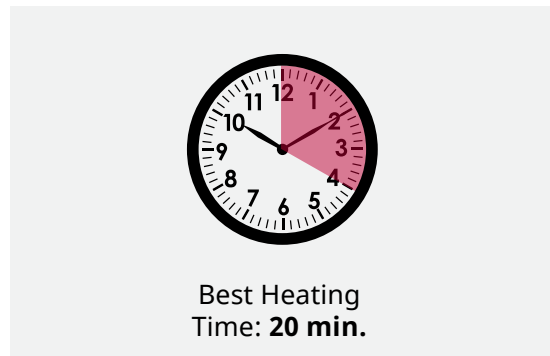
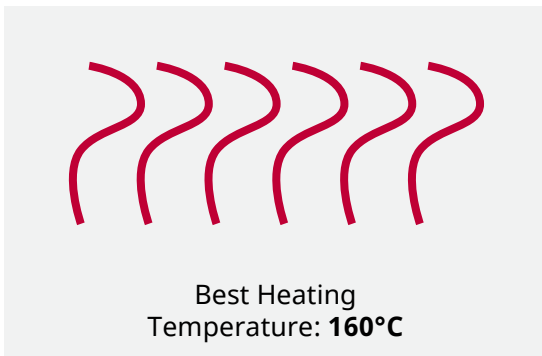


		Standard recommendation					
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH		
HIMACS colour family	for all colours		for all colours		for all colours		
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	
Step 1	100/80 μ	150/180 μ	100/80 μ	150/180 μ	100/80 μ	150/180 μ	
	take dust away		take dust away		take dust away		
Step 2	60 μ	220	60 μ	220	60 μ	220	
	take dust away		take dust away		take dust away		
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 μ	280/320	30 μ	280/320	
	take dust away		take dust away		take dust away		
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 μ	380/400	
	take dust away		take dust away		take dust away		
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 μ	600/800	
			take dust away		take dust away		
Step 6				industrial paper towel	Finesse-it™ Finish-component	1200	
			take dust away		take dust away		
Step 7						1500	
					1800		
					2500		

2.4 Thermoforming

To prepare the workpieces, follow the standard thermoforming process

For the Thermoforming process we recommend using a pre-heating oven with double sided heating plates.


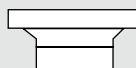


- Thermoforming comparison test: Standard HIMACS S028 Alpine White vs HIMACS Ultra-Thermoforming S928 Alpine White.


- The Glass-Transition-Temperature is reached by ca. +111°C.
- Please note the temperature is supposed to be the same across whole sheet.

Product and Mould Development History

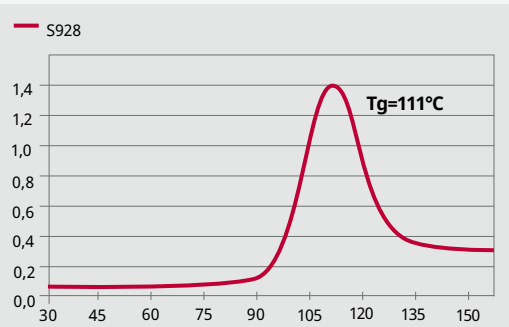
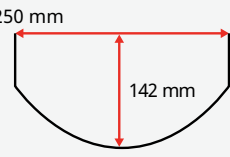
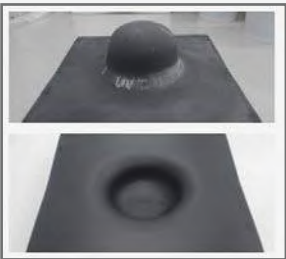
New mould production for evaluation of sink ball formability

	BEFORE	AFTER
Mould Shape		
Mould Depth	Depth: 110 mm	Depth: 142 mm
Remark		30 % enhanced conditions

History of thermoforming test: Pilot Test sample with improved properties 142 mm depth: Passed

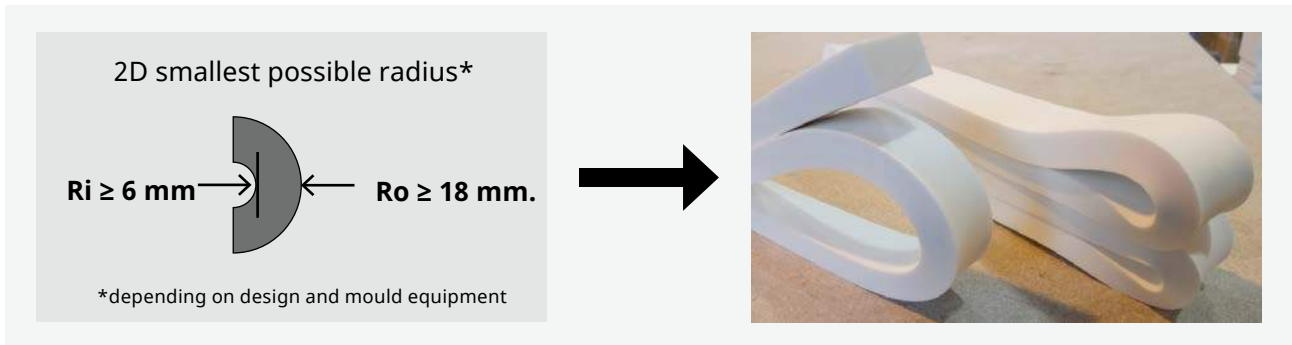


S928 Tan δ

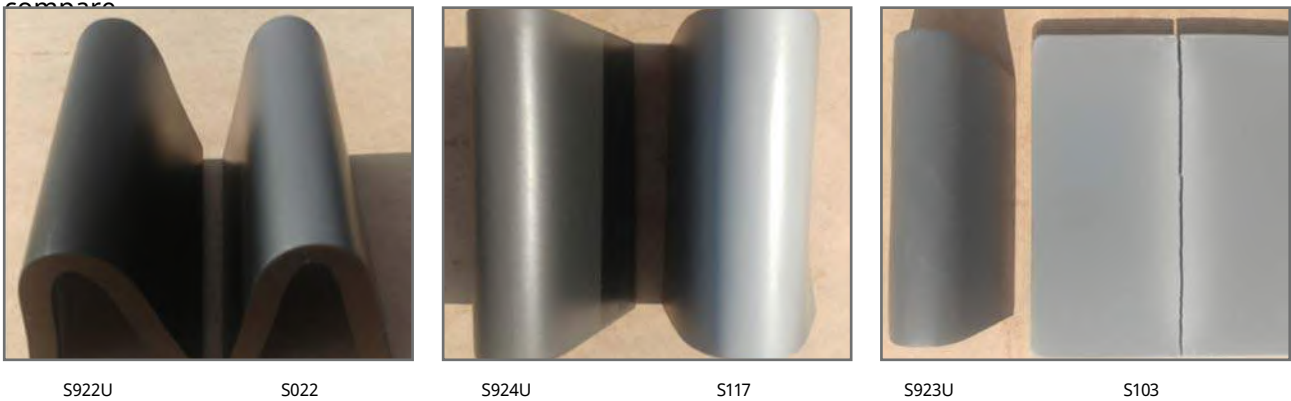
- Concerning the 3D thermoforming of HIMACS Ultra-Thermoforming, the allowable R value depends on the type of mould.
- The smallest interior radius to bend is approximate $R_i \geq 6 \text{ mm}$ and exterior radius of $R_o \geq 18 \text{ mm}$.

• Picture below shows bending to the extreme:



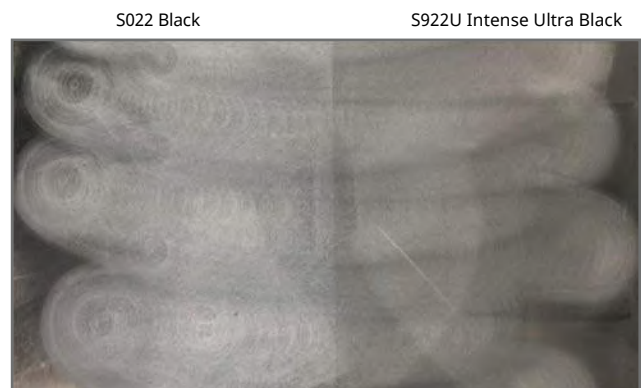
2.5 Comparison Tests

Thermoforming to the limits. Here three (3) samples to compare



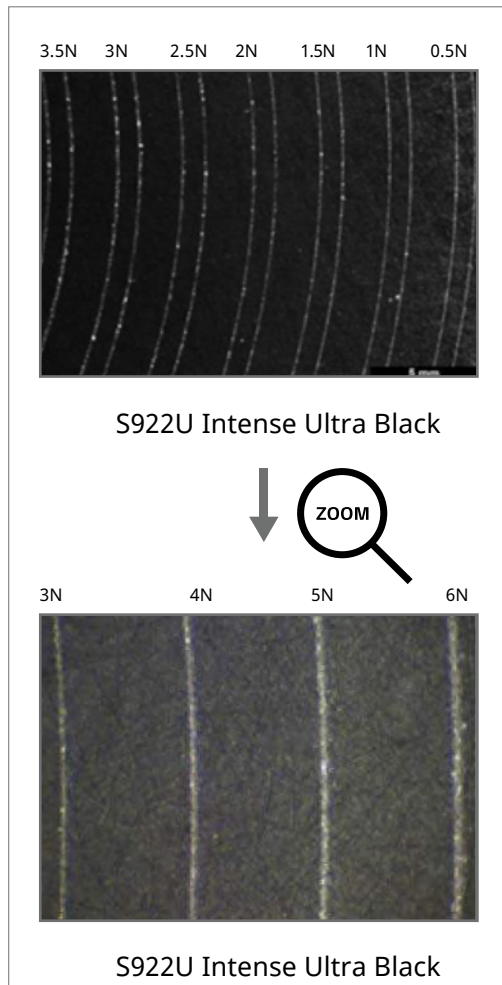
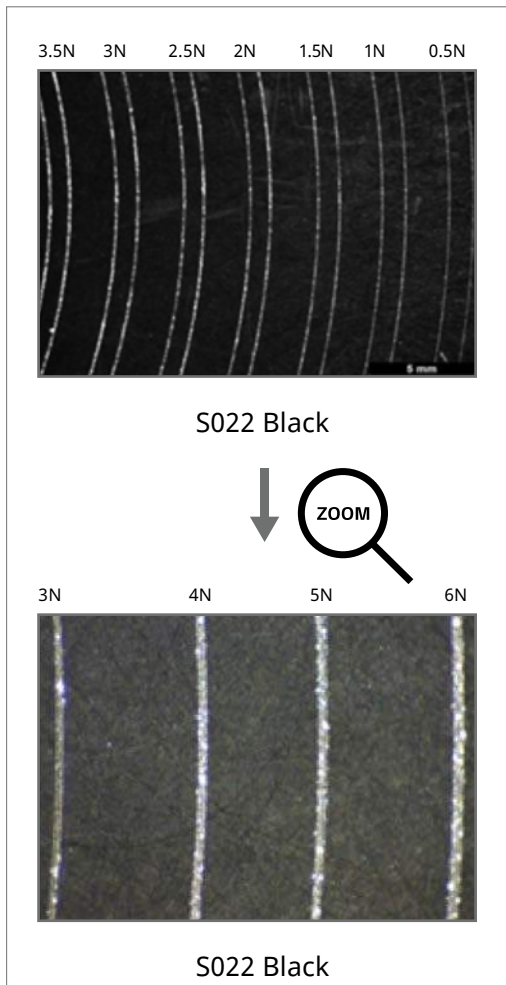
2.5.1 Comparison Tests

Intense Ultra Thermoforming Sheets do show a much less dust concentration as with Standard or many alternate products. It shows a more worker friendly fabrication environment.

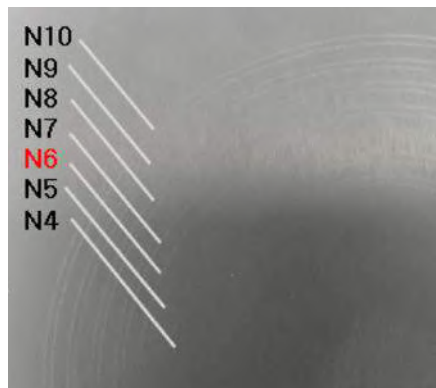


2.6 Scratch Comparison Tests

Improved Scratch Concealment



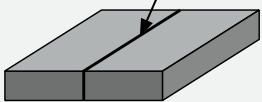
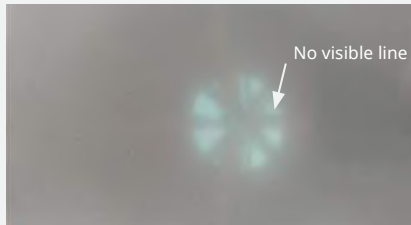
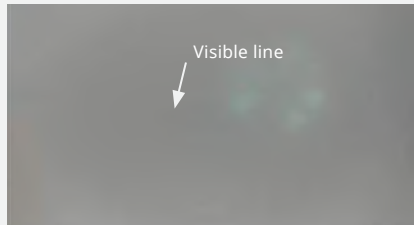
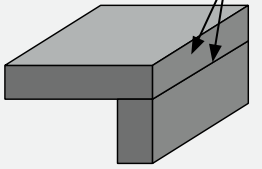
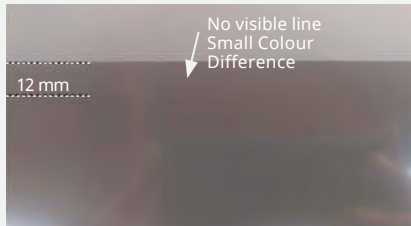
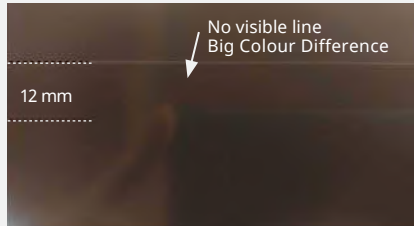
Up to level "N6" the sheet will be announced as more scratch resistance whilst above "N6" Level scratches will become more visible due to insensitivity of scratch pressure.



2.7 Seamline Comparison Test & Analyses

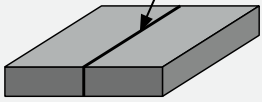
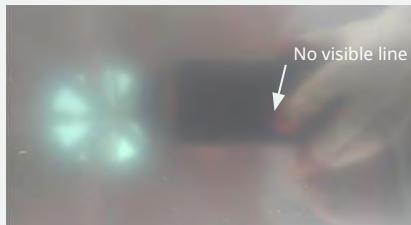
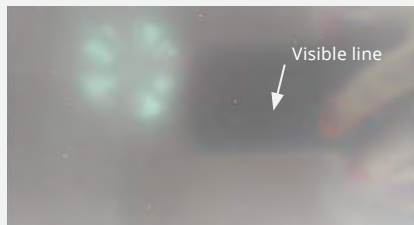
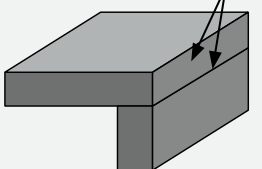
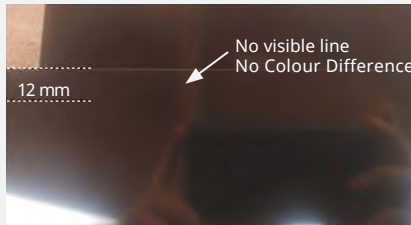
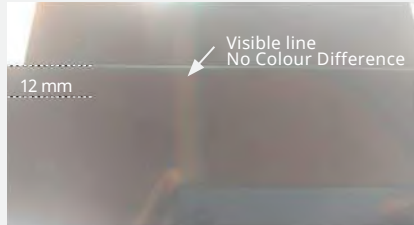
Intense Ultra Thermoforming Sheets also show a better Glue-Line capability for seams as the adhesive could be adjusted in a proper matter.

S924U vs. S117

	S924U	S117
<p><u>Flat Joining</u></p> 		
<p><u>Edge Joining</u></p> 		

- S924U: Small Colour difference was appeared at the section of the edge joining.

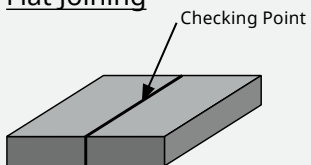
S922U vs. S022

	S922U	S022
<p><u>Flat Joining</u></p> 		
<p><u>Edge Joining</u></p> 		

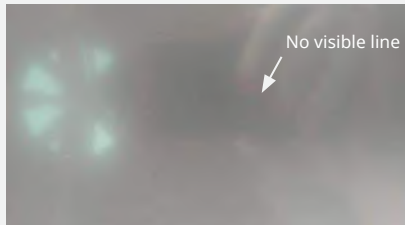
- S922U: All good, No issue

S923U vs. S103

Flat Joining



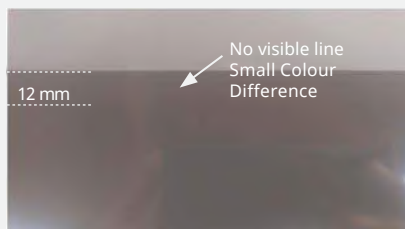
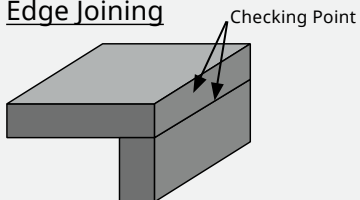
S923U



S103

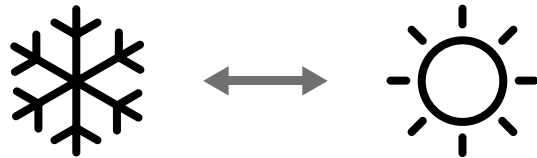


Edge Joining



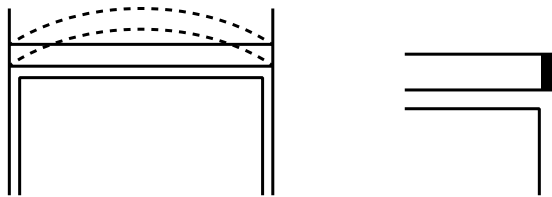
- S923U: Small Colour difference appeared at the section of the edge joining.

3. Thermal Expansion



Sufficient space should be given to compensate for expansion or contraction at the time of installation since this product may expand or contract depending on the temperature.

Allow 1.5 mm per linear meter for expansion and contraction.



Expansion coefficient HIMACS according to norm DIN EN 14851:

$$\Delta t = \text{ca. } 38 \times 10^{-6} / \text{K}$$

■ 4. Quality Check

- Check any fabricated item on quality aspects before leaving the workshop.
- Any mistakes can be repaired in the workshop at the time of fabrication.
Repairs needed at a later date will be more costly and time consuming.

Important:

Remember that the 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes.

5. Technical Specification Data

5.1 Technical Specification Data of Ultra Thermoforming Sheets

S928 ULTRA-THERMOFORMING ALPINE WHITE				
TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Density and Specific Gravity ((23/23) °C)	-	-	1.72	ASTM D792-13 (Method A)
Rockwell Hardness (HRM)	-	-	82	ASTM D785-08 (2015) (Procedure A)
Barcol Hardness	-	-	63	ASTM D2583-13a
Tensile Strength	MPa	-	43.2	ASTM D638-14 (*)
Tensile Modulus of Elasticity	GPa	-	9.79	ASTM D638-14 (*)
Flexural Strength	MPa	-	67.9	ASTM D790-15e2 (**)
Flexural Modulus of Elasticity	GPa	-	9.30	ASTM D790-15e2 (**)
Izod Impact Strength	J/m	-	24	ASTM D256-10e1 (Method A)
Water Absorption (24 h Immersion)	%	-	0.02	ASTM D570-98 (2010) e1
Appearance (Discolouration) after Heat Resistance [(170 ±2)°C 1 h]	-	-	No Defects	Client Provided Test Method
Hot Water Resistance	-	-	No Defects	Client Provided Test Method (***)
Deflection Temperature Under Load (1.82 MPa)	°C	-	101	ASTM D648-16 (Method B)
Thermal Expansion	1/°C	-	3.8x10 ⁻⁵	KS M 3015: 2003
Pencil Hardness (Mitsubishi pencil)	-	-	9H	KS M ISO 15184: 2013

* Speed of Testing: 5.2 mm/min, Support Span: 190 mm, Number of Specimen: 4ea

** Specimen: Type I, Speed of Testing: 5 mm/min (Modulus: 1 mm/min)

*** Changing appearance after pour boiled water on the specimen surface.

5.2 Technical Specification Data for Intense Ultra

S922U INTENSE ULTRA BLACK				
TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Density and Specific Gravity ((23/23) °C)	-	-	1.708	ASTM D792-13 (Method A)
Rockwell Hardness (HRM)	-	-	85	ASTM D785-08 (2015) (Procedure A)
Barcol Hardness	-	-	62	ASTM D2583-13a
Tensile Strength	MPa	-	46.2	ASTM D638-14 (*)
Tensile Modulus of Elasticity	GPa	-	10.2	ASTM D638-14 (*)
Flexural Strength	MPa	-	73.4	ASTM D790-17 (**)
Flexural Modulus of Elasticity	GPa	-	9.50	ASTM D790-17 (**)
Izod Impact Strength	J/m	-	20	ASTM D570-98 (2018)
Water ApSORption (24 h Immersion)	%	-	0.02	ASTM D570-98 (2018)
Appearance (Crack) after Heat Resistance [(170 ±2) °C x 1 h]	-	-	No Defects	Client Provided Test Method
Appearance (Crack) after Hot Water Resistance	-	-	No Defects	Client Provided Test Method (***)
Temperature Under Flexural Load (1.82 MPa)	°C	-	99	ASTM D648-18 (Method B)
Thermal Expansion	1/°C	-	3.6 X 10 ⁻⁵	KS M 3015: 2003
Pencil Hardness (Mitsu bishi pencil)	-	-	8H	KS M ISO 15184: 2013

S923U INTENSE ULTRA GREY				
TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Density and Specific Gravity ((23/23) °C)	-	-	1.722	ASTM D792-13 (Method A)
Rockwell Hardness (HRM)	-	-	86	ASTM D785-08 (2015) (Procedure A)
Barcol Hardness	-	-	62	ASTM D2583-13a
Tensile Strength	MPa	-	51.3	ASTM D638-14 (*)
Tensile Modulus of Elasticity	GPa	-	9.43	ASTM D638-14 (*)
Flexural Strength	MPa	-	71.7	ASTM D790-17 (**)
Flexural Modulus of Elasticity	GPa	-	10.0	ASTM D790-17 (**)
Izod Impact Strength	J/m	-	19	ASTM D570-98 (2018)
Water ApSORption (24 h Immersion)	%	-	0.02	ASTM D570-98 (2018)
Appearance (Crack) after Heat Resistance [(170 ±2) °C x 1 h]	-	-	No Defects	Client Provided Test Method
Appearance (Crack) after Hot Water Resistance	-	-	No Defects	Client Provided Test Method (***)
Temperature Under Flexural Load (1.82 MPa)	°C	-	97	ASTM D648-18 (Method B)
Thermal Expansion	1/°C	-	4.1 X 10 ⁻⁵	KS M 3015: 2003
Pencil Hardness (Mitsu bishi pencil)	-	-	8H	KS M ISO 15184: 2013

* Speed of Testing: 5.2 mm/min, Support Span: 190 mm, Number of Specimen: 4ea
 ** Specimen: Type I, Speed of Testing: 5 mm/min (Modulus: 1 mm/min)
 *** Changing appearance after pour boiled water on the specimen surface.

TECHNICAL DATA SHEET LUCIA COLLECTION



Sheet Fabrication

Sheet color family: Lucia "W"

Sheet Offering 2020: Lucia

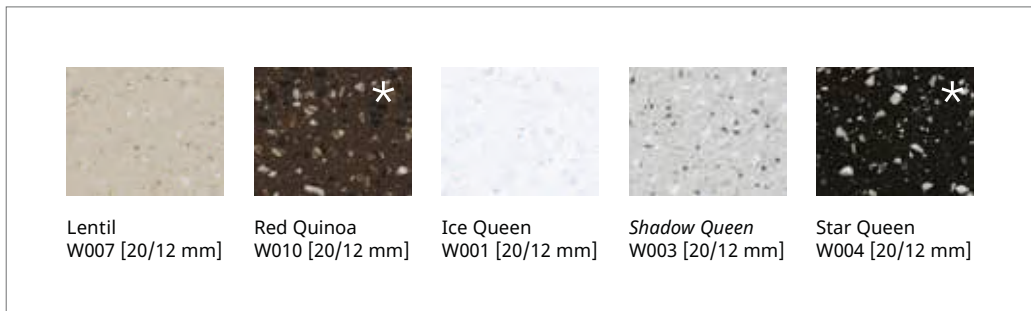


Fig.1

Disclaimer colors

The basic HIMACS material is identical for every color but it is important to note that darker and more heavily pigmented colors will show dust, scratches, haziness, marks left by hard water and other ordinary wear and tear more noticeably than lighter textured colors. Therefore colors marked with a (*) are less suitable for applications that are exposed to extensive surface contact such as worktops located in heavy traffic area as an example. Due to specific characteristics and properties of the LUCIA colors, where 3 colors have a glitter effect, special consideration has to be taken into account with jointing and the use of covered up-stands. Chip contribution may vary in the sheet and from sheet to sheet.

LUCIA is a unique colour family which needs special guidelines when fabricating and the installation MUST be carried out more precisely and carefully than usual. This is necessary to obtain the same standard of fabrication quality expected when using HIMACS.

Hint:

Before starting any fabrication: take note of the printed sheet-number of each sheet. Ensure to work with sequential sheet numbers and mark always the production flow even and best when assembling any kind of project.

Glitter Effect

Three colors of Lucia (W001; W004 & W010) have additional glitter chips to their chips of different sizes and colors. These glitter chips are mainly based on the surface side and do not go very deep into the depth of the material. Therefore, when making a rebate you may lose this glitter effect in the cut or rebate area.

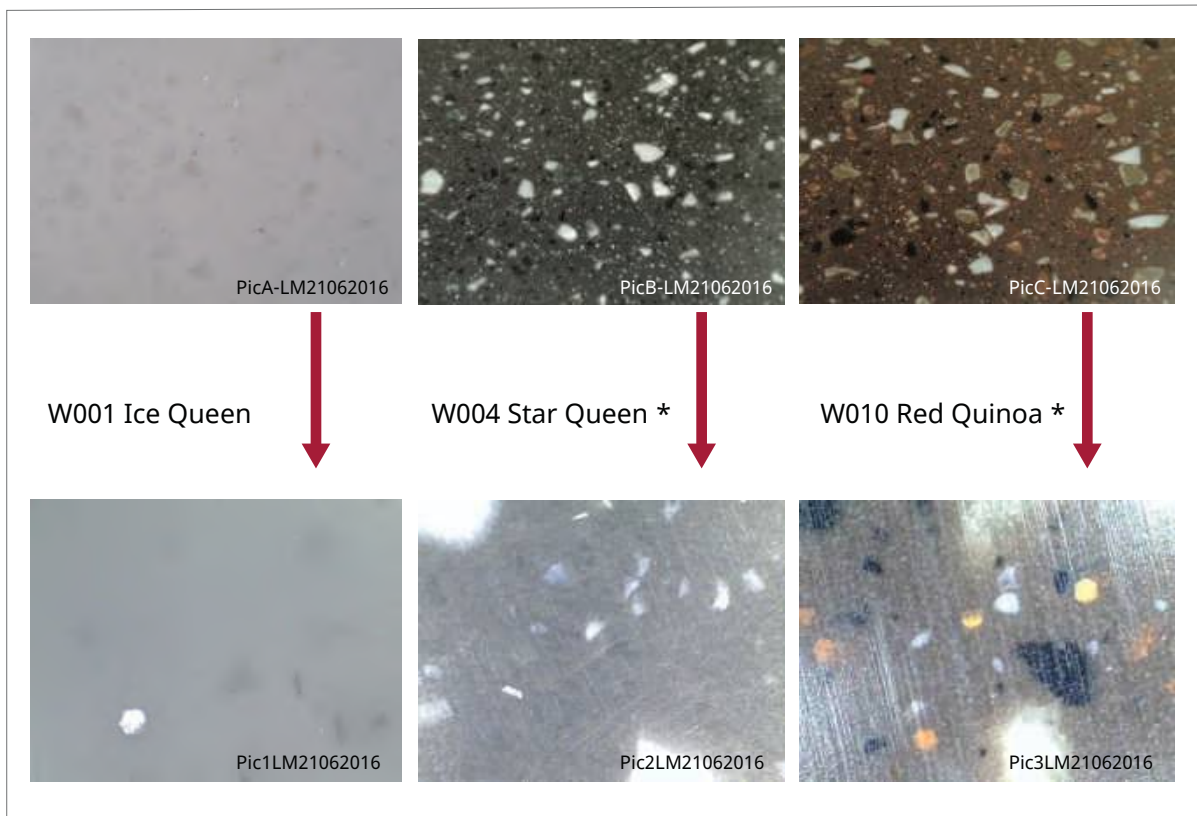


Fig.2-3-4-5-6-7 Pictures taken under microscope by Lothar Moritz/ photos by Lothar Moritz

1. Material Preparation

- When fabricating Lucia colours of HIMACS there is almost no difference from the standard HIMACS products in fabricating or installing. There is even no difference to the smell during the fabrication process due to the acrylic based material where the formulation has been changed slightly but composed of the same ingredients.
- Always handle the material with care to avoid any additional uncontrolled scratching from the top or the back of the sheet.
- When cutting HIMACS translucent material always use a **new and sharp saw blade** or trim off with a sharp CNC router to the size required.

Ensure the sawing machine is properly adjusted and that it is running correctly and absolutely straight. If marks of the saw blade or cutter of the trimmer are visible ensure to re-sand the edges by using 180 or 220 (240) grit sandpaper.

Ensure not to sand the edge round to avoid a bad result of the seam afterwards.

Prepare the back of the sheet by re-sanding or rebating (by a step of 1-2mm) of the place where the edge will be placed.

- When chips break out during cutting, change saw blade or trim off with an electrical plane or spindle moulder.

2. Bonding

- In case of bonding – clean edges as usual and press the work pieces as standards.
- Use the recommended translucent adhesive colours. Squeeze and press out the first couple of cm of glue line and control if the color and color pigments of adhesive are proper mixing. Then proceed with the usual bonding process and procedure of HIMACS adhesive.
- When storing the adhesive don't leave the cartridge in a vertical position but store it horizontal and turn it ones in a while when not using it.

Use of HIMACS Adhesive Color Recommendation for Volcanics

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	ADHESIVE COLOR CODE	ADHESIVE COLOR NAME
W001	Ice Queen		Lucia	H16	AL/White
W003	Shadow Queen		Lucia	H58	Pebble Pearl
W004	Star Queen	X	Lucia	H42	Merapi
W007	Lentil		Lucia	H20	Cream
W010	Red Quinoa	X	Lucia	H39	Latte

Fig.8

3. Bonding Surface to Surface

Due to the Lucia ingredients used larger chips and glitter pigments a continuous natural flow during the manu-facturing process should be realized. Those chips have a special position of direction which could cause a certain colour difference when turning the sheets during fabrication process into different directions of assembling.

Therefore when bonding two sheets together it is important to ensure to bond the pieces best in one direction but never in opposite – see Fig.9 & Fig.10. Do not turn around a second sheet by 180°. This eventually avoids a certain colour difference you may see after the sanding process only

Always follow the continuous production flow by ensuring the printing on the back side of the sheets (Fig.9&10) always follows one direction – never going in opposite directions.

On an application such as an L- or U- shaped counter top or a big conference table always ensure the underside printing is going in one direction.

4. Assembling

Following the production direction

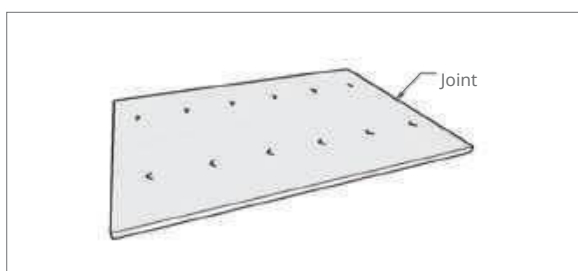


Fig.9 Sample of sheet assembling

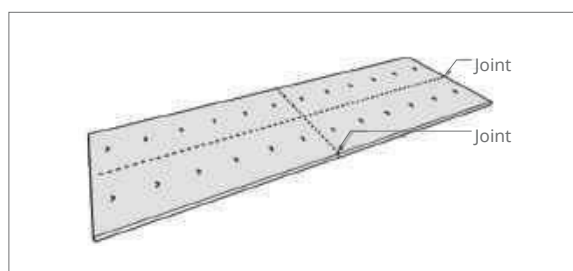


Fig.10 Sample of sheet assembling

5. Lucia Family Pattern

When preparing a curved upstand (Fig.12) or downturn, customers may not accept the final result. However, one may not compare, though with Solid colours used in the kitchen market.

A downturn or an upstand are best achieved with a 45° angle or a profiled folding option – see Fig. 12 & 13 (V-grooving).

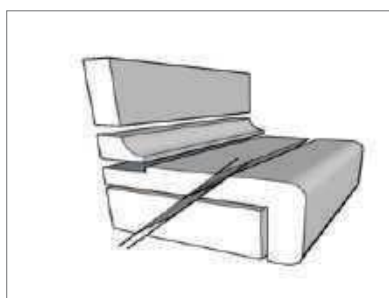


Fig.11

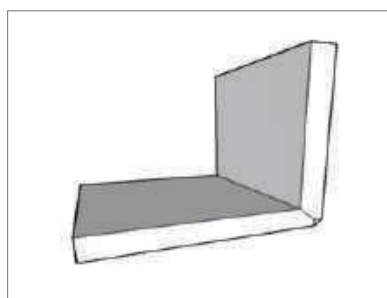


Fig.12

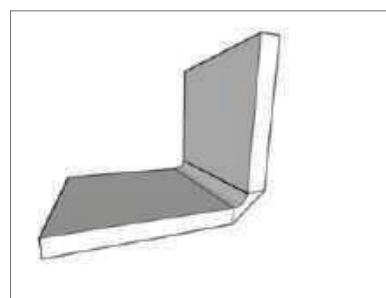


Fig.13

► Further details, please find under TDS "Edge Treatments & Downturns"

6. Edge Bonding

To let the pattern flow around the edges a 45° angled cut off the edge or an alternative rebate is one of the best solutions.

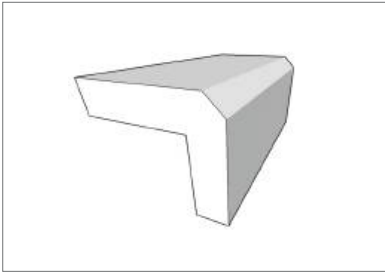


Fig.14

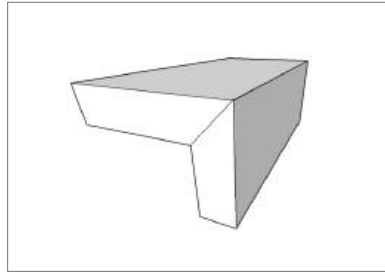


Fig.15

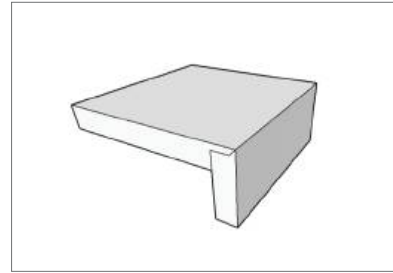


Fig.16

For the bonding process of the edges please follow the instructions above or check further on TDS "Edge Treatments & Downturns".

Always make a "Quality Check" before handing over the project to the customer.

7. Edge Preparation & Build Up

HI-MACS sheets are delivered with a sanded backside of the sheet where it is highly recommended to sand smooth or to trim the edge making a rebate. Turn the sheet over so that the back of the sheet is upside-down and you can work comfortably.

Ensure the HIMACS sheet does not sag and the sheet is properly supported at each position and do not round the edge of the bonding area.

Using a rebate at the back of the sheet for the edge treatment also has the advantage to:

- take away the rough sanding marks and
- allows stopping the edge on a fine line
- to avoid using gluing blocks or
- Any kind of ruler or gluing templates.

Check all edges carefully before bonding. Ensure that no chips are broken out and no heavy marks of the saw blade or any whitening of the edge is visible.

Create the rebate that approximately 0,5mm of the sheet will hang over to trim off later after the adhesive cured.

Put all necessary materials and tools in place which you will need for bonding:

- Clean, white cloth
- Denatured Alcohol (or Acetone)
- HIMACS- Adhesive (check the right color) (small or large cartridge) Adhesive dispenser and mixer-tips
- Clamps (C-clamps or best use "Klemsia")

► Further details, please find under TDS "Drop Edges & Downturns"

8. Sanding

The sanding process is similar to the standard sanding process. When sanding with hand tools or alternative with stationary equipment ensure not to create heat on the surface to avoid any unexpected unevenness of the surface. Depending on available tools and equipment sanding time will be within the same range as with HIMACS standard products.

		Standard recommendation				
FINISH-LEVEL	MATT-FINISH	SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH		
HIMACS colour family	for all colours	for all colours		for all colours		
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper
Step 1	100/80 µ	150/180	100/80 µ	150/180	100/80 µ	150/180
	take dust away		take dust away		take dust away	
Step 2	60 µ	220	60 µ	220	60 µ	220
	take dust away		take dust away		take dust away	
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 µ	280/320	30 µ	280/320
	take dust away		take dust away		take dust away	
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 µ	380/400
	take dust away		take dust away		take dust away	
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 µ	600/800
				take dust away	take dust away	
Step 6				industrial paper towel	Finesse-it™ Finish-component	1200
					take dust away	
Step 7						1500 1800 2500

HIMACS Surface Sanding Process

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:	FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:	FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Matt	P 60/100	3M Hookit dust remove	Semi gloss	P 240	3M Hookit dust remove	High gloss	P 600	3M Hookit 51156
	P 120 / 150	3M Hookit dust remove		P 320	3M Hookit dust remove		Cleanup / dry	Wipe off
	P 180	3M Hookit dust remove		P 400	3M Hookit dust remove		P 1200	3M Hookit 51156
	Scotch-Brite	Marron dust remove		Scotch-Brite	Grey dust remove		Cleanup / dry	Wipe off
					P 1000		3M Trizact	
					Cleanup / dry		Wipe off	
					P 3000		3M Trizact	
					Cleanup / dry		Wipe off	
					Finesse-it	Polish paste with felt-disk		
					Wipe off	With cotton cloth		
			Dust remove	3M Scotch-Brite MS-DC 150x8mm type T white				

► Further details, please find under TDS "Sanding"

9. LRV results of Lucia

COLOUR CODE	COLOUR NAME	DISCLAIMER	COLOR FAMILY / RANGE	LRV
W001	Ice Queen		Lucia	89.67
W003	Shadow Queen		Lucia	67.44
W004	Star Queen	X	Lucia	32.44
W007	Lentil		Lucia	66.38
W010	Red Quinoa	X	Lucia	34.38

Fig.6

10. Expansion

One of the main characteristics of the material is the importance of the material's expansion and contraction due to temperature change. This means: always allow the material to expand or to shrink without any possible barrier.

Expansion coefficient HIMACS according to norm DIN EN 14581:

$$\Delta t = 48 \times 10^{-6} / K$$

Allow **1.5 mm** per linear meter for expansion and contraction.

11. Thermoforming

The radius listing below is showing the standard smallest radius of each 12mm HIMACS thickness based on a white color.

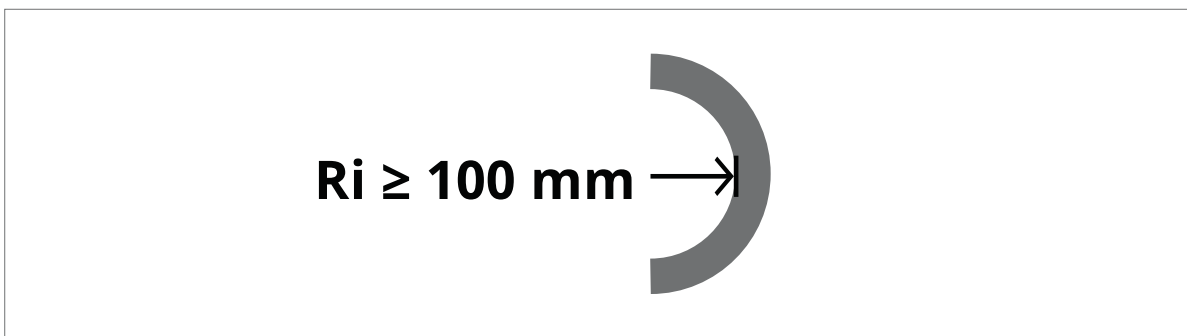
Be aware that due to highly pigmented formulation easily whitening can appear in the radius, when forming on the limits – but always should become agreed with the customer if this may be acceptable or a wider radius has to be chosen.

Therefore we suggest to make customer sign off the sample you prepare for the project and keep this for further records.

The heating time is similar to the general heating time of HIMACS products for the thermoforming process.

+ 155 ° C up to + 175 ° C Danger heating point: + 204 ° C

Inside radius Ri for Lucia



► Further Technical Information's see TDS "Thermoforming"

12. Quality Check

- Check any fabricated item on quality aspects before leaving the workshop.
- In case of any mistakes it easily can be repaired in the workshop and keeps the time of re-work very low.
- Any damage or any mistakes which will be recognized at a later time will make the fixing much more expensive.
- When backlighting check the light transmittance to avoid later claims.

The 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes neither any misuse of product recommendations.

Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs our approval for Warranty.

This Technical Document is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since we cannot anticipate all variations in actual end-use conditions, We make no warranties and assume no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

■ TECHNICAL DATA SHEET CONCRETE COLLECTION



The Concrete Collection is a range embodying the rough texture of raw concrete with a pattern design which calmly and delicately permeates the artificial stone. The HIMACS Concrete Collection came from an initial desire to discard existing ideas, and go back to the bare essentials. The Concrete Collection challenges modern extravagance, and returns to an industrial era where basic colours provide a clean canvas to build on.

The Concrete Collection fulfills today's design trends.

1. Products

1.1 Available Colours



Urban Concrete
G554 [20/12/9/
6 mm]



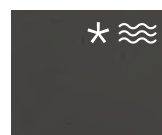
Steel Concrete
G555 [12/9/6 mm]



Chic Concrete
M551 [12 mm]

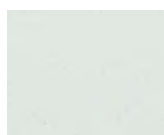


Shadow Concrete
M552 [12 mm]



Ebony Concrete
M553 [12 mm]

NEW



Snow Concrete
G556 [12 mm]



Cloud Concrete
G557 [12 mm]

2. Product Specifications

2.1 Available Products: Product Code – Colour – Size – Weight

GROUP	COLOUR CODE	COLOUR NAME	SHEET THICKNESS	SHEET SIZE (WIDTH X LENGTH)	M ² PER SHEET	WEIGHT PER SHEET	WEIGHT PER M ²	SHEETS PER PALLET
Concrete	G556	Snow Concrete	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	G557	Cloud Concrete	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M551	Chic Concrete	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M552	Shadow Concrete	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	M553	Ebony Concrete	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	G554	Urban Concrete	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15
	G555	Steel Concrete	12 mm	760 mm x 3680 mm	2.7968	55,38 kg	19,80 kg	15

2.2 Product: Sheet – Adhesive

GROUP	SHEET		ADHESIVE		
	COLOUR CODE	COLOUR NAME	COLOUR CODE	COLOUR NAME	PACKAGING UNIT
Concrete	G556	Snow Concrete	H02	Arctic White	45 ml / 250 ml
	G557	Cloud Concrete	H132	Cloud	45 ml / 250 ml
	M551	Chic Concrete	H114	Pantheon	45 ml / 250 ml
	M552	Shadow Concrete	H114	Pantheon	45 ml / 250 ml
	M553	Ebony Concrete	H115	Colosseum	45 ml / 250 ml
	G554	Urban Concrete	H22	Perna Grey	45 ml / 250 ml
	G555	Steel Concrete	H114	Pantheon	45 ml / 250 ml

Note: the adhesive is not developed as a filler for repairs. In the case of damage to the surface it is strongly recommended to make a plug repair if possible (tools are available on the market – please contact your local technical support).

2.3 Product: Sheet – Colour Codes: RAL – NCS – Pantone

GROUP	COLOUR CODE	COLOUR NAME	RAL	NCS	PANTONE
Concrete	G556	Snow Concrete	9002		12-0404 TPX
	G557	Cloud Concrete	7044		14-0002 TPX
	M551	Chic Concrete		S 4502-Y	17-1210 TPG
	M552	Shadow Concrete		S 5502-Y	17-1500 TPG
	M553	Ebony Concrete		S7500-N	18-0403 TPG
	G554	Urban Concrete		S 3502-Y	15-0000 TPG
	G555	Steel Concrete		S 4502-Y	17 0205 TPG

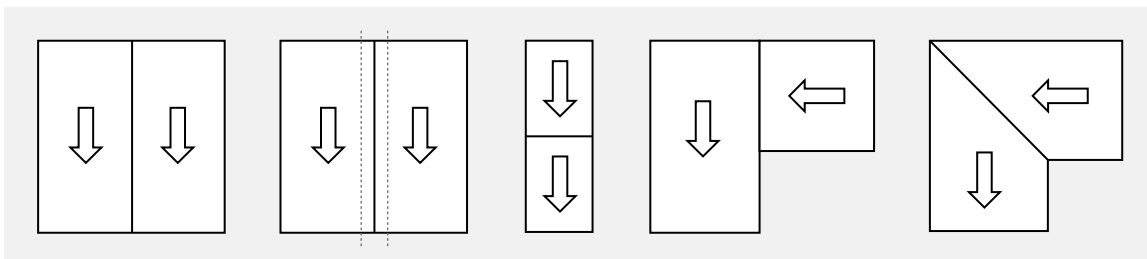
2.4 Product: Sheet – LRV:

GROUP	COLOUR CODE	COLOUR NAME	LRV
Concrete	G556	Snow Concrete	
	G557	Cloud Concrete	
	M551	Chic Concrete	25.35
	M552	Shadow Concrete	18.87
	M553	Ebony Concrete	11.22
	G554	Urban Concrete	31.96
	G555	Steel Concrete	23.26

3. Bonding Sheet to Sheet

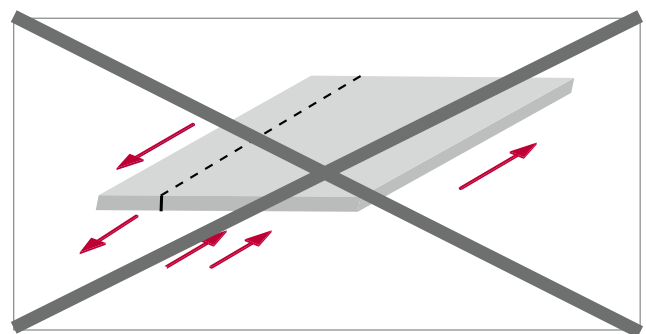
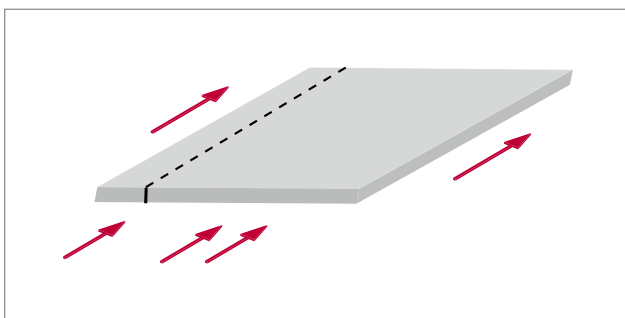
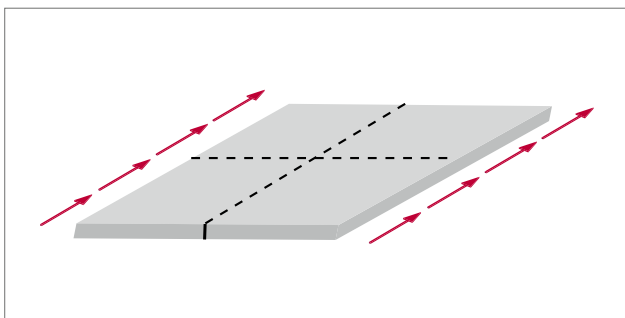
When bonding sheet to sheet double check the best veining possibility according to its veining flowing look. There's no way to determine which method will work best with any particular colour other than to visually evaluate the configurations.

Again, we strongly advise the fabricator to ensure the purchaser and end user understand these considerations before commencing work.



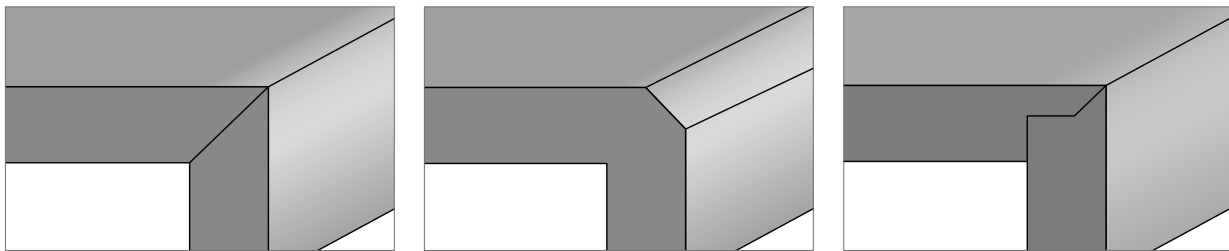
When using several sheets for doing one job ensure a continuous flow of sequential numbers as well as the same production flow.

Do not turn one sheet into a different direction from the next or opposite side (**no turn** of any sheet by 90°, 180° or 270°).



4. Edge bonding flow

To let the pattern flow around the edges a 45° angled cut of the edge or an alternative rebate is one of the best solutions.



Standard v-grooved

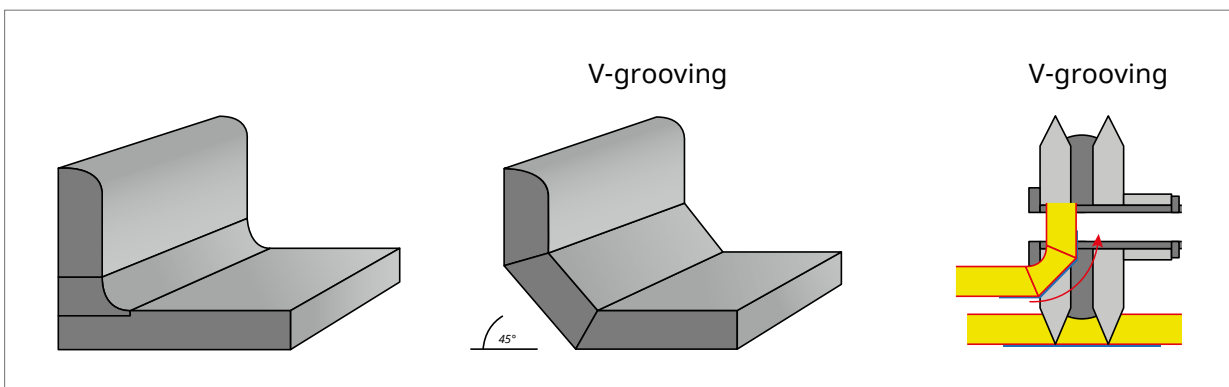
Standard with bevel

Standard V-grooved and angled

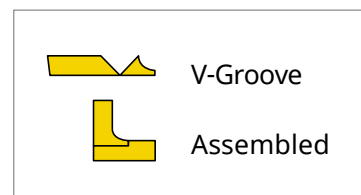
For the bonding process of the edges please follow the instructions of edge treatments. Also here: We strongly advise the fabricator to confirm that the purchaser and the end user understand these considerations before proceeding whilst best to prepare a sample and let this design sign off.

5. Backsplash

To let the pattern flow around the edges a 45° angled cut of the edge or an alternative rebate is one of the best solutions.



When preparing a curved upstand or downturn, customers may not accept the final result. One may not compare, though with UNI colours used in the kitchen market. A downturn or an upstand are best achieved with a 45° angle or a profiled folding option – see picture 3 (V-grooving).



6. Sanding (finishing)

- The reference is as recommended with our standard products:
- For further details: **See TB-no.4 Sanding.**



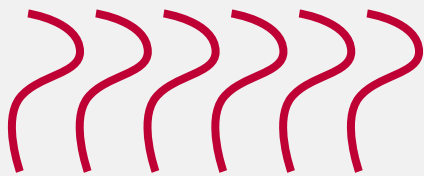
Standard recommendation

FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH	
HIMACS colour family	for all colours		for all colours		for all colours	
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper
Step 1	100/80 µ	150/180 µ	100/80 µ	150/180 µ	100/80 µ	150/180 µ
Step 2	60 µ	220	60 µ	220	60 µ	220
	take dust away		take dust away		take dust away	
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 µ	280/320	30 µ	280/320
	take dust away		take dust away		take dust away	
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 µ	380/400
	take dust away		take dust away		take dust away	
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 µ	600/800
	take dust away		take dust away		take dust away	
Step 6				industrial paper towel	Finesse-it™ Finish-component	1200
	take dust away		take dust away		take dust away	
Step 7						1500
						1800
						2500

7. Thermoforming

To prepare the workpieces, follow the standard thermoforming process
For more information's see: **FM21EU, 7.15 Thermoforming**

For the Thermoforming process we recommend using a pre-heating oven with double sided heating plates.



Best Heating Temperature:
155°C – 175°C



Best Heating
Time: **12 – 18 min.**

The heating time is similar to the general heating time of HIMACS products for the thermoforming process. The classification of a minimum radius for CONCRETE is approx. $\geq 85\text{mm}$. Be aware that any undertaking of recommended radii can cause some colour change or create some cracks. For further details of thermoforming process see also our **FM21EU, 7.15 Thermoforming**

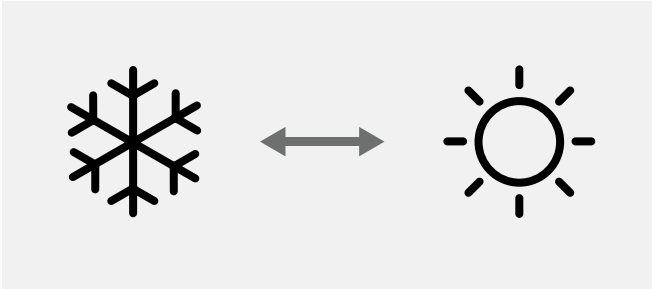
For any technical inquiry contact your local technical support.

For more detailed thermoforming equipment or any thermoforming accessories please contact global@nabuurs.com or visit the website: www.globalvacuumpresses.com

$R_i \geq 85 \text{ mm}$

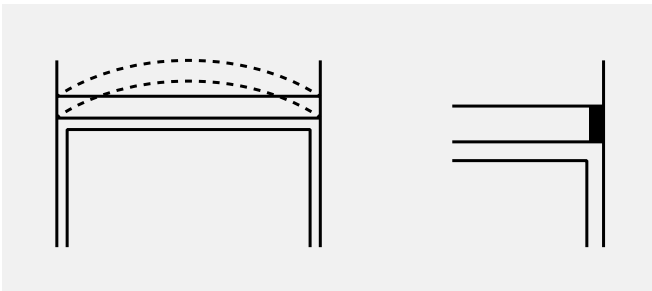


■ 8. Thermal Expansion



Sufficient space should be given to compensate for expansion or contraction at the time of installation since this product may expand or contract depending on the temperature.

Allow 1.5 mm per linear meter for expansion and contraction.



Expansion coefficient HIMACS according to norm DIN EN 14851:

$$\Delta t = \text{ca. } 48 \times 10^{-6} / \text{K}$$

■ 9. Quality Check

- Check any fabricated item on quality aspects before leaving the workshop.
- Any mistakes can be repaired in the workshop at the time of fabrication.
Repairs needed at a later date will be more costly and time consuming.

■ 10. Summary

Important:

Remember that the 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes.

11. Fire Classification

11.1 Fire Classification Report according to DIN 4102-2 / M551 Chic Concrete: "B1"



11.2 Fire Classification Report according to DIN 4102-2 / G554 Urban Concrete: "B1"



Interior Solid Surface Material

HIMACS

**■ TECHNICAL DATA SHEET
STRATO COLLECTION**



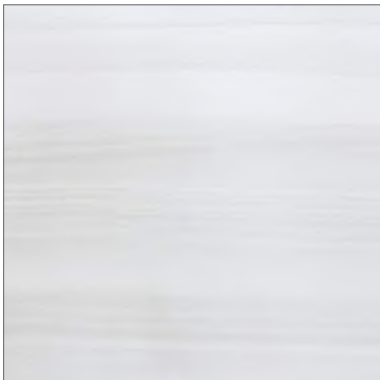
■ Strato Collection

New sheet collection for 2019 in Europe. It features a distinct stripe effect.

Strato Colours:



Strato Cloud Z001



Strato Wind Z003



Strato Slate Z005

Strato Collection

1 Sheet Specifications:

1-1 Strato Collection is a new 2019 product, available in 12mm

Group	Colour Code	Colour Name	Thicknes	Width	Length	Weight/kg	Sheet per Pallet
Strato Collection	Z001	Strato Cloud	12mm	760mm	3680mm	56.7kg	20
	Z003	Strato Slate	12mm	760mm	3680mm	56.7kg	20
	Z005	Strato Wind	12mm	760mm	3680mm	56.7kg	20

1-2 Strato Collection Sheet Colours / Strato Collection Adhesive Colours

Group	Sheets		Adhesives		Cartridge / PU
	Colour Name	Colour Code	Colour Code	Colour Name	
Strato Collection	Strato Cloud	Z001	H36	Silver	250ml
	Strato Slate	Z003	H22	Perna/Grey	250ml
	Strato Wind	Z005	H16	Alpine/White	250ml

Note:

The adhesive is not developed as filler for repairs. In case of damage to the surface it is strongly recommended to make a plug repair if possible (tools are available on the market – please contact your local technical support).

1-3 Strato Colour Codes:

Group	Colour Codes	Colour Name	RAL	NCS	Pantone
Strato Collection	Z001	Strato Cloud			
	Z003	Strato Slate			
	Z005	Strato Wind			

1-4 Strato LRV (Light Reflecting Value):

Group	Colour Codes	Colour Name	LRV
Strato Collection	Z001	Strato Cloud	
	Z003	Strato Slate	
	Z005	Strato Wind	

Fabrication

Strato Collection - New Sheet collection features a distinct "stripe" effect that extends from one end of a sheet to the other end of a sheet as shown in the partial-sheet image below, Pic. 1:



Strato Collection material exhibits a greater variation in colour, shading, and pattern than is apparent in samples. Even 300mm square samples and full-sheet photographic images cannot fully capture these variations. If possible allow the customer to view the actual material together with seaming layout examples and sign a "document of understanding". Otherwise the finished countertop may not be consistent with customer expectations.

Because the stripes can drift slightly as sheets move through early stage manufacturing it is important to order consecutive (sequential) sheets whenever there will be a field seam or a seam creating a "L"- or "U"-shaped countertop. Even with consecutive sheets it's important to visually verify alignments before beginning fabrication. In some cases rotating one sheet 180-degrees may deliver the desired uniform alignment.

Customer expectations are best managed by fully educating the customer about product characteristics. For instance, the linear striping that appears on the surface doesn't continue directly through the sheet thickness. Instead, a cross-section of Strato Collection material looks like shown in Pic. 2



Strato Collection is the same material as any other HIMACS product, but it requires special consideration in order to fabricate an aesthetically pleasing finish product. We strongly advise the fabricator to confirm to the purchaser and the end user to understand these considerations before proceeding.

Due to the stripe design a variation of edge creation is possible, like samples below:



In order to have a finished edge or end that most end-users expect it's necessary to use the "v-groove" or "miter"(45°) method of fabrication. Then the finished edge will appear as seen below:



"L" and "U"-shaped countertop configurations may be more aesthetically pleasing to your customer with a 45-degree corner seam (below) than with the generally-accepted (approved) offset seam. (sample: pic-no.6)



Using the 45-degree seam will result in a seam that spans more than the nominal 600mm countertop depth. Butt seams or simple straight offset seams may not acceptable by end consumer. Show a sample to your customer so they fully understand before fabrication.

When the 45-degree seam is used, a seam reinforcement plate of not less than 150mm, plus additional support perpendicular on either side of the required seam reinforcement plate, is required. This secondary support can be placed at the midpoint of the required seam reinforcement piece. Where no corner support other than wall-mounted cleats is available (such as when there is no corner cabinet) the secondary reinforcement can be placed at the back edges where the countertop meets the wall.

When the 45-degree seam method is used, the inside corner radius is especially crucial because there is significant stress on this point. The image below shows a well-executed inside corner with a full 25mm radius.

Note:

The attention given to maintaining uniform appearance of the stripe pattern through this inside corner radius.

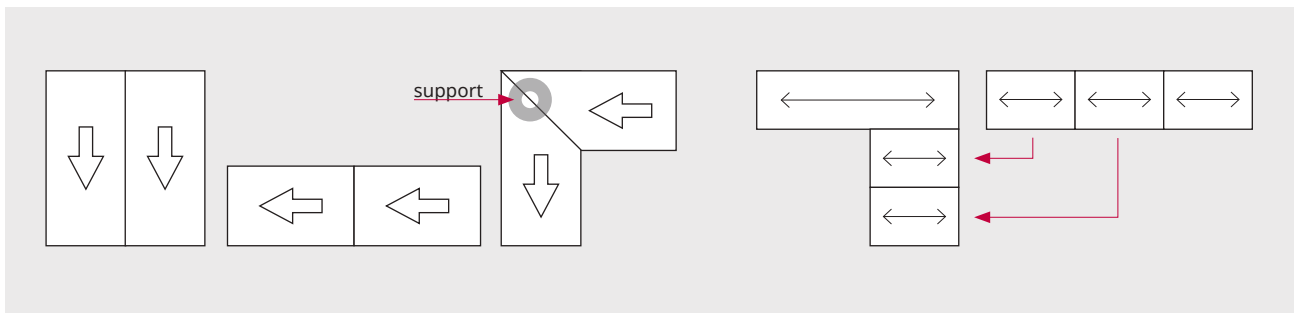


“U”- or “L”- SHAPED COUNTERTOP

When a countertop or work surface will require a field seam to join one or more sheets together, it is especially important to use consecutive sheets of HIMACS. However, the stripes can drift slightly as sheets move through early stage manufacturing so it's important to visually verify alignments before beginning fabrication. In some cases rotating one sheet 180-degrees may deliver the desired uniform alignment. Using consecutively numbered sheets is always the best practice when seams are made.

When bonding sheet to sheet double check the best veining possibility according to its veining flowing look. There's no way to determine which method will work best with any particular colour other than to visually evaluate the configurations.

LG Hausys strongly advise the fabricator to confirm with the purchaser and end user of the final look and understand these considerations before commencing work.

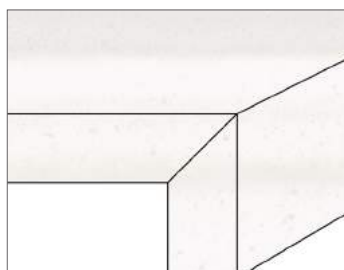


Hint:

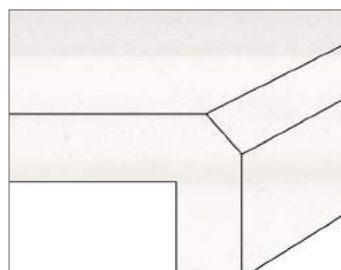
Whatever counter connection will be chosen, ensure a proper support to avoid any lowering or slop of load during later times.

Edge Treatment Requirement

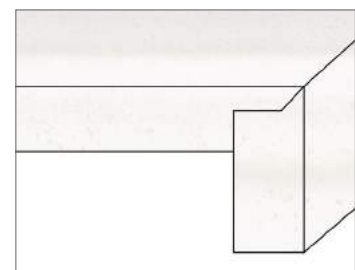
To let the pattern flow around the edges a 45° angled cut of the edge or an alternative rebate is one of the best solutions.



Standard v-grooved



Standard with bevel



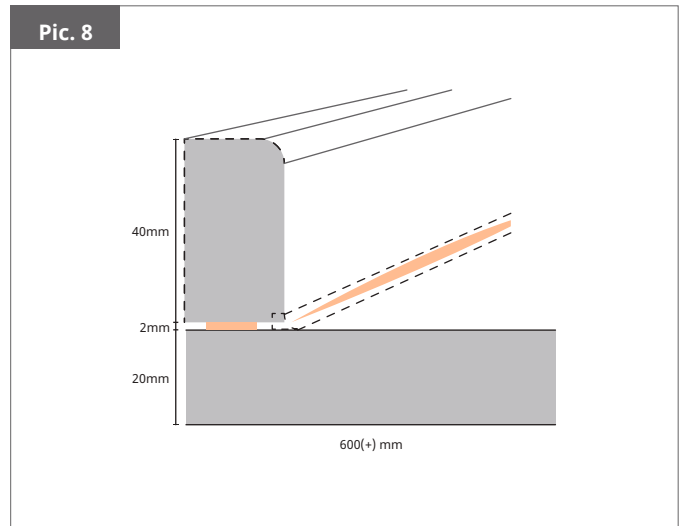
Standard V-grooved and angled

For the bonding process of the edges please follow the instructions of edge treatments.

NOTE: We strongly advise the fabricator clearly explains and demonstrates to the purchaser and end user of the characteristics of this product before signing off the work.

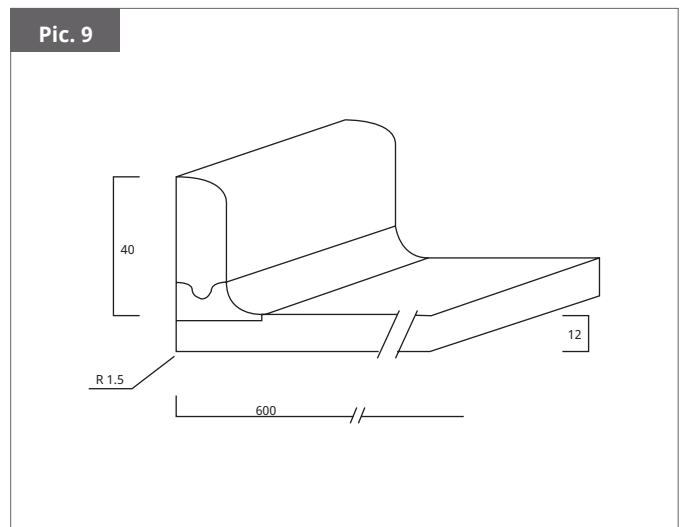
BACKSPLASH

When using standard backsplash prepared with a rebate of 2mm x 2mm: best to use transparent silicone to finish off



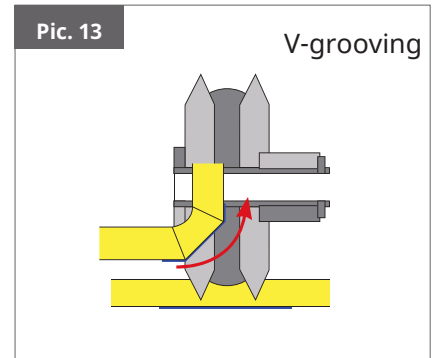
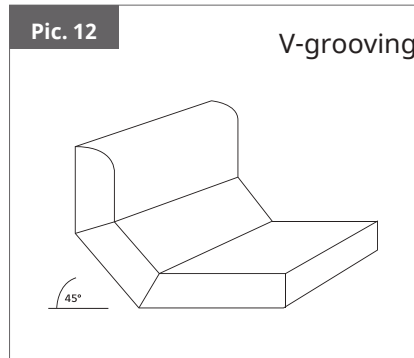
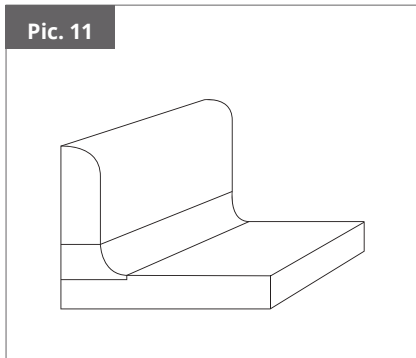
COVERED BACKSPLASH

In some cases it's possible to construct a covered backsplash as shown below but, because of the random colour distribution through the sheet thickness, results may not be consistent



Backsplash flow

To let the pattern flow around the edges a 45° angled cut of the edge or an alternative rebate is one of the best solutions.



When preparing a curved upstand or downturn, customers may not accept the final result. One may not compare, though with UNI colours used in the kitchen market. A downturn or an upstand are best achieved with a 45° angle or a profiled folding option – see picture 3 (V-grooving).

Overhangs

For respective measures of oversized table tops or counter tops do proper support according the expected weight as well as to take the design into consideration. Up to 50mm no support needed. From 50mm up to 150mm a second layer is needed. over 150mm corbels are needed.

Note:

Be aware that HIMACS always needs a proper and strong sub-construction according to its application to avoid any kind of unexpected deformation over time.

2 Sanding (finishing)

The reference is as recommended with our standard products:
For further details: See TDS-no.4 Sanding.



		STANDARD RECOMMENDATIO				
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH	
HI-MACS® COLOUR FAMILY	For All COLOURS		For All COLOURS		For All COLOURS	
Sanding Step	Micron Sandpaper	Grid Sandpaper	Micron Sandpaper	Grid Sandpaper	Micron Sandpaper	Grid Sandpaper
Step 1	100/80 µ	150/180	100/80 µ	150/180	100/80 µ	150/180
	take dust away		take dust away		take dust away	
Step 2	60 µ	220	60 µ	220	60 µ	220
	take dust away		take dust away		take dust away	
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 µ	280/320	30 µ	280/320
	take dust away		take dust away		take dust away	
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Super fine Grey	380/400	15 µ	380/400
	take dust away		take dust away		take dust away	
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Super fine Grey	9 µ	600/800
				take dust away	take dust away	
Step 6				industrial paper towel	"Finess-It™" Finish-Component	1200
					take dust away	
Step 7						1500
						1800
						2500

3 Thermoforming

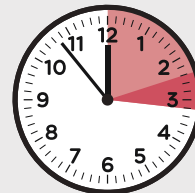
To prepare the workpieces, follow the standard thermoforming process

For the Thermoforming process we recommend using a pre-heating oven with double sided heating plates. Run pre-heating up to +175°C before placing the workpiece in the oven.

Best Heating Temperature:
165°C – 170°C



Best Heating Time:
ca. 18 min.



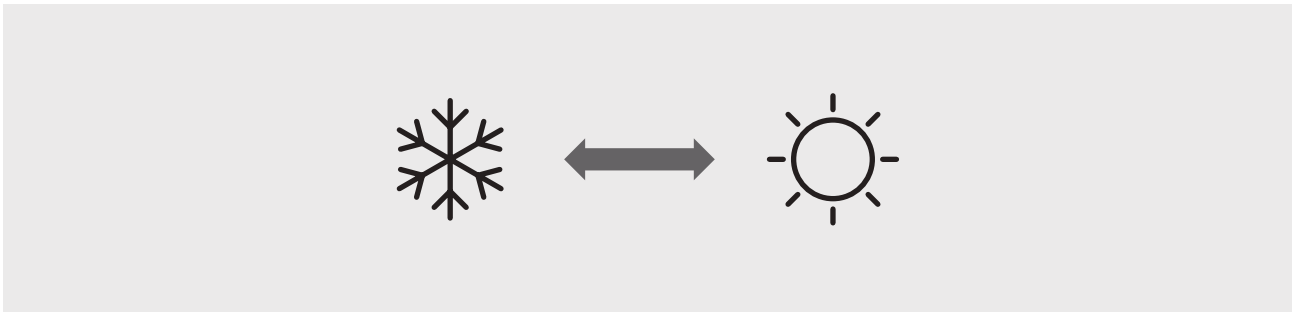
The heating time is similar to the general heating time of HIMACS products for the thermoforming process. The classification of a minimum radius for Strato Collection is approx. $\geq 85\text{mm}$. Be aware that any undertaking of recommended radii can cause some colour change or create some cracks. For any technical enquiry contact your local technical support.

For more detailed thermoforming equipment or any thermoforming accessories please contact global@nabuurs.com or visit the website: www.globalvacuumpresses.com

$R_i \geq 85\text{mm}$

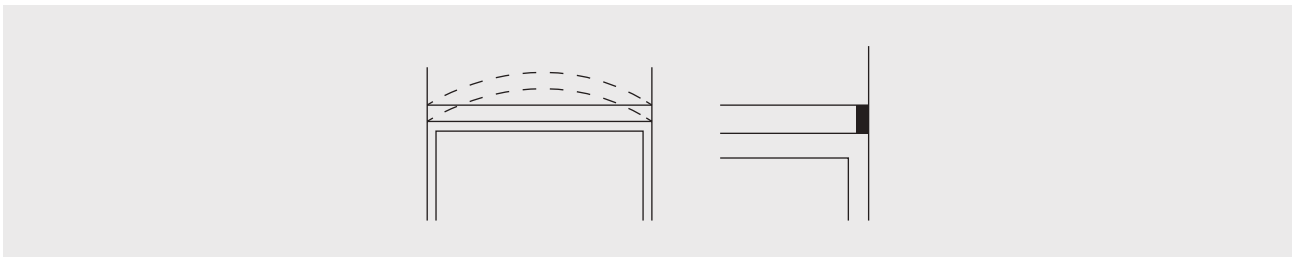


4 Thermal Expansion



Sufficient space should be given to compensate for expansion or contraction at the time of installation since this product may expand or contract depending on the temperature

Allow 1.5mm per linear meter for expansion and contraction



Expansion coefficient HIMACS according to norm DIN EN 14851:

$$\Delta T = 48 \times 10^{-6} / K$$

5 Quality Check

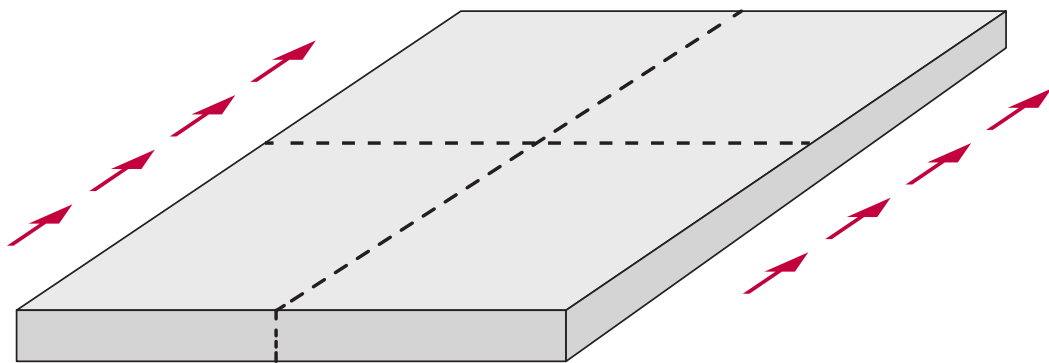
- Check any fabricated item on quality aspects before leaving the workshop.
- Any mistakes can be repaired in the workshop at the time of fabrication. Repairs needed at a later date will be more costly and time consuming.

Hint:

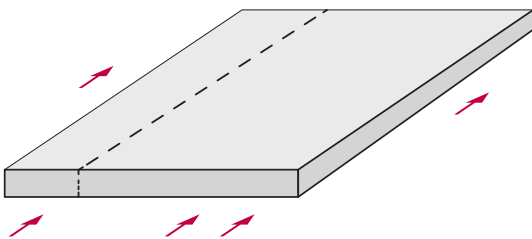
When using several sheets for doing one job ensure a continuous flow of sequential numbers as well as the same production flow.

Do not turn one sheet into a different direction from the next or opposite side
(no turn of any sheet by 90°, 180° or 270°)

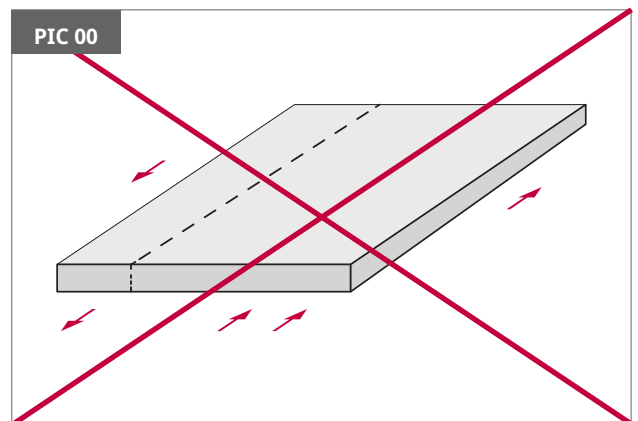
PIC 00



PIC 00



PIC 00



Important :

Remember that the 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes.

Interior Solid Surface Material

HI·MACS

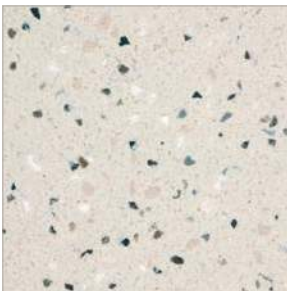
■ TECHNICAL DATA SHEET TERRAZZO COLLECTION

Colours belonging to the Terrazzo collection exhibit a greater variation in colour, shading, and pattern than is apparent in small size samples. Even A4/A3-size samples and full-sheet photographic images can't fully capture these variations. If possible, allow the customer to view the actual material together with seaming layout examples and have the customer sign a "declaration of understanding" to help ensure that the finished countertop is consistent with customer expectations.

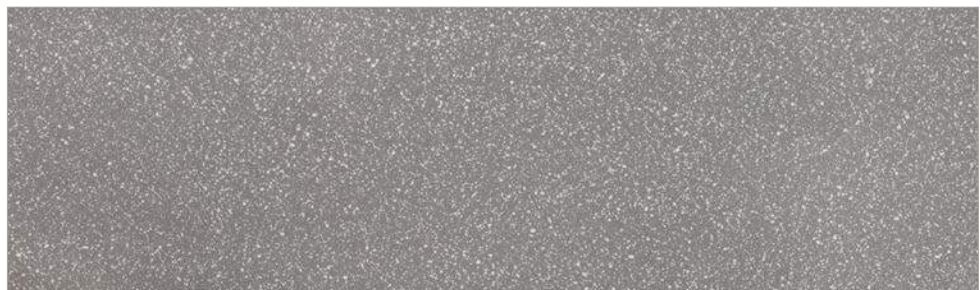
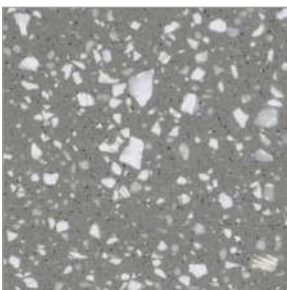
When fabricating Terrazzo it's important to use consecutive sheets whenever there will be a field seam or a seam creating a "U"- or "L"-shaped top. Even with consecutive sheets it's important to visually verify alignments before beginning fabrication. Either approach will not only deliver a more pleasing appearance but will minimize the visibility of seams and joints.

■ 1 Product Specifications

1.1 Available colours



Q001
Terrazzo
Classico



Q002
Terrazzo
Grigio

1.2 Product Specifications

GROUP	SHEET COLOUR CODE	COLOUR NAME	SHEET THICKNESS	SHEET SIZE (WIDTH X LENGTH)	M ² PER SHEET	WEIGHT PER SHEET	SHEETS PER PALLET
Terrazzo	Q001	Classico	12 mm	760 mm x 3680 mm	2.7968	ca. 56,7kg	20
	Q002	Grigio	12 mm	760 mm x 3680 mm	2.7968	ca. 56,7kg	20

1.3 Sheet & Adhesive Colour Codes

SHEET			ADHESIVE		
GROUP	COLOUR CODE	COLOUR NAME	COLOUR CODE	COLOUR NAME	PACKAGING UNIT
Terrazzo	Q001	Classico	H32	Ivory	45 ml / 250 ml
	Q002	Grigio	H109	Mud Grey	45 ml / 250 ml

1.4 LRV: Light Reflective Values

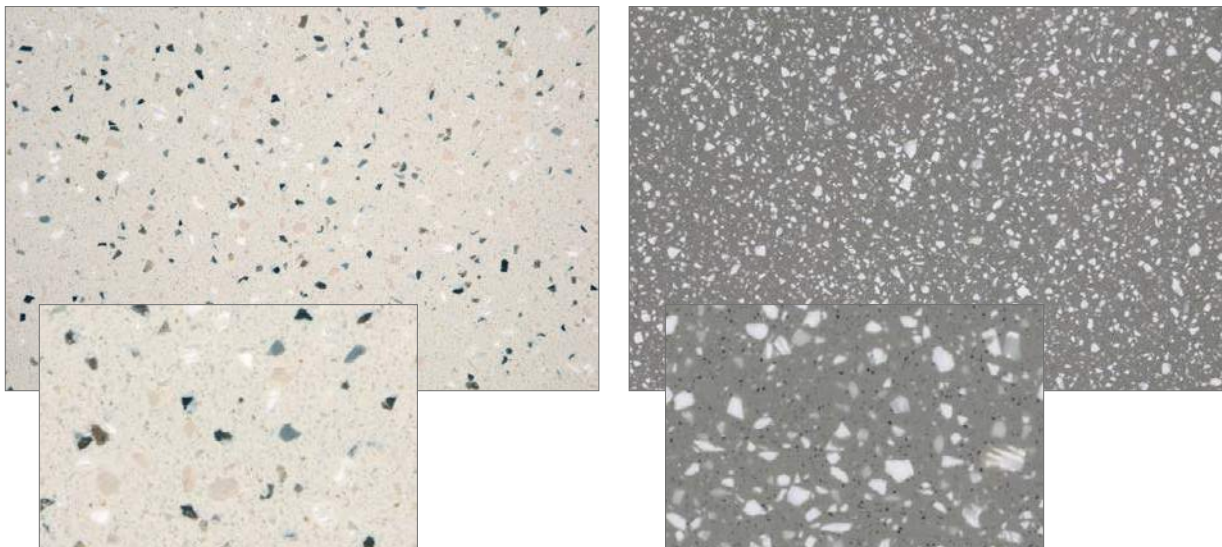
GROUP	SHEET COLOUR CODE	COLOUR NAME	LRV
Terrazzo	Q001	Classico	58.29
	Q002	Grigio	26.24

2. Fabrication

2.1 Special Sheet Characteristics

Customer expectations are best managed by fully educating the customer about product characteristics. For instance, the "motion" of chip distribution that appears on the surface doesn't continue directly through the sheet thickness. The top of a Terrazzo sheet looks nothing like the bottom of that sheet and the cross-section looks nothing like either surface. Some of these differences are shown below:

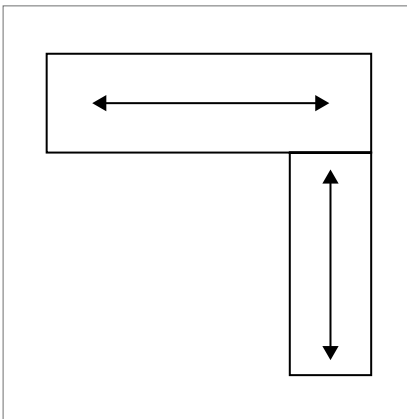
The color and pattern distribution on the surface changes due to random chip distribution of colours in different sizes and partly different collection places. This is a special pattern design and would not be valid for warranty claim.

**Hint:**

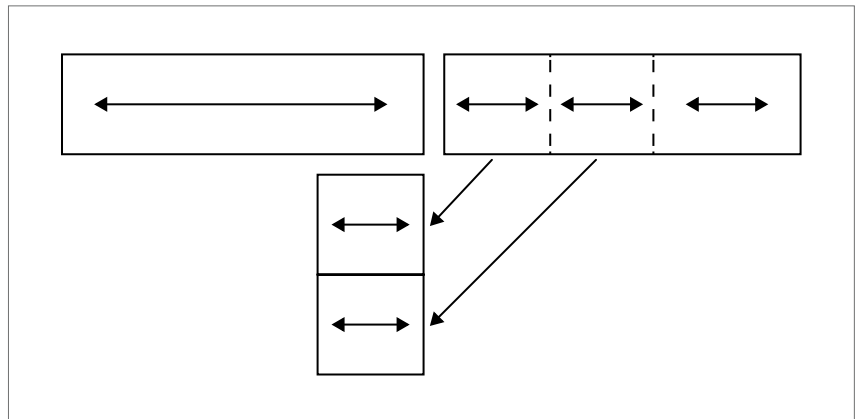
Terrazzo is the same material as any other HIMACS product, but it requires special consideration in order to fabricate an aesthetically pleasing finished product. We strongly advise the fabricator to confirm that the purchaser and the end user understand these considerations before proceeding.

2.2. Sheet to Sheet bonding flow

Fabricating an "L-shape" or "U-shape" countertop presents other challenges. Depending on the character of the HIMACS material, in some cases you may wish to have the "extension(s)" placed perpendicular to the primary surface (Example 1). In other cases you may find that placing the "extension(s)" on the same plane as the primary surface works best (Example 2). There's no way to determine which method will work best with any particular color other than to visually evaluate the configurations.

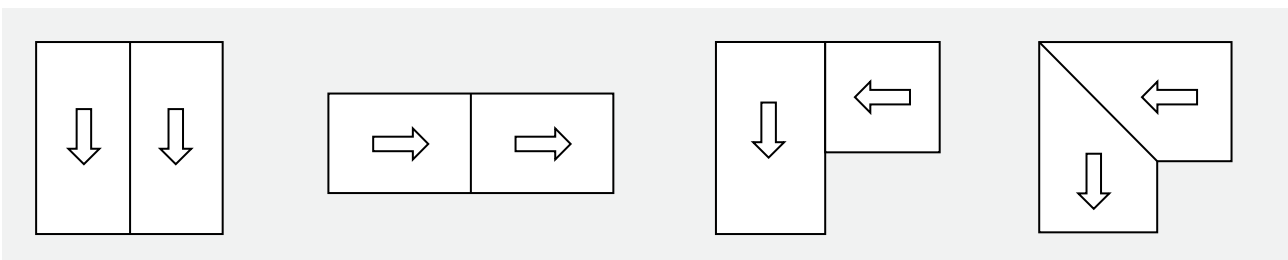


Example 1

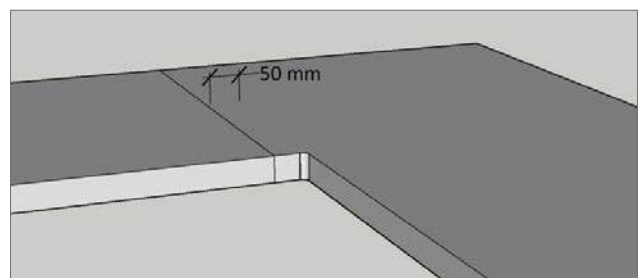


Example 2

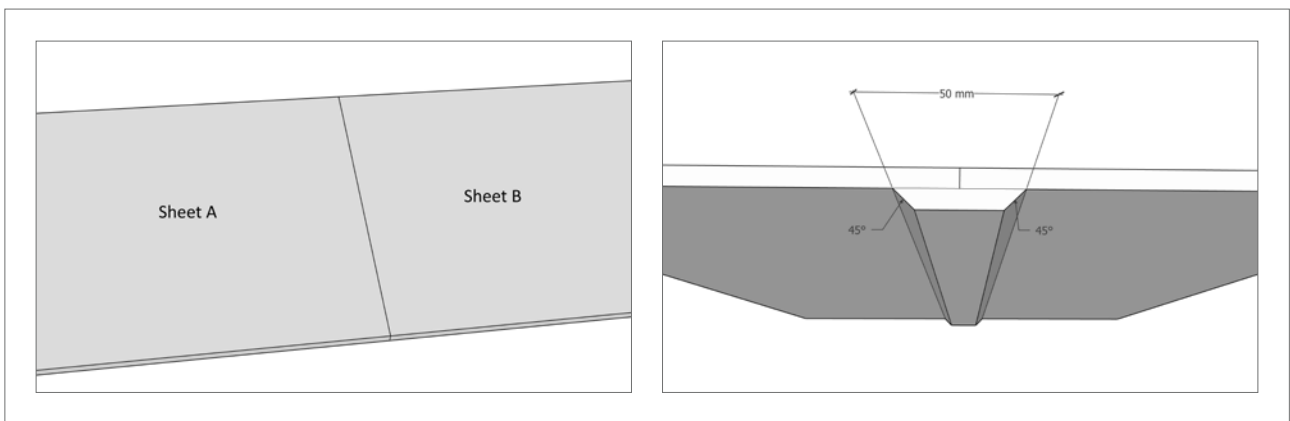
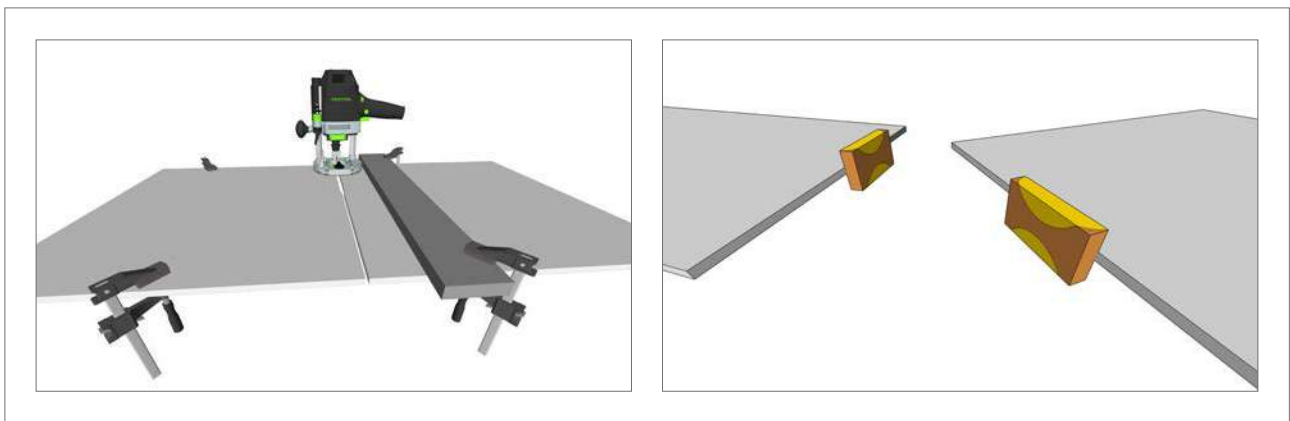
When bonding sheet to sheet double check the best chip consistency and flow according to its overall look. There's no way to determine which method will work best with any particular color other than to visually evaluate the configurations. Again, We strongly advise the fabricator to confirm that the purchaser and the end user understand these considerations before proceeding.



To achieve the best result of the visible pattern direction, particularly with the Terrazzo colours on an L- or an U-shape counter it may best to lay down the sheets of use to get an overview of continuous flow of chips before starting fabrication:



The cut has to be prepared absolutely straight and also parallel (mirror cut).
 Re-sand the cut edge with sandpaper of approx. 180grit (or 60 micron).
 Always clean off the cut edges from dust with a white cloth and use denatured alcohol or acetone.
 Ensure the edge is absolutely straight when making a seam.
 Ideally, make a profile, such as a tongue and groove.
 Ensure always to fabricate a re-enforcement strip (for kitchen worktops a 45° angled edge and smooth the adhesive line) from underneath.
 Always tighten pressure – but do not over tighten the pressure to the seam.

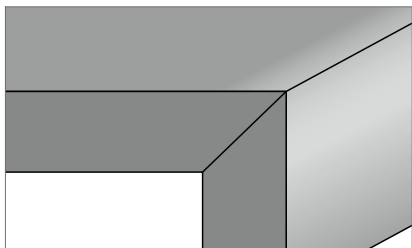


Note:

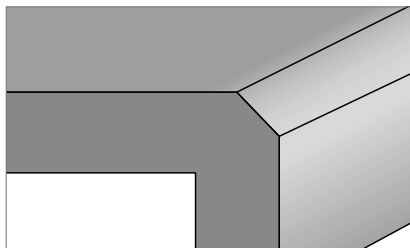
the adhesive is not developed as filler for repairs. In the case of damage to the surface it is strongly recommended to make a plug repair if possible (tools should be readily available local to you to purchase – please contact your local technical support).

2.3 Edge bonding flow

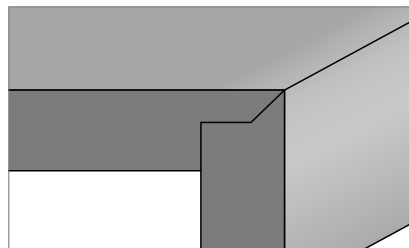
To let the pattern flow around the edges a 45° angled cut of the edge or an alternative rebate is one of the best solutions.



Standard V-grooved



Standard with bevel

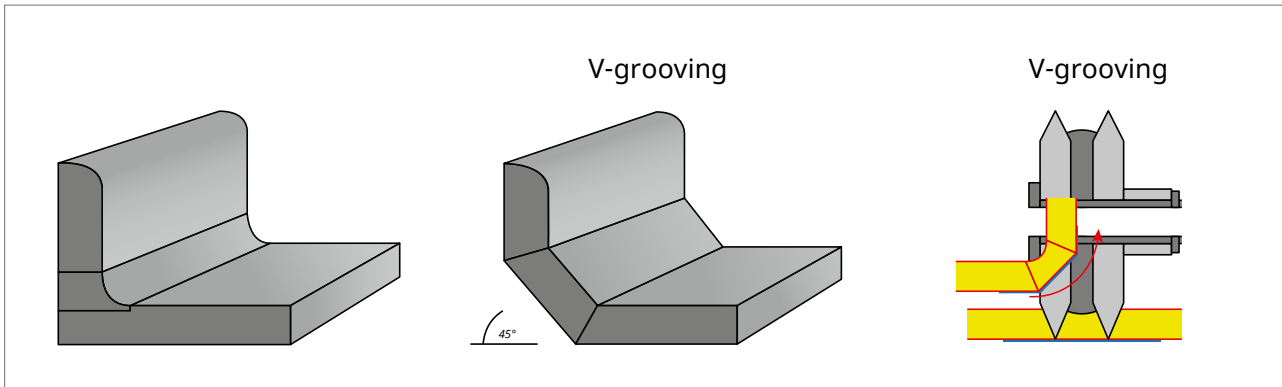


Standard V-grooved and angled

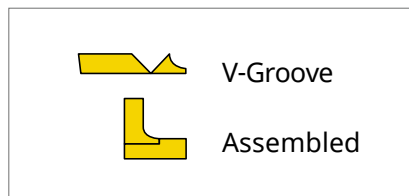
For the bonding process of the edges please follow the instructions of edge treatments. Also here: We strongly advise the fabricator to confirm that the purchaser and the end user understand these considerations before proceeding; a sample should be prepared for the client to view and sign off.

2.4 Backsplash flow

To let the pattern flow around the edges a 45° angled cut of the edge or an alternative rebate is one of the best solutions.



A downturn or an upstand are best achieved with a 45° angle or a profiled folding option – see picture 3 (V-grooving).



2.5 Sanding (finishing)

- The reference is as recommended with our standard products.
- For further details: **See TDS-no.4 Sanding.**

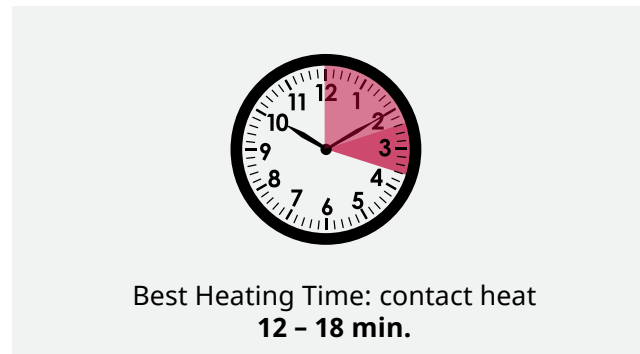
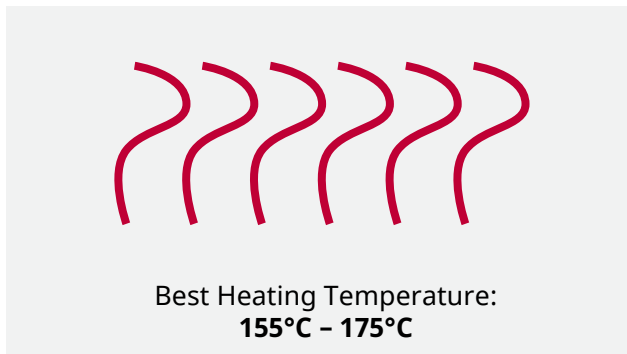


		Standard recommendation					
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH		
HIMACS colour family	for all colours		for all colours		for all colours		
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	
Step 1	100/80 μ	150/180 μ	100/80 μ	150/180 μ	100/80 μ	150/180 μ	
	take dust away		take dust away		take dust away		
Step 2	60 μ	220	60 μ	220	60 μ	220	
	take dust away		take dust away		take dust away		
Step 3	"useit ^x " SuperpadS/G Scotch Brite™ Maroon 7447	280	40/30 μ	280/320	30 μ	280/320	
	take dust away		take dust away		take dust away		
Step 4	industrial paper towel	"useit®" SuperpadS/G Scotch Brite™ Maroon 7447	"useit®" SuperpadS/G Scotch Brite™ Super fine Grey	380/400	15 μ	380/400	
	take dust away		take dust away		take dust away		
Step 5		industrial paper towel	industrial paper towel	"useit®" SuperpadS/G Scotch Brite™ Super fine Grey	9 μ	600/800	
			take dust away		take dust away		
Step 6				industrial paper towel	Finesse-it™ Finish-component	1200	
					take dust away		
Step 7						1500	
					1800		
					2500		

2.6 Thermoforming

To prepare the workpieces, follow the standard thermoforming process.

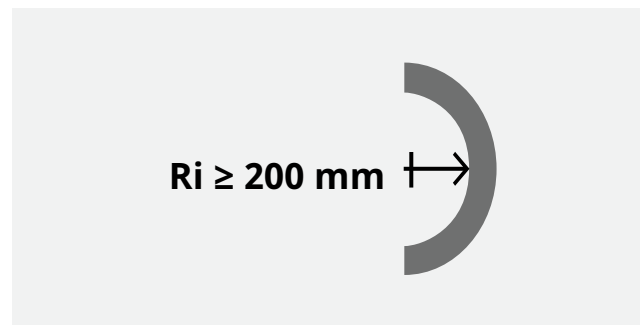
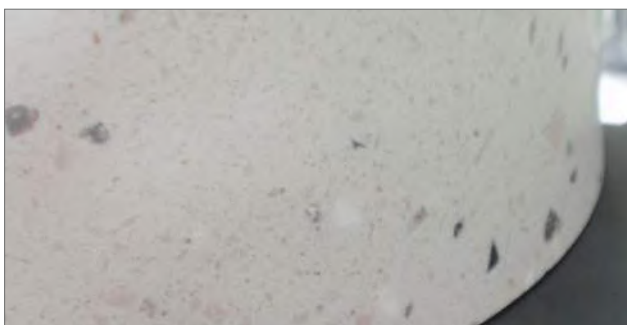
The recommended thermoforming process is to use a pre-heating oven with double sided heating plates.



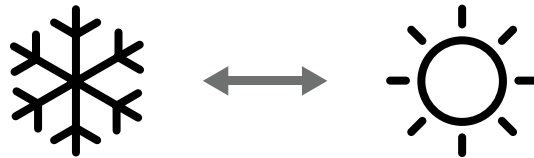
The heating time is similar to the general heating time of HIMACS products for the thermoforming process. The recommendation of smallest radius for 2D of Terrazzo is approx. $\geq 200\text{mm}$. Ensure the work-piece is heated totally through. Be aware that not using recommendations in relation to the radii can cause some colour change or create some cracking or damages to the work-piece.

For any technical inquiry contact your local technical support.

For more detailed thermoforming equipment or any thermoforming accessories please contact global@nabuurs.com or visit the website: www.globalvacuumpresses.com

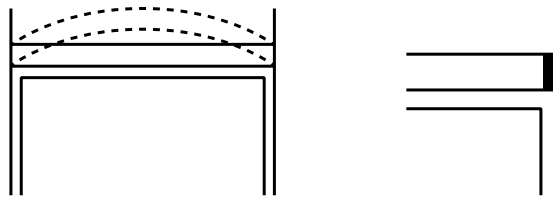


3. Thermal Expansion



Sufficient space should be given to compensate for expansion or contraction at the time of installation since this product may expand or contract depending on the temperature.

Allow 1.5 mm per linear meter for expansion and contraction.



Expansion coefficient HIMACS according to norm DIN

EN 14851: $\Delta t = \text{ca. } 48 \times 10^{-6} / \text{K}$

■ 4. Quality Check

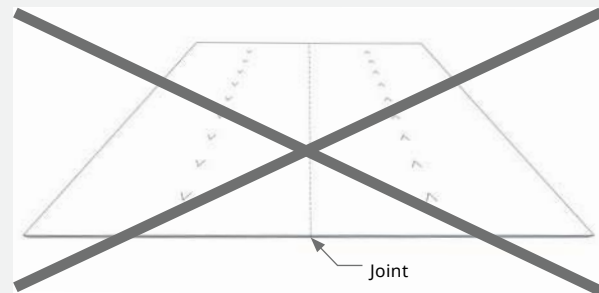
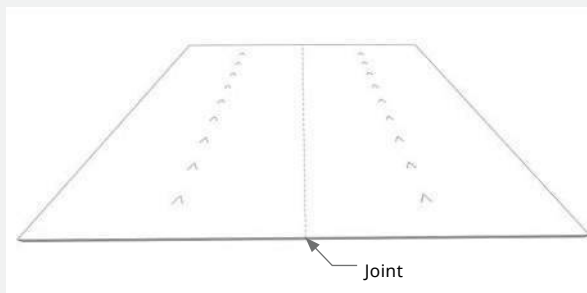
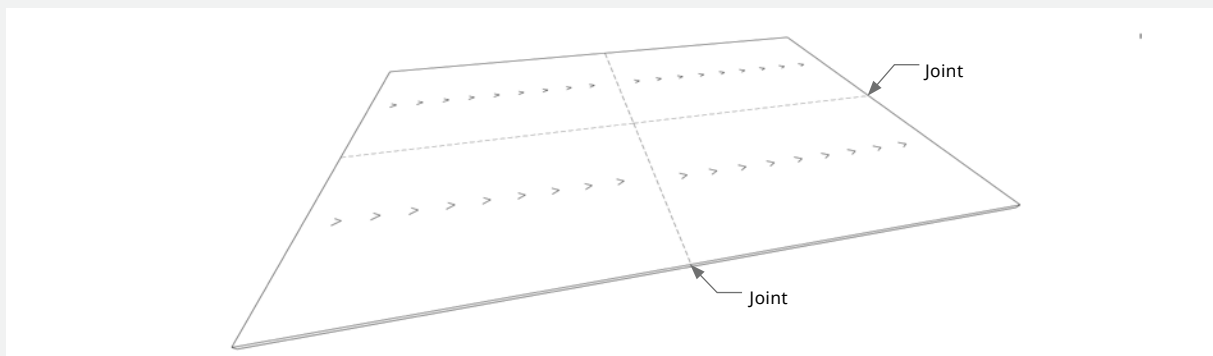
- Check any fabricated item on quality aspects before leaving the workshop.
- In case of any mistakes it easily can be repaired in the workshop and keeps the time of re-work very low.
- Any damage or any mistakes which will be recognized at a later time will make the fixing much more expensive.

Important Hint:

Remember that the 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes.

5. Summary of Hints

When using several sheets for doing one job ensure a continuous flow of sequential numbers as well as the same production flow. Do not turn one sheet into a different direction from the next or opposite side (**no turn** of any sheet by 90°, 180° or 270°).



Terrazzo is the same material as any other HIMACS product, but it requires special consideration in order to fabricate an aesthetically pleasing finished and designed product. We strongly advise the fabricator to confirm that the purchaser and the end user understand these considerations before proceeding.

The adhesive is not developed as a filler for repairs. In the case of damage to the surface it is strongly recommended to make a plug repair if possible (tools are available on the market - please contact your local technical support).

5.1 Hints and Tips

Remember that the 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes.

Keep a record of the fabricated sheet-no's including each sequential number.

Check the overall spread of chip consistency – once assessed determine if suitable and how to use in project installation.

Check Quality of fabricated goods, before delivery.

TECHNICAL DATA SHEET

HIMACS ADHESIVE 2-COMPONENT



Photo: Jousse/Karlitzek, j-k.de

1. Features

1.1 Cartridge: For professional use only

1.2 Technical Documents:

- PDF
- Downloads on Website:
www.himacs.eu

1.3 15 Years limited Warranty:

In Accordance to its material, fabrication and installation guidelines of

interior use. Description of Adhesive:

- Basis: 2-Component-System
Component A: base
Component B: hardener
- Delivery: cartridges ready to use
- Mixing: by mixer-tips only (see further instructions) by use of dispenser gun

1.4 Colours: Available Colours according to the overview listed in the Fabrication Manual of latest publishing.

1.5 Applications:

- HIMACS 2-Component Adhesive is developed to use to glue the thickness of the material and for Interior use only.
- HIMACS 2-Component Adhesive is NOT developed to glue surface to surface – no full area contact
- recommended as well as not developed as a gapfiller neither for any Inlay application.

Available Adhesive:

Cartridge 250ml

Cartridge 45ml



1.6 UV resistance:

Internal tests at LX Hausys Ltd. have shown a positive improvement of its Delta E value in comparison with its forma formulation. Due to environmental and climate changes LX Hausys Ltd. will track on the Warranty of internal use.

1.7 Dispenser Gun:

- for 45ml cartridges
- for 250ml cartridges



2. Stock Items / Goods

- 250ml Cartridge with Mixer Tip
- 45ml Cartridge with Mixer Tip
- Labeling & packaging



Production Date on Label:



Sample here: 28. Feb. 2018 - H16 Alpine White

Store horizontally after partial use.



Dispenser Gun for 45ml cartridge (manual)



Dispenser Gun for 250ml cartridge (manual)



3. Application / Use & Storage

3.1 Application & Use:

- 1) HIMACS 2-component adhesive is developed to use the glue material for bonding the thickness of the product.
- 2) HIMACS 2-component adhesive is not developed to glue surface to surface.
- 3) HIMACS adhesive is not developed to glue large areas to surfaces or to be used as a filler or inlay application.

3.2 Description

basis:	2 component-System
component A:	base
component B:	hardner

3.3 Packaging

PACKAGING		BOX	UNITS / PIECES
cartridge	45ml	1	15
mixer tip (for 45ml)	bag	-	100
cartridge	250ml	1	6
mixer tip (for 250ml)	bag	-	100

3.4 Storage

STORAGE		
life time	years	5
1) adhesive cartridges stored best by	+°C	10 to 20
2) stored best in a cool and dry place		
3) cartridges placed not in sunlight neither any heat device		
4) used and non mixed cartridges placed vertically and turned ones in a while		
5) keep adhesive out of reach of children		

4. Physical Properties /Data

4.1 Physical Properties

PROPERTIES			COMPONENT A	COMPONENT B
single components	-	-	base	hardner
consistency	-	-	pasty	pasty
specific gravity	ISO 2811-1	-	1,13	1,14
viscosity, +23°C ±1°C	KS M 3705	mPa.s	30 000	21 000
density, +20°C	ISO 2811-1	-	1,11	1,12
mixing ratio	-	-	10	1

4.2 Physical Data

PHYSICAL DATA				
HIMACS adhesive cured	various		according to stock list	
density	ISO 1183	g/cm ³	1,11	1,12
Rockwell hardness	ISO 2039	M scale	91	
tensile strength	ISO 527	MPa	36,4	
tensile strength	KS M 3015	N/mm ²	29,6	
ultimate elongation	ISO 527	%	none	
flexural strength	KS M 3015	N/mm ²	84,8	
flexural strength	ISO 178	Mpa	68,1	
flexural E-Modulus	ISO 178	Mpa	436,8	
water resistance	-	-	applicable	

5. Chemical Substances / Component A



HIMACS ADHESIVE COMPONENT A			
Ingredients	CAS No.	EINECS No.	Conc. %
Methyl methacrylate	80-62-6	201-297-1	50%
PMMA [Polymer]	9011-14-7	618-466-4	34%
Alumina trihydrate	21645-51-2	244-492-7	13%
Additives	-	-	3%

COMPONENTS WITH WORKPLACE CONTROL PARAMETER			
KOSHA:	Chemical Name	TWA	STEL
	Methyl methacrylate	50 ppm	100 ppm
ACGIH:	Chemical Name	TLV	STEL
	Methyl methacrylate	50 ppm	100 ppm
	Alumina trihydrate	1 mg/m ³	-

Appropriate engineering controls: Personal protective equipment
Respiratory protection:
Eye protection:
Hand protection:
Skin and body protection:
Further information see MSDS Component A.

Ventilation, Emergency shower
Vapor mask
Protective goggles
Chemical resistant gloves
Working clothes

6. Chemical Substances / Component B



HIMACS ADHESIVE COMPONENT B			
Ingredients	CAS No.	EINECS No.	Conc. %
Dipropylene glycol dibenzoate	27138-31-4	248-258-5	94%
Dibenzoyl peroxide	94-36-0	202-327-6	3%
Fumed silica, crystalline-free	112945-52-5	601-216-3	3%

COMPONENTS WITH WORKPLACE CONTROL PARAMETER			
KOSHA:	Chemical Name	TWA	STEL
	Dibenzoyl peroxide	5 mg/m ³	-
	Fumed silica, crystalline-free	0,1 mg/m ³	
ACGIH:	Chemical Name	TLV	STEL
	Dibenzoyl peroxide	5 mg/m ³	-

Appropriate engineering controls: Personal protective equipment
Respiratory protection:

Eye protection:

Hand protection:

Skin and body protection:

Further information see MSDS Component B.

Ventilation, Emergency shower

Vapor mask

Protective goggles

Chemical resistant gloves

Working clothes

7. Fabrication

- 1) HIMACS Adhesive is manufactured for professional use only and that personel who have reviewed the MSDS and TDS instructions on use
- 2) wear proper protective equipment
- 3) before fabrication adhesive to be adjusted to room temperature
- 4) use Adhesive in a well ventilated area only
- 5) sheets to be bond must be free of dirt, oil and dust
- 6) cleaning best with a white cloth and clear denatured alcoh or Acetone
- 7) any mark or printed ink must be removed before adhesive applied best by sanding and wipe off with clear denatured alcohol (none colored pigments)
- 8) higher fabrication temperature shorten curing time
- 9) mixing by mixer tips only
- 10) the workpices needs to be pressed so some adhesive squeezed out and stays with a line on surface
- 11) after curing the adhesive line can be cleaned off by routing or smooth sanding with sandpaper.
- 12) do not greate heat on surface during sanding process and finish surface level

FABRICATION			MIXING
open time, +17°C	-	-	± 5 Minutes
curing time, +17°C	-	-	
earliest to start working	-	-	± 45 Minutes
total curing	-	-	± 2 to 3 days
fixation pressure	-	N/cm ²	49 - 68

FABRICATION				
fabrication temperature best		+ °C	17	25

■ 8. Environment / Disposal / Hazard Warning

8.1 Environmental Issues: Cured HIMACS Adhesive is "Emission free" according to EN 16000-9 and does not outgassing at any circumstance.

8.2 Disposal

- 1) Not hardened products are usually particularly requiring monitoring hazardous waste and need to be disposed properly according to local legal requirements.
- 2) Cured material can after consultation with the relevant competent Authority or
- 3) landfill as a house / commercial waste disposed.
- 4) The local authorities, such as E.g. District Office, are required to report for proper disposal, Environmental protection agency or regulatory authority.

1) HIMACS adhesive (non mixed)

waste key number 07 02 14

waste key number 14 06 05

2) When adhesive is mixed – to be handled as sheet material:

waste key number 17 02 03

3) Packaging adhesive cartridges:

waste key number 15 01 10

8.3 Hazard Warnings

- Information on the safe handling of chemical products, as well as the essential physical, safety technical, toxicological and ecological data are the current Safety data sheets to remove.
- The relevant provisions, such as E.g. the hazardous substances Ordinance are to be observed.
- For more instructions and informations see data sheets for product safety

■ 9. Data Base / Legal Hints

9.1 Data Base

- 1) All data, dimensions, and technical data in this data sheet are based on laboratory tests.
- 2) Due to circumstances independantly from manufactory-test-laboratory the data may vary while using the material under different temperatur and level of humidity.

9.2 Legal Hints

The information provided in this Technical Data Sheet (TDS) is based on our Knowledge and experience under normal circumstances, when the product is properly stored and used. Due to the different materials, substrates as well as different working conditions, LX Hausys cannot guarantee a work result or liability. The user has to test the product to their suitability for the intended application purpose. LX Hausys reserve the right to change the product specification. The latest product data sheet should be requested from LX Hausys. In addition, all respective terms and conditions apply.

10. Greenguard

10.1 Certificate of Compliance



10.2 Greenguard Certification Criteria for Building Products and Interior Finishes

CRITERIA	CAS NUMBER	MAXIMUM ALLOWABLE PREDICTED CONCENTRATION	UNITS
TVOC ^(A)	-	0.50	mg/m ³
Formaldehyde	50-00-0	61.3 (50ppb)	µg/m ³
Total Aldehyde ^(B)	-	0.10	ppm
4-Phenylcyclohexene	4994-16-5	6.5	µg/m ³
Particle Matter less than 10 µm ^(C)	-	20	µg/m ³
Individual VOC ^(D)	-	1 / 10th TLV	-

- (A) Defined to be the total response of measured VOCs falling within the C₆ – C₁₆ range, with responses calibrated to a toluene surrogate. Maximum allowable predicted TVOC concentrations for GREENGUARD (0.50 mg/m³) fall in the range of 0.5 mg/m³ or less, as specified in CDPH Standard Method v1.1.
- (B) The sum of all measured normal aldehydes from formaldehyde through nonanal, plus benzaldehyde, individually calibrated to a compound specific standard. Heptanal through nonanal are measured via TD / GC / MS analysis and the remaining aldehydes are measured using HPLC / UV analysis.
- (C) Particle emission requirement only applicable to HVAC Duct Products with exposed surface area in air streams (a forced air test with specific test method) and for wood finishing (sanding) systems.
- (D) Allowable levels for chemicals not listed are derived from 1 / 10th of the Threshold Limit Value (TLV) industrial work place standard. (Reference: American Conference of Government industrial Hygienist, 6500 Glenway, Building D-7, and Cincinnati, OH 45211-4438).

11. Colour Use: Sheet Colour vs Adhesive Colour

NO	COLOUR	NAME	DISCLAIMER	RANGE	ADHESIVE
1	G001	Desert Sand		S & P	H04 Peanut
2	G002	Grey Sand		S & P	H03 Grey
3	G004	White Quartz		Quartz	H36 Silver
4	G005	White Granite		Granite	H03 Grey
5	G007	Platinum Granite		Granite	H03 Grey
6	G009	Black Sand		S & P	H42 Merapi
7	G010	Black Pearl	•	S & P	H07 Black
8	G015	Midnight Pearl	•	S & P	H10 Blue
9	G031	Black Granite	•	Granite	H07 Black
10	G034	Arctic Granite		Granite	H36 Silver
11	G038	Sea Oat Quartz		Quartz	H04 Peanut
12	G048	Beach Sand		S & P	H04 Peanut
13	G050	Tapioca Pearl		S & P	H36 Silver
14	G058	Moonscape Quartz		Quartz	H04 Peanut
15	G063	Allspice Quartz		Quartz	H14 Sephia
16	G074	Mocha Granite		Granite	H37 Mocca
17	G100	Peanut Butter		Granite	H04 Peanut
18	G101	Crystal Beige		Quartz	H01 Satin White
19	G102	Grey Crystal		Granite	H03 Grey
20	G105	Brown Pearl	•	S & P	H35 Dark
21	G106	Riviera Sand		S & P	H04 Peanut
22	G107	Pebble Pearl		S & P	H03 Grey
23	G108	Lunar Sand		S & P	H36 Silver
24	G554	Urban Concrete		Concrete	H22 Perna Grey
25	G555	Steel Concrete	•	Concrete	H114 Pantheon
26	M551	Chic Concrete		Concrete	H114 Pantheon
27	M552	Shadow Concrete	•	Concrete	H114 Pantheon
28	M553	Ebony Concrete	•	Concrete	H115 Colosseum
29	M201	Terni		Marmo	H68 Terni
30	M206	Monza	•	Marmo	H07 Black
31	M303	Capri	•	Marmo	H62 Clay
32	M306	Breeze White		Marmo	H02 Arctic White
33	M422	Creamona		Marmo	H36 Silver
34	M426	Laviano		Marmo	H03 Grey
35	M427	Bellizzi		Marmo	H36 Silver



NO	COLOUR	NAME	DISCLAIMER	RANGE	ADHESIVE
36	M428	Ispani		Marmo	H36 Silver
37	M501	Edessa		Marmo	H02 Arctic White
38	M904	Naples	●	Marmo	H107 Marta Grey
39	S001	Satin White		Solid	H01 Satin White
40	S002	Almond		Solid	H04 Peanut
41	S005	Grey		Solid	H03 Grey
42	S006	Arctic White		Solid	H02 Arctic White
43	S009	Cream		Solid	H20 Cream
44	S022	Black	●	Solid	H07 Black
45	S025	Fiery Red	●	Solid	H18 Red
46	S026	Banana	●	Solid	H17 Banana
47	S027	Orange	●	Solid	H19 Orange
48	S028	Alpine White		Solid	H16 Alpine White
49	S029	Ivory White		Solid	H32 Ivory
50	S033	Nordic White		Solid	H16 Alpine White
51	S034	Diamond White		Solid	H113 Diamond White
52	S100	Coffee Brown	●	Solid	H37 Mocca
53	S102	Babylon Beige	●	Solid	H52 Babylon Beige
54	S103	Concrete Grey	●	Solid	H53 Concrete Grey
55	S104	Toffee Brown	●	Solid	H54 Toffee Brown
56	S106	Lemon Squash	●	Solid	H104 Lemon Squash
57	S108	Marta Grey	●	Solid	H107 Marta Grey
58	S109	Steel Grey	●	Solid	H101 Steel Grey
59	S111	Dark Night	●	Solid	T09 Dark Night
60	S115	Deep Indigo	●	Solid	T08 Deep Indigo
61	S116	Festival Pink	●	Solid	H106 Festival Pink
62	S117	Midnight Grey	●	Solid	H35 Dark
63	S118	Mink	●	Solid	H128 Grey
64	S119	Evergreen	●	Solid	H125 Green
65	S120	Cosmic Blue	●	Solid	H127 Navy
66	S121	Suede	●	Solid	H126 Beige
67	S201	Nougat Cream		Solid	H04 Peanut
68	S203	Sky Blue		Solid	H30 Dawn Misty
69	S212	Light Green	●	Solid	H56 Light Green
70	S302	Opal		Lucent	T02 Opal



NO	COLOUR	NAME	DISCLAIMER	RANGE	ADHESIVE
71	S303	Sapphire		Lucent	T03 Sapphire
72	S304	Ruby		Lucent	T04 Ruby
73	S305	Emerald		Lucent	T05 Emerald
74	VA01	Santa Ana		Volcanics	H03 Grey
75	VE01	Tambora		Volcanics	H20 Cream
76	VB02	Cima	•	Volcanics	H45 V/Black
77	VA22	Frosty		Volcanics	H03 Grey
78	VG21	Maui		Volcanics	H49 Maui
79	VW01	Gemini		Volcanics	H36 Silver
80	T010	Nebula		Aster	H02 Arctic White
81	T011	Venus		Aster	H01 Satin White
82	T017	Andromeda		Aster	H16 Alpine White
83	T018	Carina		Aster	H02 Arctic White
84	T019	New Moon		Aster	H01 Satin White
85	T020	Hercules	•	Aster	H22 Perna Grey
86	P102	Kold Silver		Sparkle	H111 Kold Silver
87	W001	Ice Queen		Lucia	H16 AL/White
88	W003	Shadow Queen		Lucia	H58 Pebble Pearl
89	W004	Star Queen	•	Lucia	H42 Merapi
90	W007	Lentil		Lucia	H20 Cream
91	W010	Red Quinoa	•	Lucia	H39 Latte

■ 12. Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs approval from LX Hausys Europe GmbH, for Warranty. This bulletin is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since LX Hausys Europe GmbH cannot anticipate all variations in actual end-use conditions, LX Hausys Europe GmbH makes no warranties and assumes no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

■ 13. Warranty

The 15-year limited Warranty for HIMACS where offered, does not cover damage caused by failure to follow proper fabrication and installation procedures and maintenance care, for which LX Hausys Europe GmbH does not have published procedures, or damages caused by customer abuse. The above Technical description shows mandatory procedures – for complete details, refer to HIMACS Fabrication Guidelines and/or additional Technical Bulletins of latest relevant updates

TECHNICAL DATA SHEET

JOINT ADHESIVE



Joint Adhesive

HIMACS special formulated two component adhesive system is available in 45ml and in 250ml cartridges and in many different colors.



Pic.1 45ml + Mixer tip



Pic.2 250ml + Mixer tip

Each adhesive cartridge has a maximum shelf life. Check its suitability prior to use, see the date of manufacture on the label attached on the product itself and on the packaging boxes from LX Hausys.

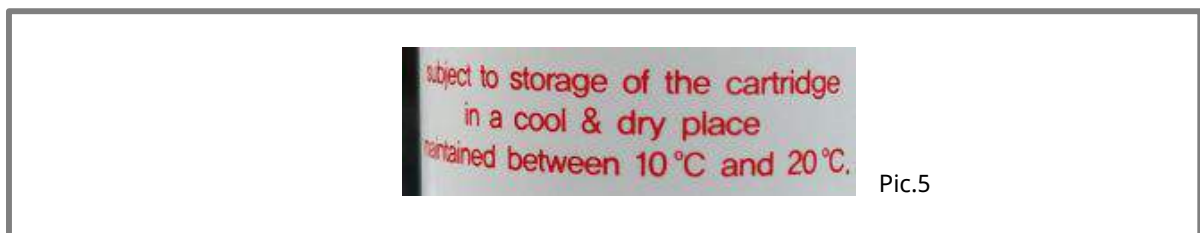


Pic.3 Shelf life for all available colors:
5-Years after date of manufacturing*)



Pic.4

Storage of adhesive should be in cool (approx. +10°C to maximum +20°C) and dry conditions. When storing adhesive cartridges used or unused place them horizontally in your shelves so as not to allow pigments eventually to settle when not using it for some time:



Pic.5

Keep the adhesive cartridges best in a dark room or cabinet and keep away from sunlight and do not place them adjacent to any heating equipment.
Keep HIMACS adhesive away from children.
For more information about the product and its ingredients have a look into the MSDS of the adhesive.
To mix both components special sized "mixer-tips" is needed.



Pic. 6



Pic. 7



Pic. 8

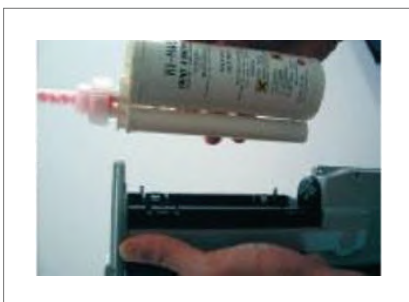
Both mixer-tips for the cartridges of 250ml and for 45ml are developed with a Bayonet-lock and fit only in one direction according to the inside size of connection diameter. For each cartridge size a dispenser gun (manual) is available (see latest price list).



Pic. 9 Dispenser Gun for 45ml cartridge (manual)



Pic. 10 Dispenser Gun for 250ml cartridge (manual)



Pic. 11



Pic. 12



Pic. 13

1. Put the cartridge into the dispenser gun. Ensure the correct positioning of the two different parts (filler and hardener) in the dispenser.
2. Before adjusting the mixer-tip check if both components can be squeezed out and that the components can flow.
3. Clean off with a clean towel and fix the mixer-tip.
4. Clean the seam with Denatured Alcohol or Acetone – use only a clean white cloth to do this.
5. Start to press both adhesive components into the mixer-tip and check if both mixing properly.
6. Squeeze the first couple of cm on a test piece. When mixing is good – start to bring the adhesive to the seam.
7. Do not touch non cured adhesive with dirty hands or any aluminum tools.



HIMACS ADHESIVE TECHNICAL SPECIFICATION DATA SHEET

DESCRIPTION

Basis	2 component-System
Component A	Base
Component B	Hardener

PHYSICAL PROPERTIES			COMPONENT A	COMPONENT B
single components			Base	Hardener
consistency			Pasty	Pasty
specific gravity	ISO 2811-1	-	1.13	1.14
viscosity, +23°C ±1°C	KS M 3705	mPa.s	30,000	21,000
density, +20°C	ISO 2811-1	-	1.11	1.12
mixing ratio	-	-	10	1

FABRICATION			MIXING	
Open time, +17°C	-	-	± 5 Minutes	
Curing time, +17°C	-	-		
Earliest to start working	-	-	± 45 Minutes	
Total curing	-	-	± 2 to 3 days	
Fixation pressure	-	N/cm ²	49 - 68	

PHYSICAL DATA				
HIMACS Adhesive cured	Various		According to stock list	
Density	ISO 1183	g/cm ³	1.11	1.12
Rockwell Hardness	ISO 2039	M scale	91	
Tensile Strength	ISO 527	MPa	36.4	
Tensile Strength	KS M 3015	N/mm ²	29.6	
Ultimate Elongation	ISO 527	%	None	
Flexural Strength	KS M 3015	N/mm ²	84.8	
Flexural Strength	ISO 178	MPa	68.1	
Flexural E-Modulus	ISO 178	MPa	436.8	
Water Resistance			Applicable	

PACKAGING		BOX	UNITS/PIECES
Cartridge	45ml	1	15
Mixer tip (For 45ml)	Bag		100
Cartridge	205ml	1	6
Mixer tip (For 250ml)	Bag		100

APPLICATION & USE

1. HIMACS 2-component adhesive is developed to use the glue material for bonding the thickness of the product
2. HIMACS 2-component adhesive is not developed to glue surface to surface
3. HIMACS adhesive is not developed to glue large areas to surfaces or to be used as a filler or inlay application.

STORAGE

Life Time	Years	5
1. Adhesive cartridges stored best by	+ °C	10 to 20
2. Stored best in a cool and dry place		
3. Cartridges placed not in sunlight neither any heat device		
4. Used and non-mixed cartridges placed vertically and turned ones in a while		
5. Keep adhesive out of reach of children		

FABRICATION

Fabrication temperature best	+ °C	17	25
1. HIMACS Adhesive is manufactured for professional use only and that personnel who have reviewed the MSDS and TDS instructions on use			
2. Wear proper protective equipment: for eyes / face, hands and arms			
3. Before fabrication adhesive to be adjusted to room temperature			
4. Use Adhesive in a well ventilated area only			
5. Sheets to be bond must be free of dirt, oil and dust			
6. Cleaning best with a white cloth and clear denatured alcohol or Acetone			
7. Any mark or printed ink must be removed before adhesive applied best by sanding and wipe off with clear denatured alcohol (none colored pigments)			
8. Higher fabrication temperature shorten curing time (see max. Fabrication temp.)			
9. Mixing by mixer tips only			
10. Prepare to be bonding edges smooth (180grit sandpaper)			
11. Clean edges with lucent denatured alcohol			
12. The workpieces needs to be pressed so some adhesive squeezed out and stays with a line on surface			
13. After curing the adhesive line can be cleaned off by routing or smooth sanding with sandpaper			
14. Do not create heat on surface during sanding process and finish surface level			

Chemical Substances



Component A: ingredients

Mixture: Description of the mixture: Synthetic resin(s) and filler(s). The mixture contains these substance:

SUBSTANCE NAME	EC/CAS No.	CLASSIFICATION				CONC. (%)
		67/548/EEC	CLP			
			HAZARD CLASS AND CATEGORY CODE(S)	HAZARD STATEMENT	PICTOGRAM/SIGNAL WORD	
Methyl methacrylate ^{1,D}	201-297-1/ 80-62-6	Highly Flammable F; R11 Irritant Xi; R36 ² /37/38 Sensitizing R43	Flam.Liq. 2 Skin. Irrit. 2 Eye Irrit. 2 ² Skin Sens. 1 STOT SE 3	H225 H315 H319 ² H317 H335	GHS02 GHS07 Dgr	35-50
PMMA [Polymer]	618-466-4/ 9011-14-7					20-35
Aluminum Trihydrate	244-492-7/ 21645-51-2					10-20
Additives	-	-	-	-	-	3

¹Substance with workplace exposure limits.

²Classification according to manufacturer.

Note D: Certain substances which are susceptible to spontaneous polymerisation decomposition are generally placed on the market in a stabilised form. It is this form that they are listed in Part 3. However, such substances are sometimes placed on the market in a non-stabilised form. In this case, supplier must state on the label the name of the substance followed by the words 'Non-stabilised'.

For full text of H-statements and R-phrases: see SECTION 16.

Control Parameters: Occupational exposure limit values listed in EH40/2005 Workplace exposure limits:

SUBSTANCE	CAS NUMBER	WORKPLACE EXPOSURE LIMIT				COMMENTS
		LONG-TERM EXPOSURE LIMIT (8-HR TWA REFERENCE PERIOD) ppm mg/m ³		SHORT-TERM EXPOSURE LIMIT (15-MINUTE REFERENCE PERIOD) ppm mg/m ³		
Methyl methacrylate	80-62-6	50	208	100	416	-
Titanium dioxide total inhalable	13463-67-7	-	10	-	-	-
respirable Carbon black	1333-86-4	-	3.5	-	7	-

Further information's see MSDS Adhesive



Component B: ingredients

Mixture: Description of the mixture: Plasticizer. The mixture contains these substance:

SUBSTANCE NAME	EC/CAS No.	CLASSIFICATION				CONC. (%)
		67/548/EEC	CLP			
			HAZARD CLASS AND CATEGORY CODE(S)	HAZARD STATEMENT	PICTOGRAM/SIGNAL WORD	
Dipropylene glycol dibenzoate	248-258-5/ 27138-31-4	-	-	-	-	94
Dibenzoyl peroxide ¹	202-327-6/ 94-36-0	Explosive E; R3 Oxidizing O; R7 Irritant Xi; R36 Sensitizing R43	Org. Perox. B Eye Irrit. 2 Skin Sens. 1	H241 H319 H317	GHS01 GHS02 GHS07 Dgr	3
Fumed silica, Cryst.-free ¹	601-216-3/ 112945-52-5	-	-	-	-	3

¹Substance with workplace exposure limits.
For full text of H-statements and R-phrases: see SECTION 16.

Control Parameters: Occupational exposure limit values listed in EH40/2005 Workplace exposure limits:

SUBSTANCE	CAS NUMBER	WORKPLACE EXPOSURE LIMIT		COMMENTS
		LONG-TERM EXPOSURE LIMIT (8-HR TWA REFERENCE PERIOD) ppm mg/m ³	SHORT-TERM EXPOSURE LIMIT (15-MINUTE REFERENCE PERIOD) ppm mg/m ³	
Dibenzoyl peroxide	94-36-0	- 5	- -	-
Fumed silica, Crystalline-free	-	- 0.1	- -	-

► Further information's see at Material Safety Data Sheet Adhesive

Characteristics & Fabrication Summary:

Be sure to use an adhesive colour selection chart to review the properly coded adhesive for respective HIMACS sheet colour. It is important to “adhere” to the recommendations set forth by HIMACS. This will ensure proper colour match and the finished glue lines by following the recommended instructions provided in LX Technical Guidelines.

- Bulk adhesive cartridges typically provide approximate 12 meters of seaming (one straight line squeezed under normal continuous pressure).
- Normal cure time is about 35 minutes in +21°C (+70°F). If hotter, your working time is greatly reduced and, if cooler, your working time is greatly enhanced. Consider this as you begin assembly. You do not want to get too far ahead of yourself if it is warm. You will end up with a mess.
- Remember to consider scuff-sanding joints for better bonding using 180 grit sandpaper. Check if the seam is perfect straight and smooth without any whitening effect due to cutting or other sanding marks (especially by high pigmented colors).
- Before applying the adhesive, clean all areas being bonded with denatured alcohol and a clean white rag. Be sure to look for dirt, pencil marks, and oily fingerprints on all bonding surfaces and remove them.
- Assemble the cartridge in the dispenser gun with a fresh disposable mixer-tip. After each use, remove and replace this tip. The adhesive in the tip will set up just as the seams do on your materials. To ensure the best bond, remember to keep up the maintenance of your mixer-tip.
- If you are finished bonding for the day, you can leave the tip on and place it in your storage refrigerator. The next time you use it you only need to change the tip.
- As you get ready to apply adhesive and begin assembly of your HIMACS top, remember to purge the tip. This is done by squeezing out a bead of approximately the length of the tip.
- This ensures trapped air has worked itself from the mixer-tip and that the catalyst and adhesive have properly mixed and are ready.

Quality check:

- Have a visible check of the cartridge before using if no damage is visible.
- Check if cartridge has any leaking on the bottom or on the top.
- Check if both components can easily flow out properly.
- For any complaint issue, please always provide manufacturing date of adhesive. Since 2013 any complaint should be reported via CRM complaint form

	Cause
adhesive or bond failure	a) failure to scuff, sand or clean joint before bonding b) freezing temperature c) improper support of deck / overhang seams d) improper mixing of components of adhesive e) expired or old adhesive
discoloured seams	a) failure to use clean, white lint free rags b) failure to clean joints with denatured alcohol or clearacetone before adhering c) use of wrong adhesive colour

Hazard Warnings

- Information on the safe handling of chemical products, as well as the essential physical, safety technical, toxicological and ecological data are the current Safety data sheets to remove.
- The relevant provisions, such as E.g. the hazardous substances Ordinance are to be observed.
- For more instructions and information's see data sheets for product safety

Disposal

- Not hardened products are usually particularly requiring monitoring hazardous waste and need to be disposed properly according to local legal requirements.
- Cured material can after consultation with the relevant competent Authority or
- landfill as a house / commercial waste disposed.
- The local authorities, such as E.g. District Office, are required to report for proper disposal, Environmental protection agency or regulatory authority.

- ① HIMACS adhesive (non mixed)
 - waste key number 07 02 14
 - waste key number 14 06 05
- ② when adhesive is mixed - to be handled as sheet material:
 - waste key number 17 02 03
- ③ packaging adhesive cartridges:
 - waste key number 15 01 10

Data Base

1. All data, dimensions, and technical data in this data sheet are based on laboratory tests.
2. Due to circumstances independently from manufactory-test-laboratory the data may vary while using the material under different temperature and level of humidity.

Legal Hints

The information provided in this Technical Data Sheet (TDS) is based on our Knowledge and experience under normal circumstances, when the product is properly stored and used. Due to the different materials, substrates as well as different working conditions, we cannot guarantee a work result or liability. The user has to test the product to their suitability for the intended application purpose. We reserve the right to change the product specification. The latest product data sheet should be requested from us. In addition, all respective terms and conditions apply.


HIMACS Adhesive ./ . Production date

The diagram shows a cartridge of HIMACS adhesive with the following details:

- Adhesive Color Code:** H16
- Adhesive Color Name:** AL/White= Alpine White
- Production Date:** 2018.01.22 (format: YYYY/MM/DD)
- Shelf Life:** 5 Years
- Symbols:** Two hazard symbols are shown: a flame (flammable) and an exclamation mark (irritant).
- Storage Instruction:** subject to storage of the cartridge in a cool & dry place maintained between 10°C and 20°C

GreeGuard Certification of HIMACS Joint Adhesive: Greenguard Adhesive:

CERTIFICATE OF COMPLIANCE



GREENGUARD
PRODUCT CERTIFIED FOR
LOW CHEMICAL EMISSIONS
UL COM/GG
UL 2818

LG Hausys Ltd

HI-MACS Joint Adhesive


161103-410
Certificate Number

08/29/2019 - 06/18/2020
Certificate Period

Certified
Status

UL 2818 - 2013 Standard for Chemical Emissions for Building Materials, Finishes and Furnishings

Building Construction Adhesives are determined compliant in accordance with an Office environment with an air change of 0.68 hr⁻¹.
Products tested in accordance with UL 2818 test method to show compliance to emission limits in UL 2818, Section 7.1.



UL investigates representative samples of the identified Product(s) to the identified Standard(s) or other requirements in accordance with the agreements and any applicable program service terms in place between UL and the Certificate Holder (collectively "Agreement"). The Certificate Holder is authorized to use the UL Mark for the identified Product(s) manufactured at the production site(s) covered by the UL Test Report, in accordance with the terms of the Agreement. This Certificate is valid for the identified Product(s).

GREENGUARD Certification Criteria for Building Products and Interior Finishes

Criteria	CAS Number	Maximum Allowable Predicted Concentration	Units
TVOC _{C₁₀}	-	0.50	mg/m ³
Formaldehyde	50-00-0	61.3 (50 ppb)	µg/m ³
Total Aldehydes ⁽¹⁾	-	0.10	ppm
Particle Matter less than 10 µm ⁽²⁾	-	50	µg/m ³
4-Phenylcyclohexene	4994-16-5	6.5	µg/m ³
Individual VOCs ⁽³⁾	-	1/10th TLV	-

- ⁽¹⁾ Defined to be the total response of measured VOCs falling within the C₁₀-C₁₀ range, with responses calibrated to a toluene surrogate. Maximum allowable predicted TVOC concentrations for GREENGUARD (0.50 mg/m³) fall in the range of 0.5 mg/m³ or less, as specified in core Standard Method v1.1.
- ⁽²⁾ The sum of all measured normal aldehydes from formaldehyde through nonanal, plus benzaldehyde. Individually calibrated to a compound specific standard. Hexanal through nonanal are measured via TD/GC/MS analysis and the remaining aldehydes are measured using HPLC/UV analysis.
- ⁽³⁾ Particle emission requirement only applicable to HVAC Duct Products with exposed surface area in air streams (a forced air test with specific test method) and for wood finishing (sanding) systems.
- ⁽⁴⁾ Allowable levels for chemicals not listed are derived from 1/10th of the Threshold Limit Value (TLV) industrial work place standard (reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building 0-7, and Cincinnati, OH 45211-4430).



Environment

UL investigates representative samples of the identified Product(s) to the identified Standard(s) or other requirements in accordance with the agreements and any applicable program service terms in place between UL, Environment and the Certificate Holder (collectively "Agreement"). The Certificate Holder is authorized to use the UL Environment Mark for the identified Product(s) manufactured at the production site(s) covered by the UL Test Report, in accordance with the terms of the Agreement. This Certificate is valid for the identified Product(s) under their terms compliance with the Agreement.

Greenguard Gold Adhesive

CERTIFICATE OF COMPLIANCE



LG Hausys Ltd
 HI-MACS Joint Adhesive

161103-420
 Certificate Number

08/29/2019 - 06/18/2020
 Certificate Period

Certified
 Status

UL 2818 - 2013 Gold Standard for Chemical Emissions for Building Materials, Finishes and Furnishings

Building Construction Adhesives are tested in accordance with California Department of Public Health (CDPH) Standard Method v1.2-2017 in a Classroom Environment.
 Product tested in accordance with UL 2818 test method to show compliance to emission limits on UL 2818, Section 7.1 and 7.2.



UL investigated representative samples of the identified Product(s) to the identified Standard(s) or other requirements in accordance with the agreements and any applicable program service terms in place between UL and the Certificate Holder (collectively "Agreement"). The Certificate Holder is authorized to use the UL Mark for the identified Product(s) manufactured at the production site(s) covered by the UL Test Report, in accordance with the terms of the Agreement. This Certificate is valid for the identified dates unless there is non-compliance with the Agreement.

GREENGUARD Gold Certification Criteria for Building Products and Interior Finishes

Criteria	CAS Number	Maximum Allowable Predicted Concentration	Units
TVOC ⁽¹⁾	-	0.22	mg/m ³
Formaldehyde	50-00-0	9 (7.3 ppb)	µg/m ³
Total Aldehydes ⁽²⁾	-	0.043	ppm
4-Phenylcyclohexene	4994-26-5	6.5	µg/m ³
Particle Matter less than 10 µm ⁽³⁾	-	20	µg/m ³
1-Methyl-2-pyrrolidinone ⁽⁴⁾	872-50-4	160	µg/m ³
Individual VOCs ⁽⁵⁾	-	1/2 CREL or 1/100th TLV	-

- (1) Defined to be the total response of measured VOCs falling within the C₆-C₁₀ range, with response calibrated to a toluene surrogate. Maximum allowable predicted TVOC concentrations for GREENGUARD Gold (0.22 mg/m³) fall in the range of 0.5 mg/m³ or less, as specified in CDPH Standard Method v1.2.
- (2) The sum of all measured normal aldehydes from formaldehyde through nonanal, plus benzoindehyde, individually calibrated to a compound specific standard. Nonanal through nonanal are measured via TD/GC/MS analysis and the remaining aldehydes are measured using HPLC/UV analysis.
- (3) Particle emission requirement only applicable to HVAC Duct Products with exposed surface area in air streams (a forced air test with specific test method) and for wood finishing (sanding) systems.
- (4) Based on the CA Prop 65 Maximum Allowable Dose Level for inhalation of 3,200 µg/day and an inhalation rate of 20 m³/day.
- (5) Allowable levels for chemicals not listed are derived from the lower of 1/2 the California Office of Environmental Health Hazard Assessment (OEHHA) Chronic Reference Exposure Level (CREL) as required per the CDPH (EHS) Standard Method v1.2 and EPA MA level credit 7.6.2 and 1/100th of the Threshold Limit Value (TLV) industrial hygiene practice standard (Reference: American Conference of Government Industrial Hygienists, 3500 Glenway, Building 0-7, and Cincinnati, OH 45211-4136).



UL investigated representative samples of the identified Product(s) to the identified Standard(s) or other requirements in accordance with the agreements and any applicable program service terms in place between UL and the Certificate Holder (collectively "Agreement"). The Certificate Holder is authorized to use the UL Mark for the identified Product(s) manufactured at the production site(s) covered by the UL Test Report, in accordance with the terms of the Agreement. This Certificate is valid for the identified dates unless there is non-compliance with the Agreement.

Use of HIMACS Joint Adhesive:

NO	COLOUR NAME	NOTIFICATION COLOR	RANGE	ADHESIVE
1	G002 Grey Sand		S & P	H03 Grey
2	G004 White Quartz		Quartz	H36 Silver
3	G007 Platinum Granite		Granite	H03 Grey
4	G009 Black Sand		S & P	H42 Merapi
5	G010 Black Pearl	✓	S & P	H07 Black
6	G015 Midnight Pearl	✓	S & P	H10 Blue
7	G031 Black Granite	✓	Granite	H07 Black
8	G034 Arctic Granite		Granite	H36 Silver
9	G038 Sea Oat Quartz		Quartz	H04 Peanut
10	G048 Beach Sand		S & P	H04 Peanut
11	G050 Tapioca Pearl		S & P	H36 Silver
12	G063 Allspice Quartz		Quartz	H14 Sephia
13	G074 Mocha Granite		Granite	H37 Mocca
14	G100 Peanut Butter		Granite	H04 Peanut
15	G101 Crystal Beige		Quartz	H01 Satin White
16	G105 Brown Pearl	✓	S & P	H35 Dark
17	G106 Riviera Sand		S & P	H04 Peanut
18	G107 Pebble Pearl		S & P	H03 Grey
19	G108 Lunar Sand		S & P	H36 Silver
20	G556 Snow Concrete (NEW)		Concrete	H02 Arctic White
21	G557 Cloud Concrete (NEW)		Concrete	H132 Cloud
22	G554 Urban Concrete		Concrete	H22 Perna Grey
23	G555 Steel Concrete	✓	Concrete	H114 Pantheon
24	M551 Chic Concrete		Concrete	H114 Pantheon
25	M552 Shadow Concrete	✓	Concrete	H114 Pantheon
26	M553 Ebony Concrete	✓	Concrete	H115 Colosseum
27	M603 Pavia (NEW)		Marmo	H21 Pavia White
28	M605 Sanremo (NEW)	✓	Marmo	H35 Dark
29	M606 Aurora Bianco (NEW)		Marmo	H02 Arctic White
30	M608 Aurora Grey (NEW)		Marmo	H139 Aurora Grey
31	M201 Terni		Marmo	H68 Terni
32	M303 Capri	✓	Marmo	H62 Clay
33	M422 Creamona		Marmo	H36 Silver
34	M426 Laviano		Marmo	H03 Grey
35	M427 Bellizzi		Marmo	H01 Satin White
36	M428 Ispani		Marmo	H36 Silver
37	M501 Edessa		Marmo	H02 Arctic White
38	M904 Naples	✓	Marmo	H107 Marta Grey
39	Z001 Strato Cloud (NEW)		Strato	H85 Light Grey
40	Z003 Strato Wind (NEW)		Strato	H16 Alpine White
41	Z005 Strato Slate (NEW)	✓	Strato	H22 P/Grey
42	S001 Satin White		Solid	H01 Satin White
43	S002 Almond		Solid	H04 Peanut
44	S005 Grey		Solid	H03 Grey
45	S006 Arctic White		Solid	H02 Arctic White
46	S009 Cream		Solid	H20 Cream
47	S022 Black	✓	Solid	H07 Black

Use of HIMACS Joint Adhesive:

NO	COLOUR NAME	NOTIFICATION COLOR	RANGE	ADHESIVE
48	S025 Fiery Red	✓	Solid	H18 Red
49	S026 Banana	✓	Solid	H17 Banana
50	S027 Orange	✓	Solid	H19 Orange
51	S028 Alpine White		Solid	H16 Alpine White
52	S029 Ivory White		Solid	H32 Ivory
53	S034 Diamond White		Solid	H113 Diamond White
54	S100 Coffee Brown	✓	Solid	H37 Mocca
55	S102 Babylon Beige	✓	Solid	H52 Babylon Beige
56	S103 Concrete Grey	✓	Solid	H53 Concrete Grey
57	S104 Toffee Brown	✓	Solid	H54 Toffee Brown
58	S106 Lemon Squash	✓	Solid	H104 Lemon Squash
59	S108 Marta Grey	✓	Solid	H107 Marta Grey
60	S109 Steel Grey	✓	Solid	H101 Steel Grey
61	S111 Dark Night	✓	Solid	T09 Dark Night
62	S115 Deep Indigo	✓	Solid	T08 Deep Indigo
63	S116 Festival Pink	✓	Solid	H106 Festival Pink
64	S117 Midnight Grey	✓	Solid	H35 Dark
65	S118 Mink	✓	Solid	H128 Mink Grey
66	S119 Evergreen	✓	Solid	H125 Green
67	S120 Cosmic Blue	✓	Solid	H127 Navy
68	S121 Suede		Solid	H126 Beige
69	S201 Nougat Cream		Solid	H04 Peanut
70	S203 Sky Blue		Solid	H30 Dawn Misty
71	S212 Light Green	✓	Solid	H56 Light Green
72	S302 Opal		Lucent	T02 Opal
73	S303 Sapphire		Lucent	T03 Sapphire
74	S304 Ruby		Lucent	T04 Ruby
75	S305 Emerald		Lucent	T05 Emerald
76	VA01 Santa Ana		Volcanics	H03 Grey
77	VE01 Tambora		Volcanics	H20 Cream
78	VB02 Cima	✓	Volcanics	H45 V/Black
79	VA22 Frosty		Volcanics	H03 Grey
80	VG21 Maui		Volcanics	H49 Maui
81	VW01 Gemini		Volcanics	H36 Silver
82	T010 Nebula		Aster	H02 Arctic White
83	T011 Venus		Aster	H01 Satin White
84	T017 Andromeda		Aster	H16 Alpine White
85	T019 New Moon		Aster	H01 Satin White
86	T020 Hercules	✓	Aster	H22 Perna Grey
87	P102 Kold Silver		Sparkle	H111 Kold Silver
88	W001 Ice Queen		Lucia	H16 AL/White
89	W003 Shadow Queen		Lucia	H58 Pebble Pearl
90	W004 Star Queen	✓	Lucia	H42 Merapi
91	W010 Red Quinoa	✓	Lucia	H39 Latte
92	S922U Intense Ultra Black	✓	Intense Ultra	H134 Deep Black
93	S923U Intense Ultra Grey	✓	Intense Ultra	H53 Concrete Grey
94	S924U Intense Ultra Dark Grey	✓	Intense Ultra	H135 Intense Dark Grey

Material Safety Data Sheet (MSDS) of HIMACS Joint Adhesive Component A & Component B

► Further more detailed information's see TDS Health & Safety / MSDS.



Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs approval from our company for Warranty. This bulletin is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since our company cannot anticipate all variations in actual end-use conditions, We make no warranties and assumes no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

TECHNICAL DATA SHEET SEAMING



© Dominik Obertreis

1. Seaming

The machining of two pieces of HIMACS to create a seam joint can be carried out in different ways. What is important however, is the quality of the machined edge.

The goal is always to create a perfect seam without any visible gaps at all. As accurate as a seam is prepared as perfect the result of the seam will be to become not seen anymore.

Before starting the preparation ensure the sheets to assemble are placed in the right position and have been produced according to its production flow and showing a sequential production date.

The most reliable method is the “mirror cut” technique with a hand-held router, which works by cutting both adjoining edges in one cut. Place the two pieces onto a seaming table (Fig.1), leaving a gap of 9 mm between them and secure with either C-clamps or screw clamps. Clamp a metal or a compact straight edge to one of the pieces placed on a strong and stable table. With a 12 mm double flute tungsten carbide router bit fixed into a powerful hand router, move the machine steadily in one direction away from your body and cut both sections at once. Maintain a slow steady pace without stopping. After cutting check that the joint matches perfectly and mark the mating position with a pencil line.

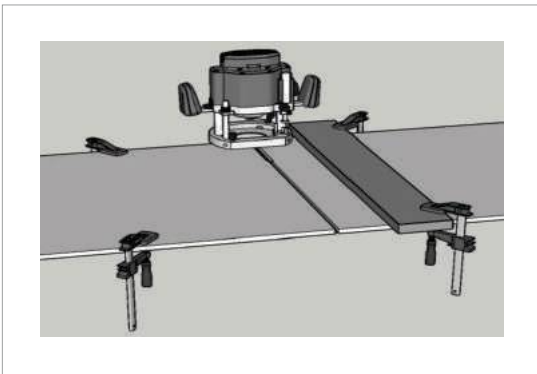


Fig.1



Fig.2

Another possibility is to machine each edge independently using a standard workbench and straight edge (Fig.2).

First clamp the work piece to the bench and attach the straight edge to the sheet, so that the router will remove 1.5mm in total. Push the router at a slow steady pace without stopping. Repeat this exercise for the second piece and then check the accuracy of the joint. If the edges do not match then one or both of these edges will require re-machining. (Using a wavy profile router bit can avoid gauge difference between both work pieces).

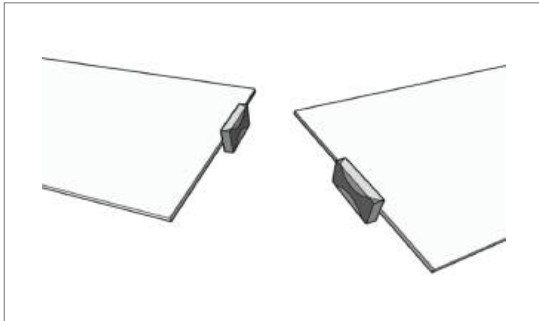


Fig.3

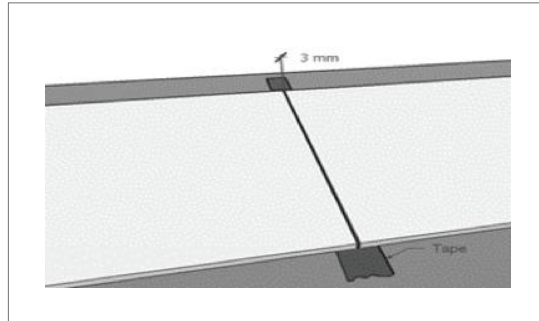


Fig.4

After machining, both cut edges will require sanding with 150/180 grit abrasive sandpaper (see Fig.3) and to be cleaned using denatured alcohol (or Acetone) with a white clean cloth or white industrial paper, in preparation for bonding.

The use of CNC cutting and nesting programs is becoming more and more popular. Equipment, such as this, is becoming very efficient, especially for small serial production or individual requirements.

When edges have been machined, sanded and cleaned, they are ready for bonding.

Before bonding, cover the tray beneath the seaming table with a transparent tape in order to catch any overspill of adhesive (Fig.4).

The sheets are to be clamped together using for example screw clamps. It will be necessary to fix small blocks to the sheet using hot melt adhesive. (Fig.5). Additional working steps are needed till the work piece is finished.

Alternatively, sash clamps (Fig.6) can be used, provided they are not over tightened. Apply tape at either end of the assembly prior to the application of adhesive.

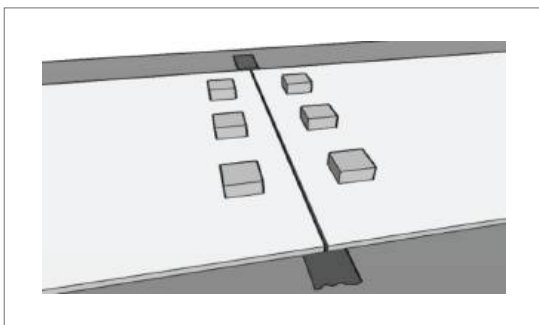


Fig.5

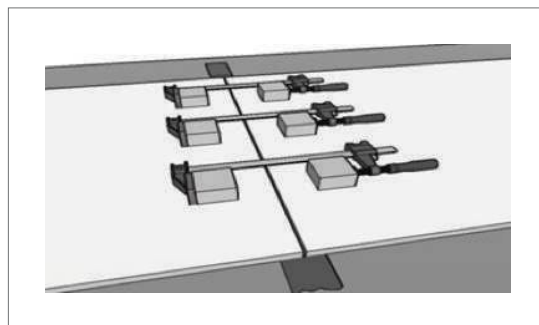


Fig.6

Clamp the assembly but do not over tighten it, as this will cause weak joints through starvation of adhesive (Fig.6). The joint of HIMACS should not larger than a half thickness of a piece of paper.

2. Clamping Tips

- Remember clamping pressures. You do not want to use excessive pressure. If you do, you will create a dry seam. This is when you squeeze all the glue from the seam joint.
- Clamp pressures should be tight enough to allow a bead of adhesive to squeeze out.
- The adhesive will shrink slightly, so do not completely clean off the joint of excess adhesive.
- Look for glue voids and air pockets. Take care of this before the seam adhesive sets up.
- Inspect the seam to ensure a tight fit.
- Let the adhesive cure for a minimum of 30 minutes in normal conditions or until hard to your fingernail touch.
- Remove the excess adhesive by "Leveling" the seam with a router with a set of skis and a small leveling bit.
- Do not use a belt sander to perform this operation. Excessive heat will weaken the integrity or fail the seam all together.
- Finish sanding all surfaces to semi-gloss finish according to recommendation.

Remove the clamps once the adhesive is fully cured and hard to the touch.

Remove excess cured adhesive with either a portable hand held router, set on skis or a small block plane with a sharp blade. Whenever possible avoid the use of chisels.

Standard butt seams will remain a less strengthen part of the assembly; therefore to strengthen the joint, reinforce the underside with an offcut of HIMACS (Fig.7 & 8).

To install a **Reinforcement Strip** is mandatory for kitchen counters or similar applications like fast food counters or buffet bars etc.

In cases where the joint could be affected by heat, it is strongly recommended to bevel (45°) the edges of the reinforced strip along the full length of the joint and to make a full adhesive film on the backside of the strip and to remove and finish off squeezed out adhesive till it is smooth.

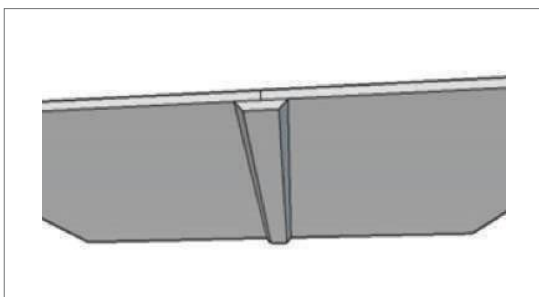


Fig.7

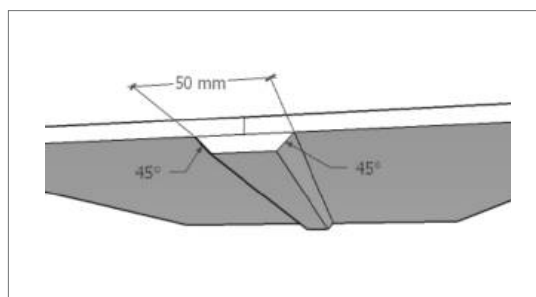


Fig.8

Finish the joint by sanding it with 180/240 grit followed by 320 grit and a Scotch Brite™ (grey) or Superpad S/G 1200. Do not simply concentrate on seam alone as this will cause shallow depressions around the joint.

► For further instructions on sanding/finishing see TDS "Sanding".

Do not place a seam over a dishwasher or washing machine. In this area of support the counter top with a full underlayment or a piece of insulation, like Styropore

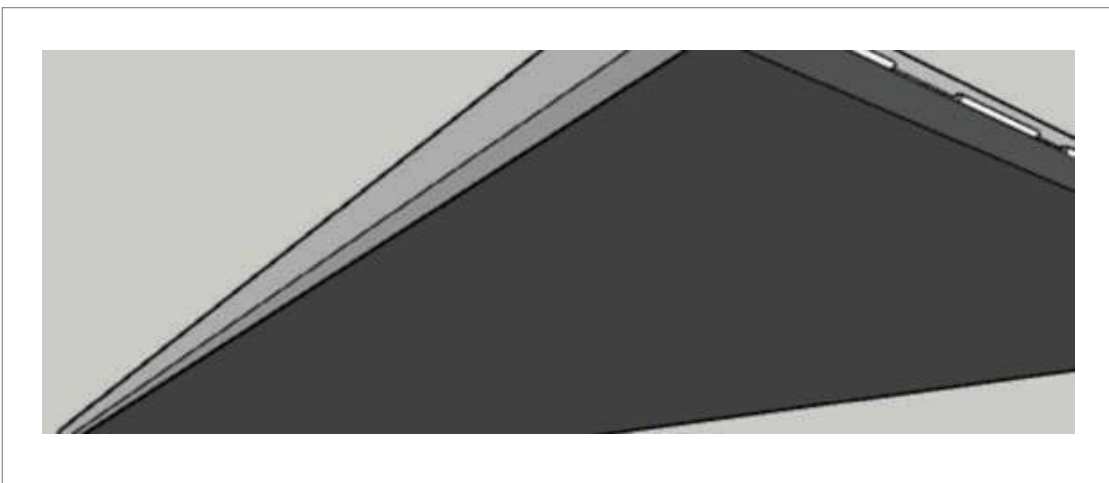


Fig.9

Never place a seam through a hob or a sink cut-out (Fig.10). Keep a distance of at least approx. $\geq 300\text{mm}$ from a heating devise.

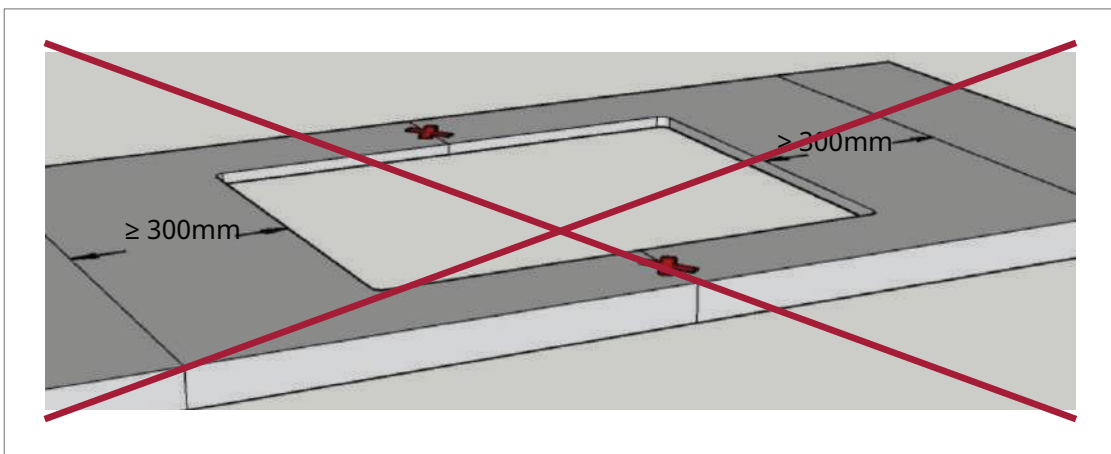


Fig.10

Keep a distance of the seam approx.. 50mm from the counter top corner away.

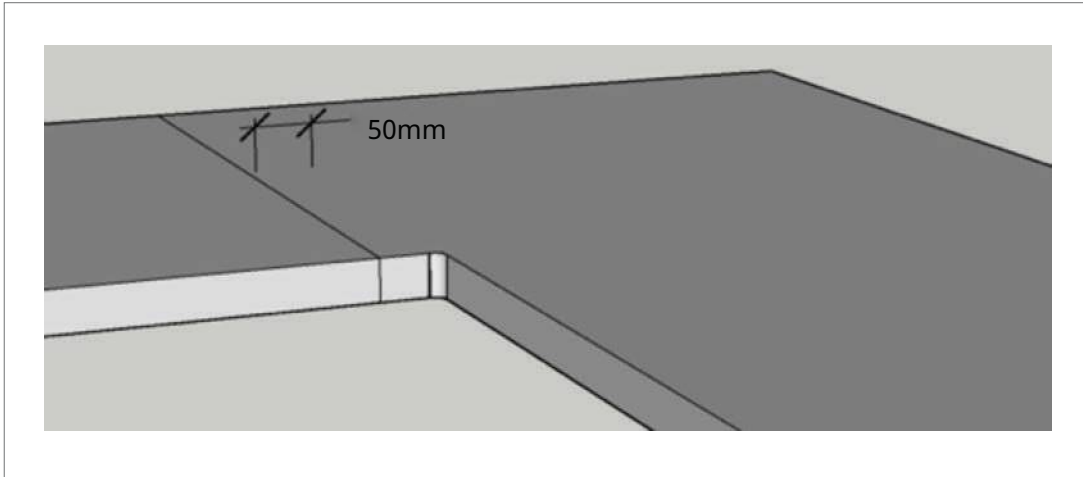


Fig.11

■ 3. Edge Corners

HIMACS requires a minimum 5 mm radius on all drop edge inside corners.(Diagram indicates recommended build-up).

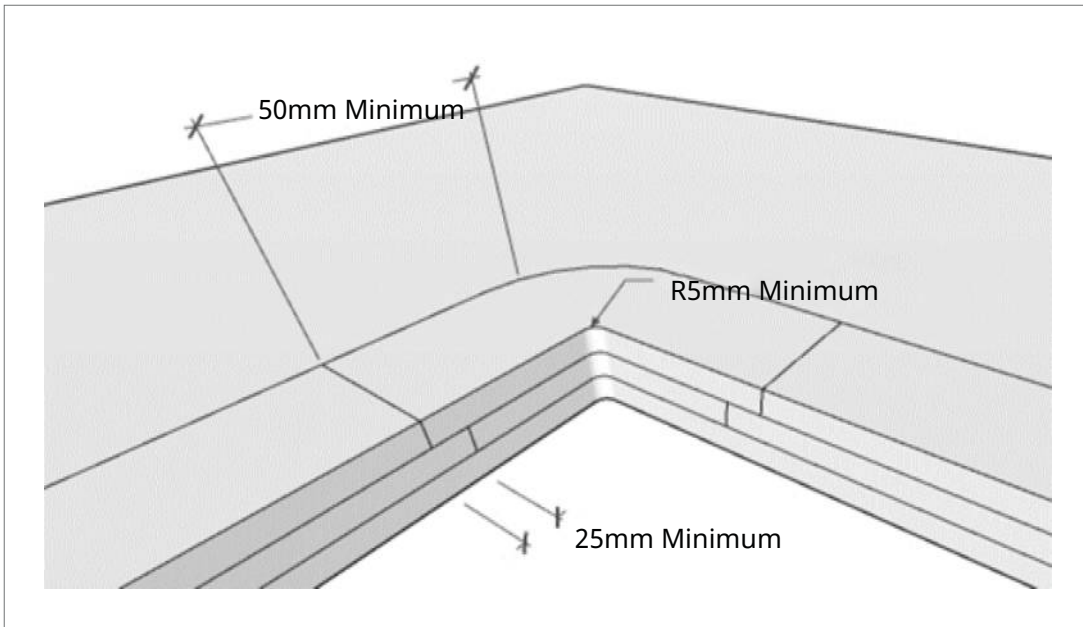


Fig.12

Whenever possible do not carry out a “Butt”- seam but always create a seam with **tongue & groove** or any other similar profile.

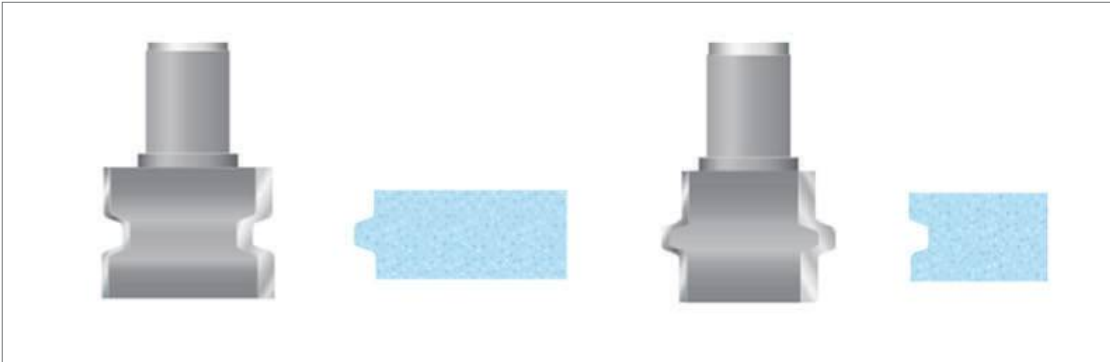


Fig.13

Source: Titman catalogue router bits

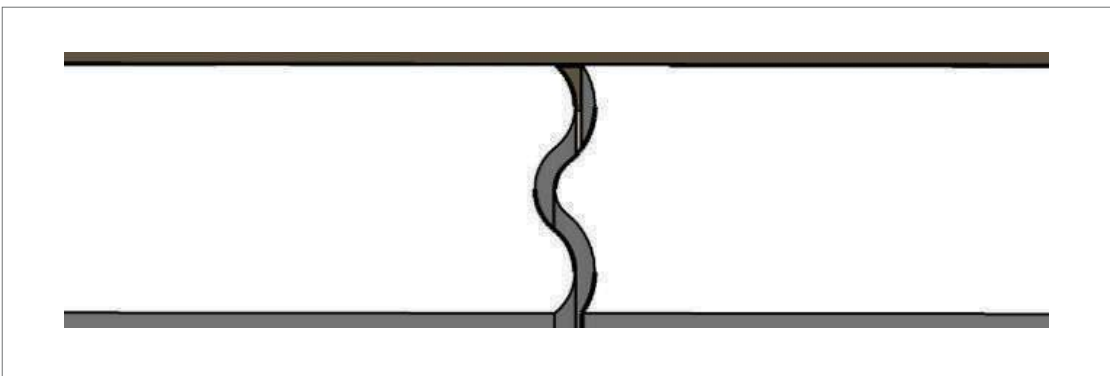


Fig.14

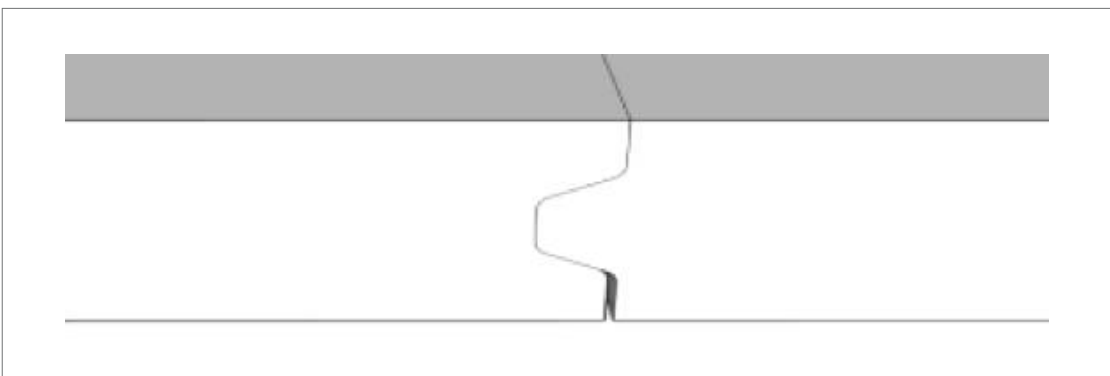


Fig.15

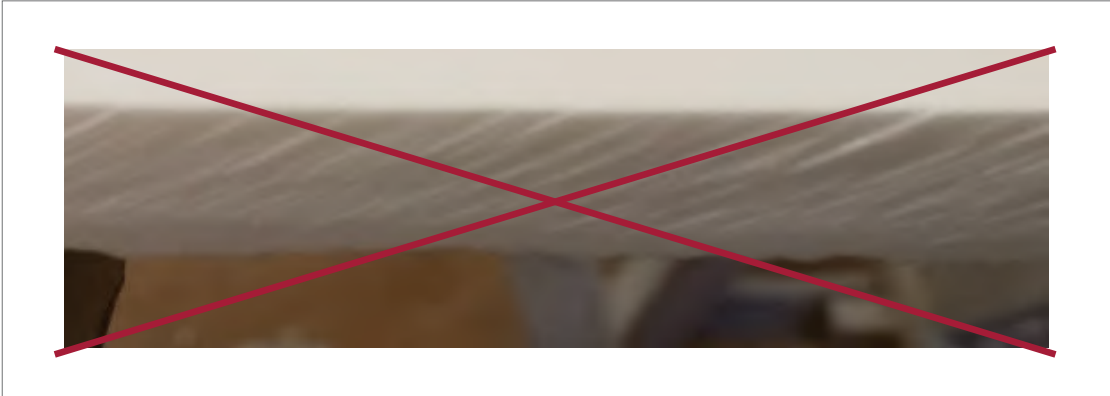


Fig.16

Disclaimer

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This Technical Document is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since we cannot anticipate all variations in actual end-use conditions,

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TECHNICAL DATA SHEET EDGE TREATMENTS & DOWNTURNS



1. General and Standard Design of Edges and Downturns

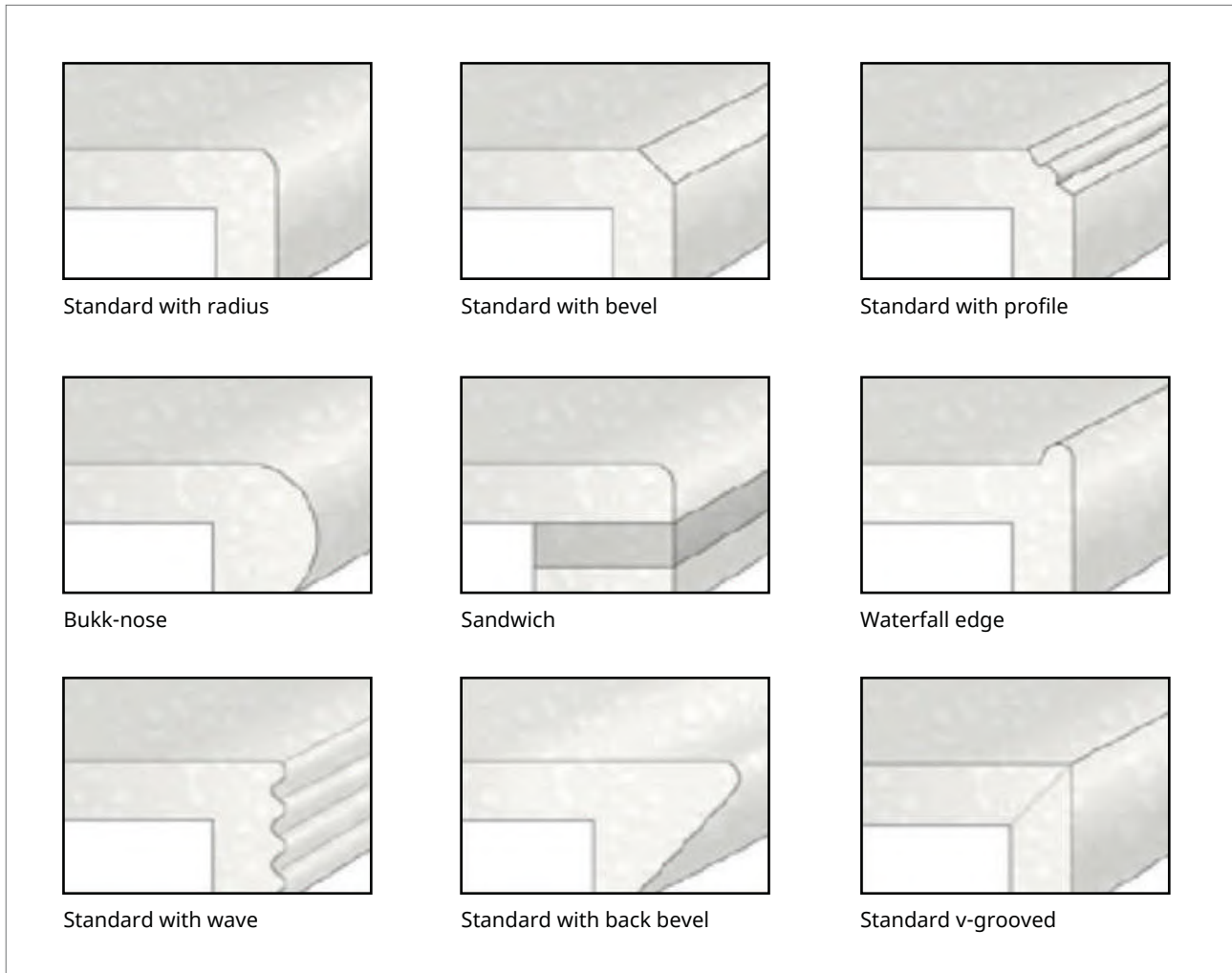


Fig.1

2. Edge Treatments and Downturns

Drop edges applied to sheets of HIMACS can create a multitude of design possibilities. The fabrication technique belongs to the color family and can be different.

- One of the easiest ways to produce a drop edge is to simply stack layers of HIMACS on the underside of the sheet (Fig. 2); reasonable for SOLID and SAND color family.
- Start by cutting strips which are slightly oversized and sand the underside with 120 grit paper. Clean with denatured alcohol and white cloth.
- Apply a sufficient amount of HIMACS joint adhesive to each of the strips and smooth out using a wooden or plastic spatula.

3. General and Standard Design of Edges and Downturns

- Attach 'A' style spring clamps every 70 mm to 80 mm and allow to cure (approx. 45min/+20°C). Ensure that, once the clamps have been applied, a reasonable amount of adhesive is forced out from the joint (Fig. 3).
- When the adhesive is completely dry, smooth down the surface using a circular table saw, then machine the required profile using a portable hand-held router or a table planer (Fig. 4).
- Drop edges can sometimes be applied on edge, primarily for deeper downturns. The best way to achieve this detail is to first rebate the underside of the sheet to a depth of approx. 1-2 mm (Fig. 5).
- The rebate serves two functions, firstly it increases the bond strength and secondly it minimizes the effect of uneven particle distribution.
- As you would normally do, sand both the internal edges of the rebate and the corresponding edges of the downturn with 150/180 grit paper, cleaned with denatured alcohol and with a white cloth (Fig. 5).

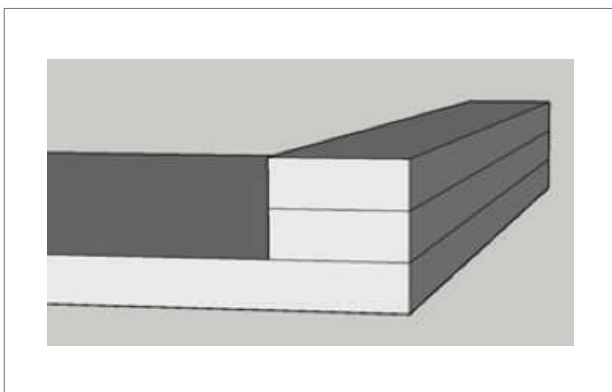


Fig.2

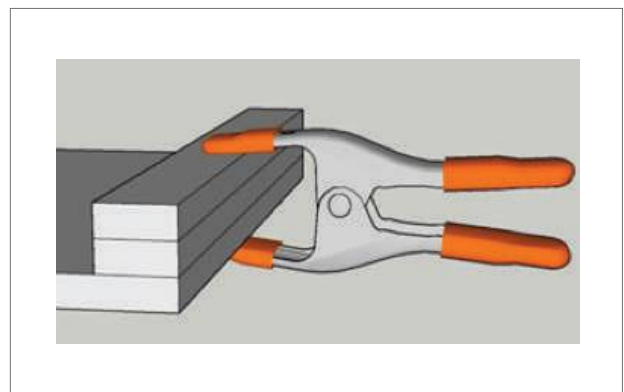


Fig.3

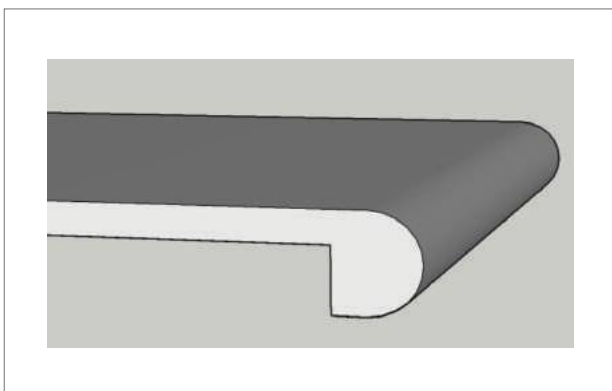


Fig.4

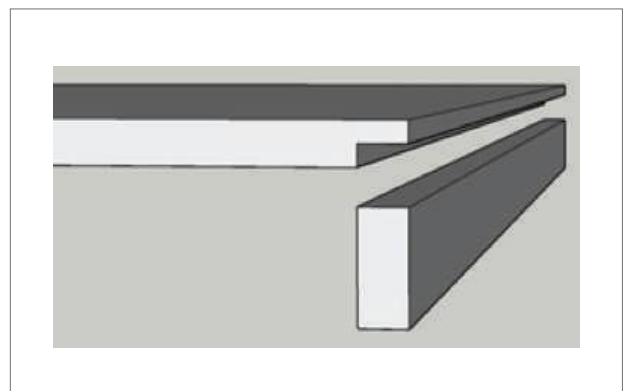


Fig.5

- Apply a sufficient amount of adhesive and clamp the edge in position with screw clamps to set every 70/80mm (Fig.6).
Ensure that beads of adhesive are formed at both the internal and external edge of the joint (Fig.5).
- Once fully cured trim off the adhesive overhang by using a portable hand router with a straight cutter and a Nylon bearing attached.
- It is possible to create curved downturns to shaped counters, simply by thermoforming the edge prior to bonding. See TDS "Thermoforming"
- For internal/outside corners you may choose an angled cut and trim it accordingly. 3D corners may difficult to realization but do perform well by using UTS-color family quality
- When it comes to a "Waterfall"-edge, the top sheet will need to be rebated while the edge will need grooving (Fig.7)
- Ensure the connection between rebate and the groove is neither too tight nor too slack (Fig.8)
- Apply adhesive and clamp the section together using sash clamps and allow adhesive to fully cure.
- Machine the edge using a router bit of the "Waterfall"-profile and with Nylon bearing attached (Fig.8).
Alternatively trim the edge profiles on a spindle moulder and adjust accordingly.

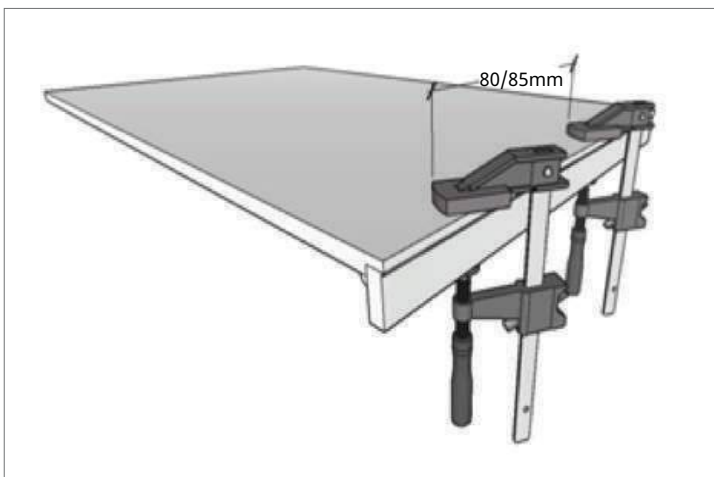


Fig.6

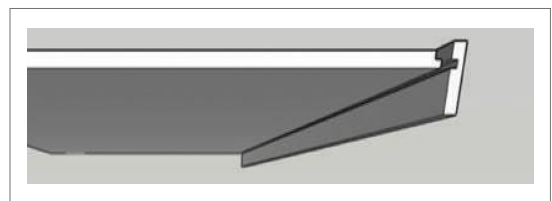


Fig.7

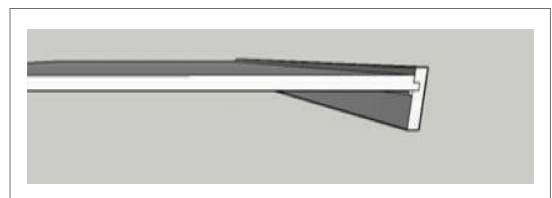


Fig.8

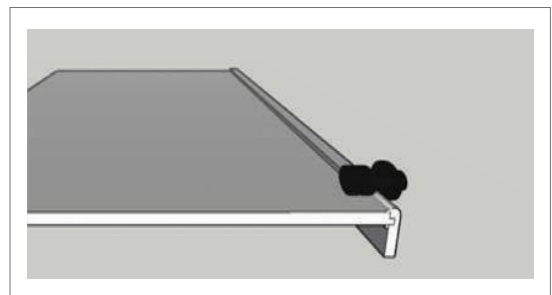


Fig.9

4. Fabrication Process: Step By Step

4.1 Edge preparation and buildup

HIMACS sheets are delivered with a less smooth sanded backside. Therefore it is highly recommended to sand it smooth (Fig.10) or prepare to trim a rebate for the front edge (down stand) (Fig.11) from the backside of the sheet. For this its best to turn the sheet over so that the back of the sheet is upside-down and you can work comfortably.

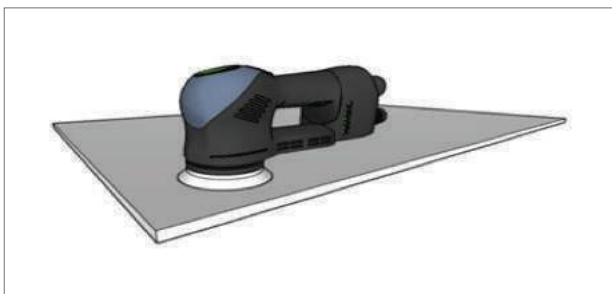


Fig.10

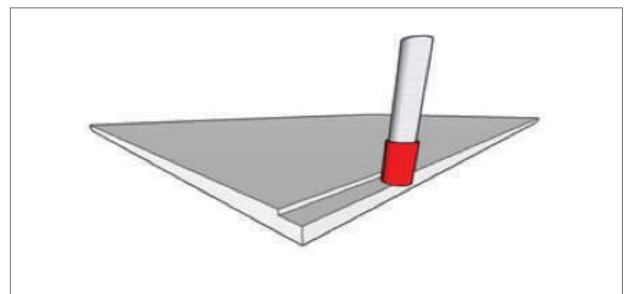


Fig.11

Hint:

Ensure the HIMACS sheet does not sag and the sheet is properly supported at each position to keep it straight and leveled. Do not round the edge of bonding area.

Using a rebate at the back of the sheet for edge treatment also has the advantage to:

- Take away the rough sanding marks
- Allows stopping the downturn (edge) to move during bonding process
- Avoid using "glue-blocks" (time saving)
- No use need for any kind of use of ruler or gluing templates

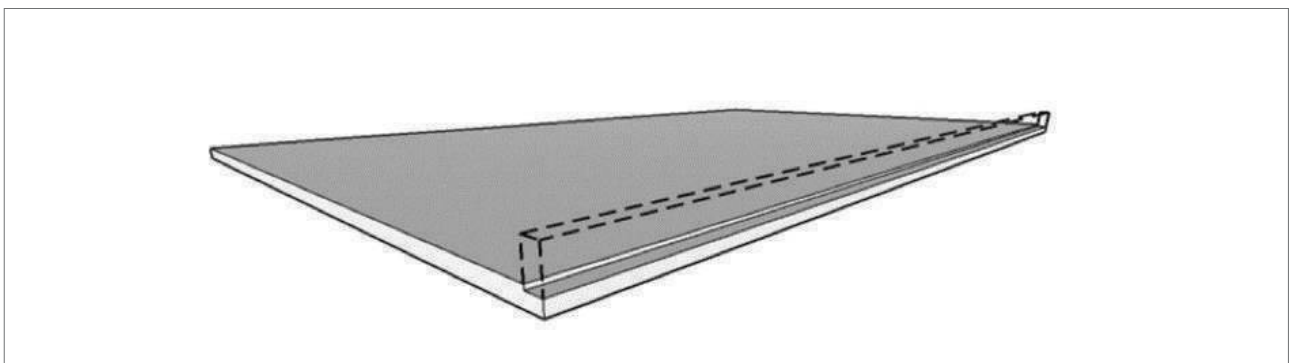


Fig.12

Hint:

Check all edges carefully before bonding.
Ensure that no chips are broken out and no marks of router bit or saw blade have left any visible marks or whitening effects on the area to bond.

Create a rebate with an overhang of approximate 0.5mm to trim off after curing of adhesive. Have all tools ready in place before starting bonding:

- A clean, white cloth
- Denatured alcohol
- HIMACS adhesive (check the right color)
- Adhesive dispenser
- Mixer tips
- Clamps (c-clamps or best use KLEMSIA-clamps)
- Cleaning paper or spoil board

4.2. Prepare and mix HIMACS Adhesive

Put a continuous glue line on the edge of the HIMACS strip or alternative onto the rebate. Avoid any kind of air-bubble in the glue-line and ensure some adhesive will be squeezed out when placing the downturn into the rebate (Fig.13)

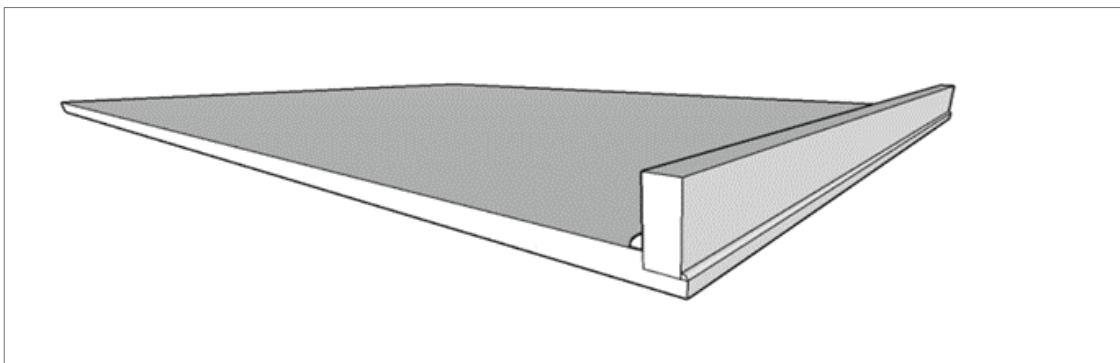


Fig.13

Place clamps all 8 to 10cm in line. Do not over tighten the pressure of the clamps. (Fig.14).
When HIMACS Adhesive has cured (after approx. 30min./ +17°C) turn over the sheet and trim off the edge with a profile router bit or using a moulding machine or CNC. (Fig.15)

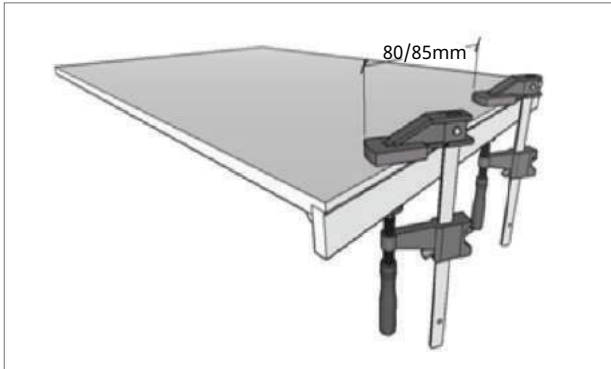


Fig.14

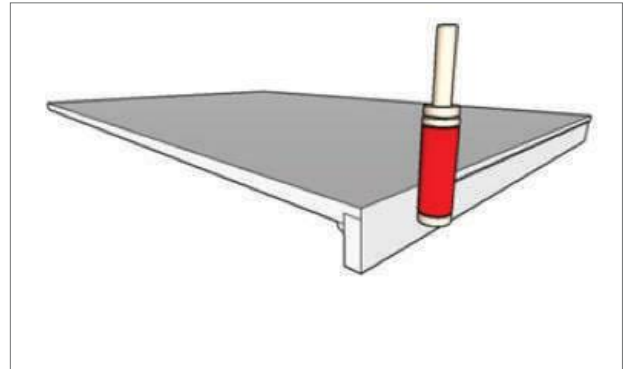


Fig.15

After trimming process finish off by sanding to the recommended final Semi-Gloss-Finish or as specified in the project, like:

- Matt finish
- Semi-gloss finish
- High gloss finish (not covered under the 15-Year-Limited-Warranty-Program)

5. Edge Detailed Design

The unique aesthetic of HIMACS sheet design in different colour families makes it necessary that during fabrication process a different technique for the edge detail needs to be taken place.

Even there is a very good distribution of large crunchies throughout the total thickness of the sheet material, the special fabrication techniques have to be taken into consideration to meet customers expectations.

It is every single fabricators and every single Installers responsibility of professionalism to process edge details according to the best end-result of perfection to High End-Quality and to make themselves proud to be member of the professional Authorized HIMACS Fabrication and Installation Quality Club.

For standard drop edges recommended best for Colour Families, like SOLIDS, SANDS and PEARLS (except G50) a standard butt seam. But still the bonding area needs to get prepared and smoothen.

To avoid lots of sanding with unregularly flatness result it may better to run a small rebate, which allows the down turn to avoid to slip away during bonding process and keep the edge straight.

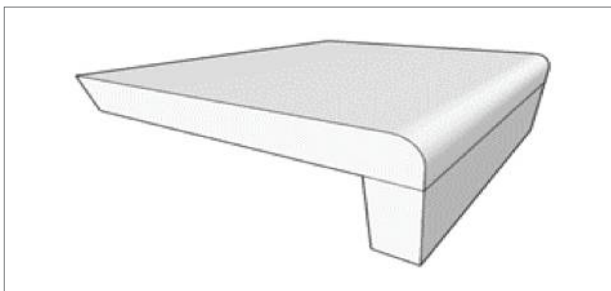


Fig.16

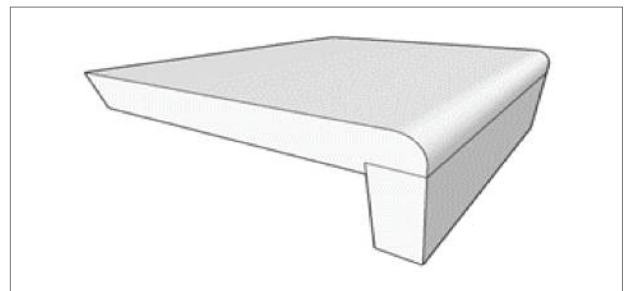


Fig.17

For colour families like, QUARTZ, GRANITE, Tapioca Pearl (G50), or VOCANICS, SPARKLE, TERRAZO or MARMO, CONCRETE etc. it may have better results to use following recommended techniques:

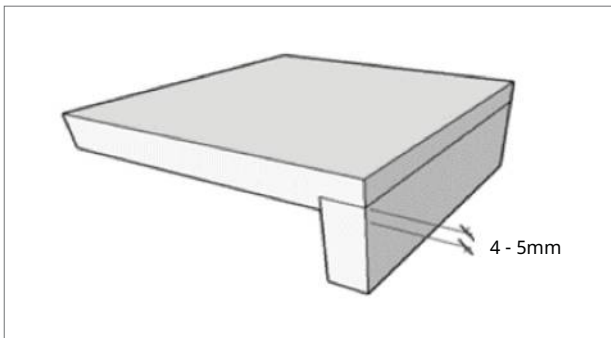


Fig.18

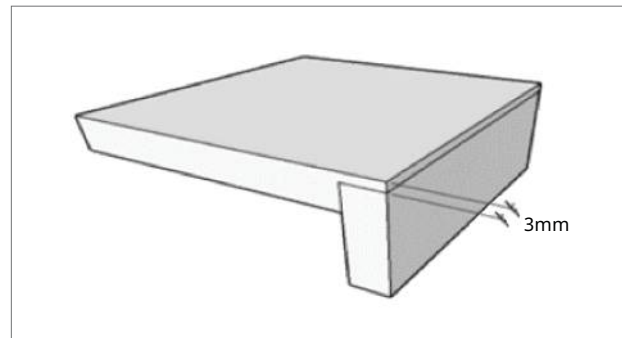


Fig.19

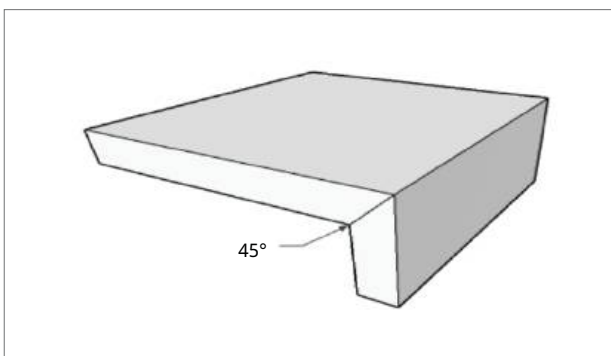


Fig.20

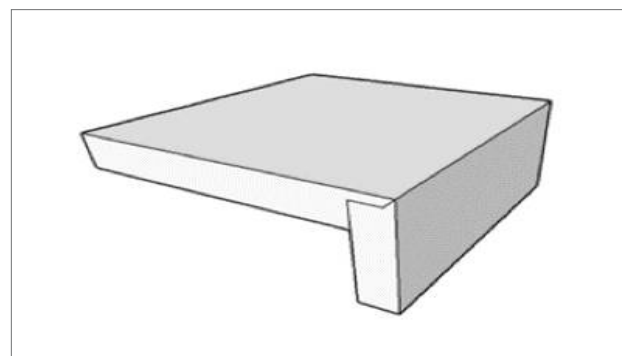


Fig.21

For the color family "VOLCANICS" or others showing marbled or veneering structure a 45° angle, Fig.20 or a profile with combined rebate and angle, Fig.21 is strongly recommended (mandatory).

For the Up-stand especially by the color family "MARMO" it will show additional limitation as described in the information of "backsplashes".

6. V-Grooved Drop Edge

- Do not cut the sheet as you would for the two (2) edge buildup strips
- Instead, follow the v-grooving device manufacturer's recommendations to set up and cut two (2) v-grooves in the underside of the HIMACS material
- Clean the v-grooved areas with denatured alcohol or acetone
- Apply joint adhesive the grooves
- Fold the HIMACS material so that the edge is created and clamp in place until the adhesive hardens

7. Edge Sample: Cut to fold / V-Grooving

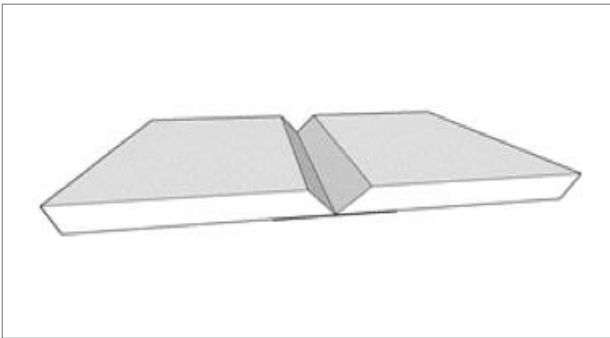


Fig.22

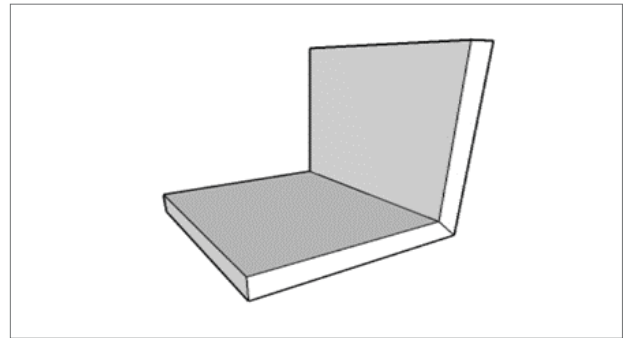


Fig.23

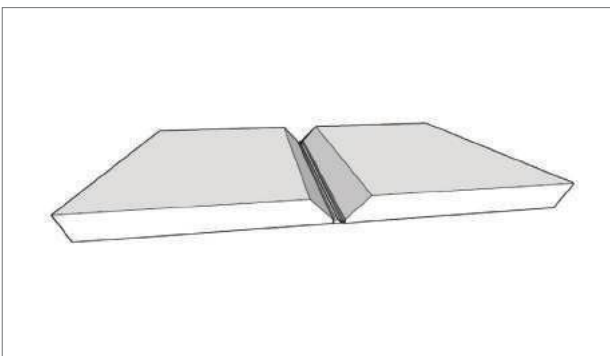


Fig.24

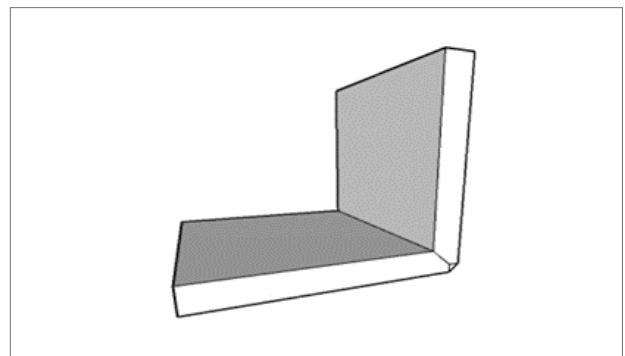


Fig.25

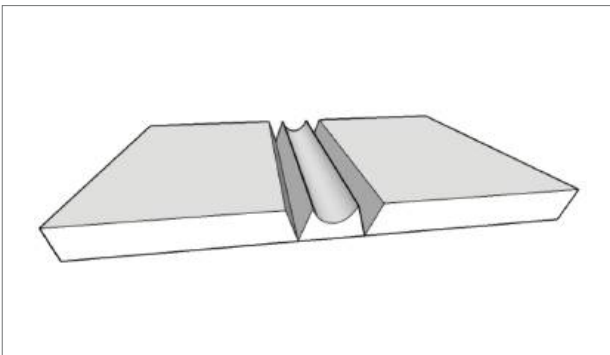


Fig.26

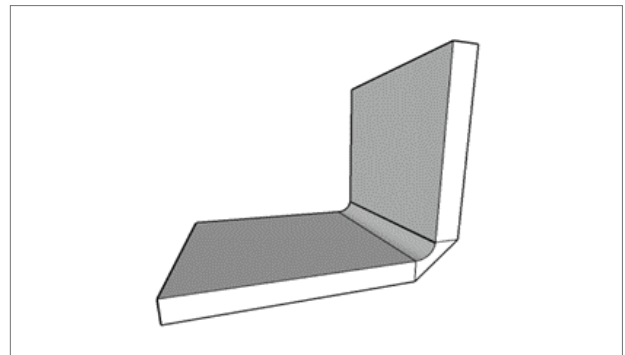


Fig.27

Hint:

Do not use the standard edge treatment process and be aware of the veneering and marbled structure flow wherever it is possible.

Hint:

Both edges of the delivered sheet (length) show a lighter structured color and this has to be taken into consideration when bonding such sheets together; even sequential numbering will not be counted and not become relevant for any complaint reason.

Further information is provided in TDS "Sheet" and TDS "Seaming"



Fig.28

Buildup not recommended as shown above in a 3-layer version by color family Marmo.
 Recommended Edge Treatment: best for veining structure or any chip pattern, like Marmo, Volcanics, Quartz, Sparkle, etc.

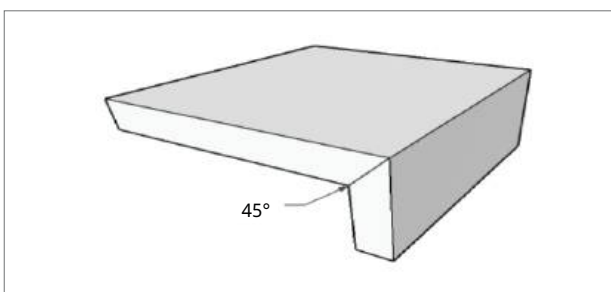


Fig.29

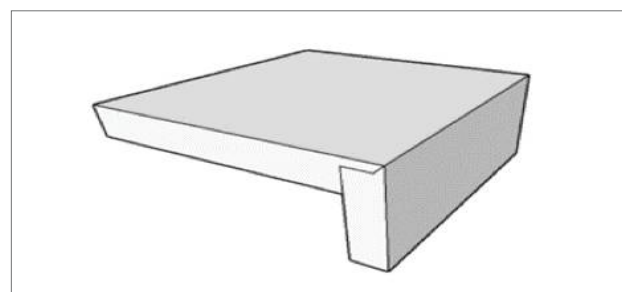


Fig.30



Fig.31

8. Edge Design With Other Materials

Before starting fabrication ensure to smooth HIMACS sheets from the backside when needed, as they show a rougher surface. Watch out for eventually some air bubbles-only on side of surface; which can later make some negative impact to the final Quality result.

Edge combination of HIMACS sheets and acrylics can be best bonded with pure translucent acrylic adhesive or with HIMACS Adhesive (Fig.32).

Other materials, like glass, metal like copper or stainless steel or laminate or other plastics should be best bonded with a permanent elastic adhesive like Silicone or PU-adhesive (Polyurethane) (Fig.33).

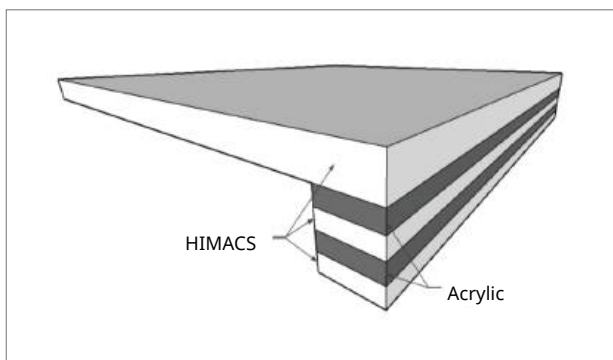


Fig.32

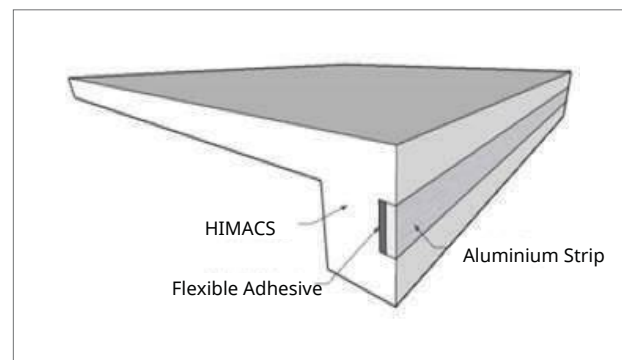


Fig.33

Hint:

Be aware to choose the right fabrication technique for the individual color family to avoid beside effects like: broken chips, broken veining structures or color differences. Quality check on the result is mandatory before processing further on fabrication and "a must" for customer satisfaction.

Disclaimer

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TECHNICAL DATA SHEET BACKSPLASHES & UPSTANDS



1. Backsplashes & Upstands

There are different possibilities of backsplashes (up stand) in different designs and manufacturing costs involved. The different design can be fabricated in different manufacturing processes - depending on the methods to be chosen. The Standard backsplash (Fig.1) is a strip of HIMACS trimmed off with a radius of ca. 6mm and fixed with acrylic based silicon adhesive.

To avoid any build up moisture or bacteria the curved backsplash (Fig.2) recommended as the most ideal solution, especially in wet areas, like sinks or vanities. But also many other applications can be designed in a way that's easy to clean

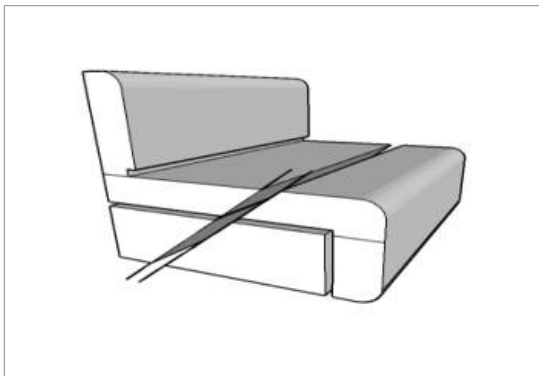


Fig.1

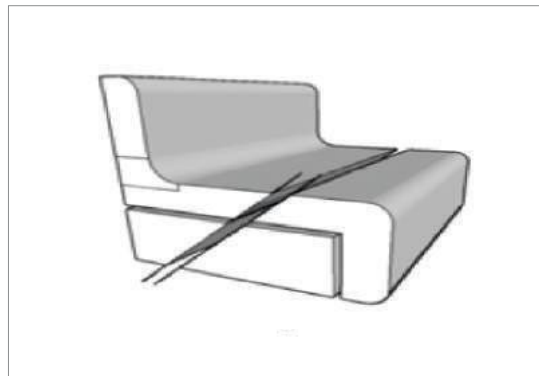


Fig.2

1.1. How to create a curved backsplash

Sample: step by step

Make a rebate on the back of a counter top (Fig.3)

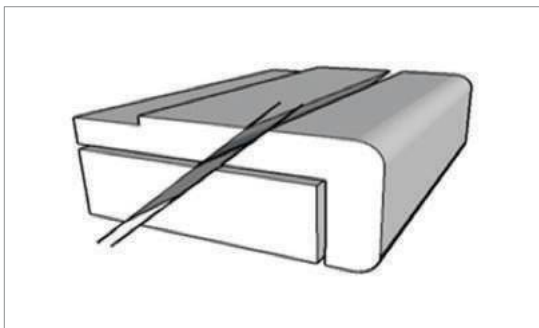


Fig.3

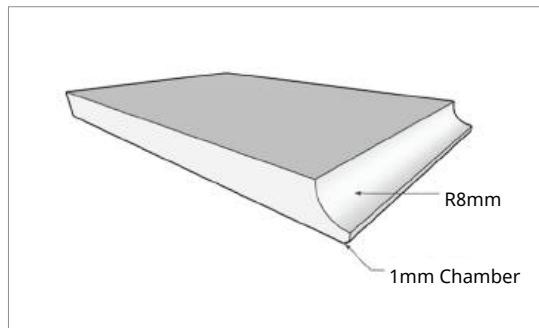


Fig.4

Trim a radius ($r = 8\text{mm}(10\text{mm})$) on a strip of HIMACS with a width of approx. 160mm (Fig.4). Cut the right length off ($w = 20\text{mm}(22\text{mm})$) from your 160mm wide strip (Fig.5).

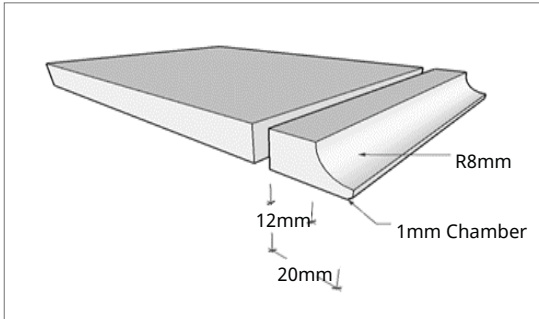


Fig.5

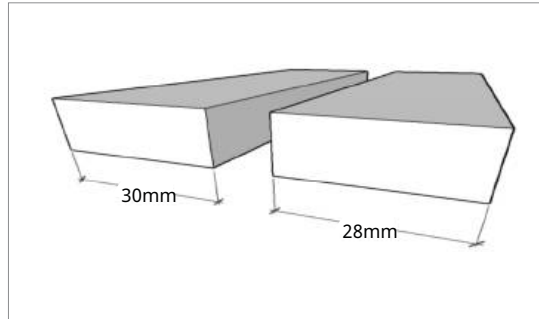


Fig.6

Cut a piece for the up stand: (30mm(28mm) (Fig.6). Put a female profile on the strip with the curve (Fig.7). Put the male profile on the up stand (Fig.8).

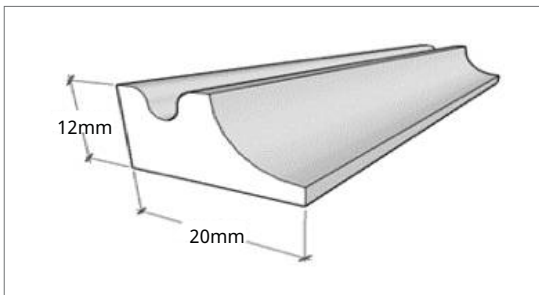


Fig.7

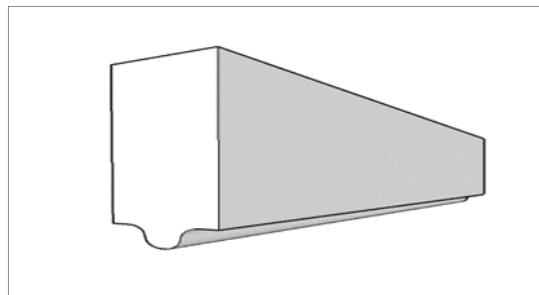


Fig.8

Bond the strip of the curve (Fig.7) and the Upstands (Fig.8) together (Fig.9). After curing time sand it and finish it off. Leave at least a minimum of a 2mm step. Never run against "0"mm(Fig.10).

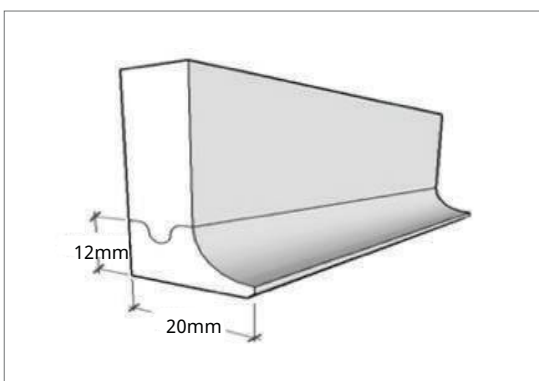


Fig.9

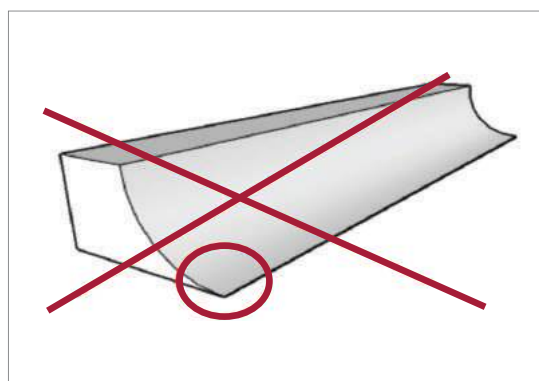


Fig.10

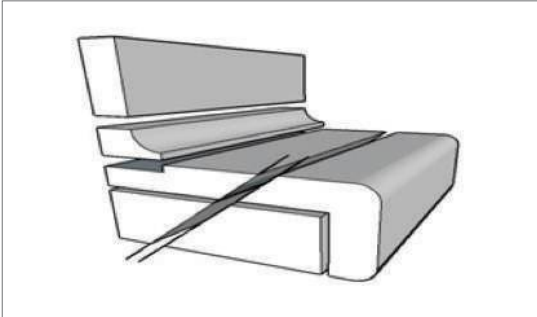


Fig.11

Insert the curved backsplash into the counter top (Fig.11) and finish off by trimming and sanding according to the guidelines.

Hint:

Before bonding the curved backsplash into the counter, apply an arris to the edge of the curved section.

1.2. Inside corner

To set up a inside corner, prepare a corner piece according to the radius you have chosen – here radius (R8). Based on a standard height prepare a block long enough to cut off later a smaller block of 20mm x 20mm x 42mm. On a special router prepare the inside radius or plunge in with a router bit after positioning and gluing (Fig.12, Fig.13).

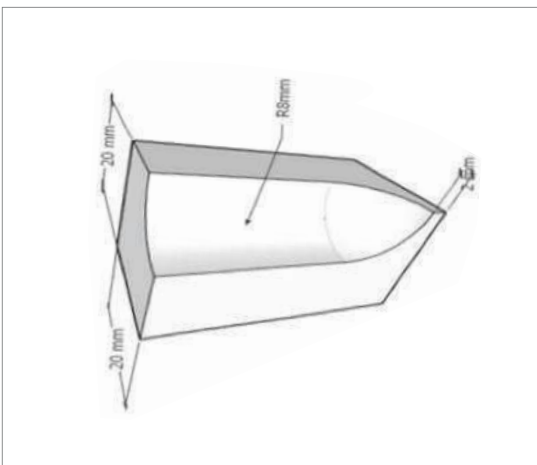


Fig.12

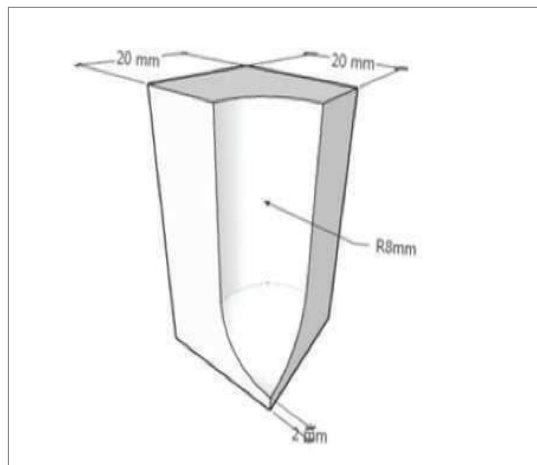


Fig.13

1.3. Outside corner

Prepare a standard curved backsplash and put your standard radius on the outside edge (Fig.14)– left or right hand side. Finish off by sanding to a semi-gloss level. To ensure homogenous surface use HIMACS only.

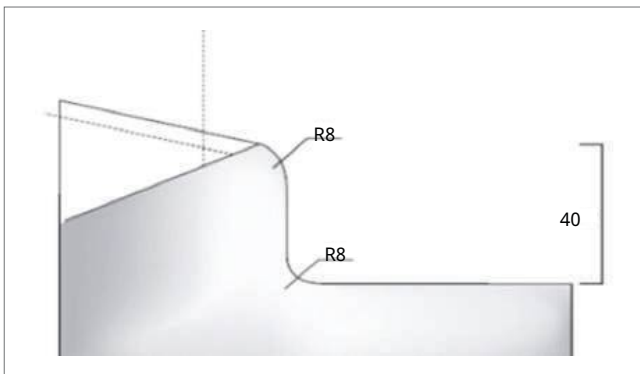


Fig.14

2. Color Family Pattern

Due to the wide offering of different pattern the recommended curved backsplash method can not become used by all HIMACS available color families.

Especially following color families cannot be recommended to produce this above described fabrication method as the larger chips used are based on the surface or has different levels of color in the sheet thickness, like:

- Quartz (some pattern)
- Granite (some pattern)
- Marmo / Aurora
- Aster
- Sparkle
- Lucia
- Volcanics
- Strato
- Terrazzo

Hint:

Please check and prepare a sample first of how it would look a like. Not every customer may does like it.

When preparing a curved upstand or downturn, customers may not accept the final result. One may not compare, though with Solid colours used in the kitchen market. A downturn or an upstand are best achieved with a 45° angle or a profiled folding option – see Fig.15 and Fig.16 (V-grooving).

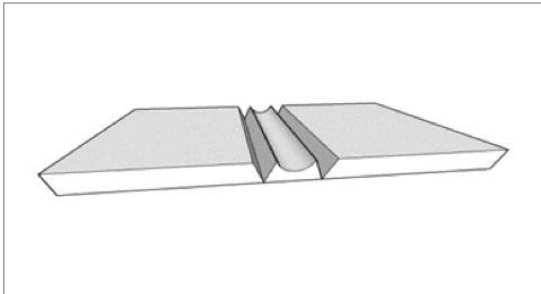


Fig.15

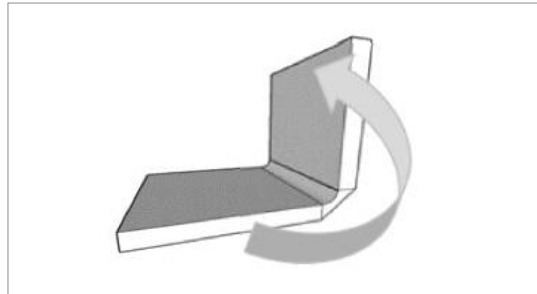


Fig.16

A covered backsplash of MARMO may become very visible as shown in Fig.17. The random veining structure fades near to both long edges of the sheet and a colour inconsistency may appear.



Fig.17

For such color families an outside corner of the Upstands a 45° angle with a small radius of 1 or 2mm on the front edge is perhaps more convenient and more customer friendly.

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TECHNICAL DATA SHEET CUT-OUTS & HOB CUT-OUTS



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1. General Cut-outs in HIMACS Material

- Internal corner cut-outs for sinks, hobs and other accessories will always be subject to higher stress and as such will require to be handled very accurately in accordance with the latest instructions given in these Fabrication Guidelines or additional Technical Bulletins.
- Machine the cut-out using a CNC router or hand router and a template.
- Always machine a radius around these corners and make the radius as large as practical, ($R \geq 5$ mm). (Fig.1). Never leave a sharp corner or do not leave any sharp edge.
- Always ensure that there is a radius of R 3mm on both sides of the edge of the cut-out (or using a profile router bit: Titman no. XC 341*12). (Fig. 2)
- Do not position a joint or any glue line across any kind of heating device.
- Keep a minimum distance for a seam of min. 300mm from cut-out for hobs.
- For hob cut-outs the internal edge should be covered with self-adhesive Neoprene tape or "Koawool" tape and covered with self-adhesive aluminum reflective tape (3M, tape no.: 425). This will prevent excessive heat buildup and the potential risk of stress cracking.
- Always leave a minimum of at least 3 mm space between the underneath of the appliance and the edge of the HIMACS if possible (depending on the type of hob you may have to include a filling piece)
- Ensure proper air ventilation and avoid any air to accumulate.
- For horizontal application – especially applications with heat sources use 12mm material only.

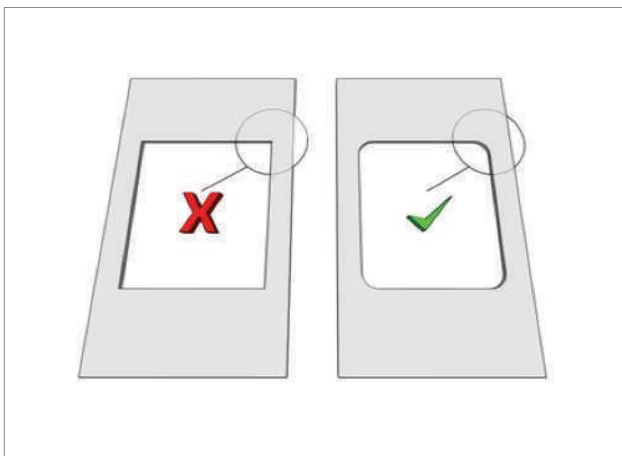


Fig.1

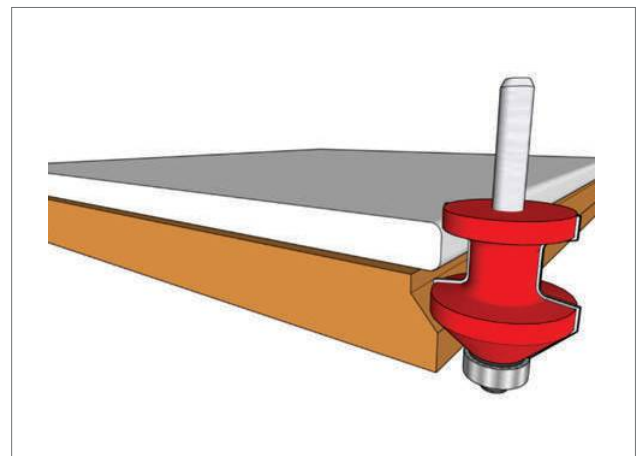


Fig.2

2. Preparation of Cutouts for Hob Units

Step by Step

- Internal corner cut-outs for hob units will always be subject to higher stress due to influence of heat. Therefore this installation requires a sensitive area to be handled very accurately and with much care.
- Do not use any jigsaw or any mason's hand-saw when preparing a hob cutout in a HIMACS counter top.
- Machine the cutout using a CNC router or a hand router with a straight cutter and a sleeve guide when using a template according to the hob dimension needs (Fig.3)
- The Internal corner radius should have a minimum size of at least $R \geq 5\text{mm}$.

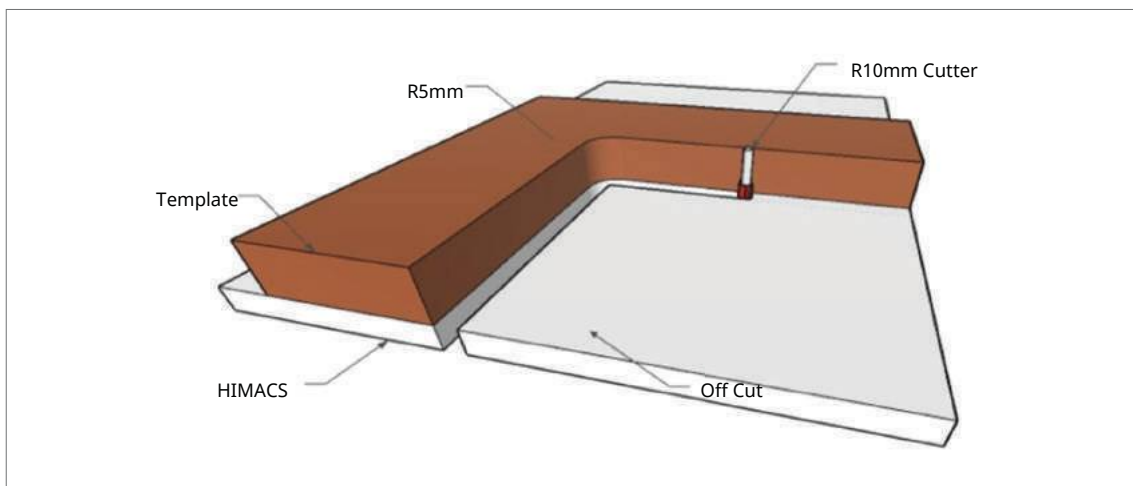


Fig.3

When you have worked with a hand router:

- After the cutout is completed, take away the template and trim the edges to put a minimum radius of $R \geq 3\text{mm}$ on both edge sides of the cutout (top and bottom).
- Using a single fluid radius router bit or a profile router bit, like Titman Ref.-no.: XC341*12) (Fig.4)

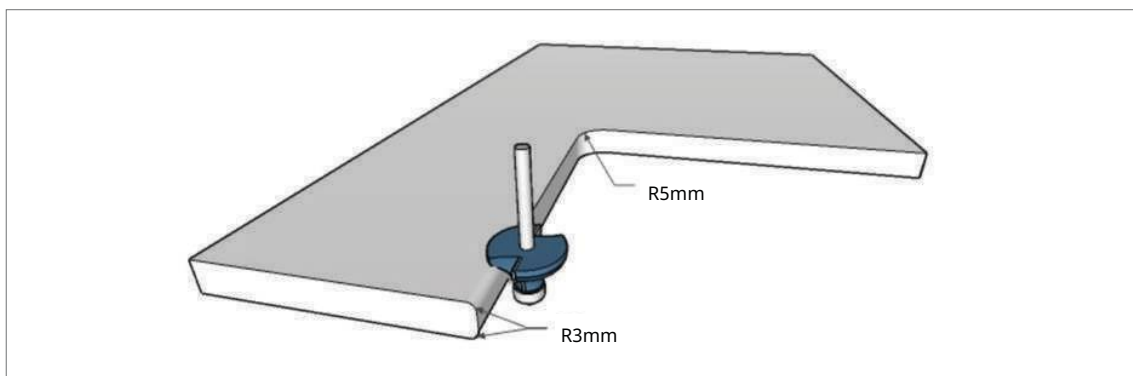


Fig.4

When using CNC run a lap to trim the edges of the cutout with the same router to avoid turning the sheet.

- After cutting and trimming the edges of cutout, proceed further with sanding the edges smooth by using 180grit (or 60micron) sandpaper.
- Clean off the working area and make it dust free.
- Install insulation tape like a ceramic tape or a Kaowool tape (2mm thickness). Alternative
 - You may also can use a Neoprene tape with a thickness of at least 1.2mm.
 - Then cover the Insulation tape with an Aluminum tape (exspl. 3M, No.425, thickness: 0.13mm) all around the edges of the cutout.
 - Make sure the tape goes minimum beyond the flange on the surface and be placed inside of the cutout (Fig.5)

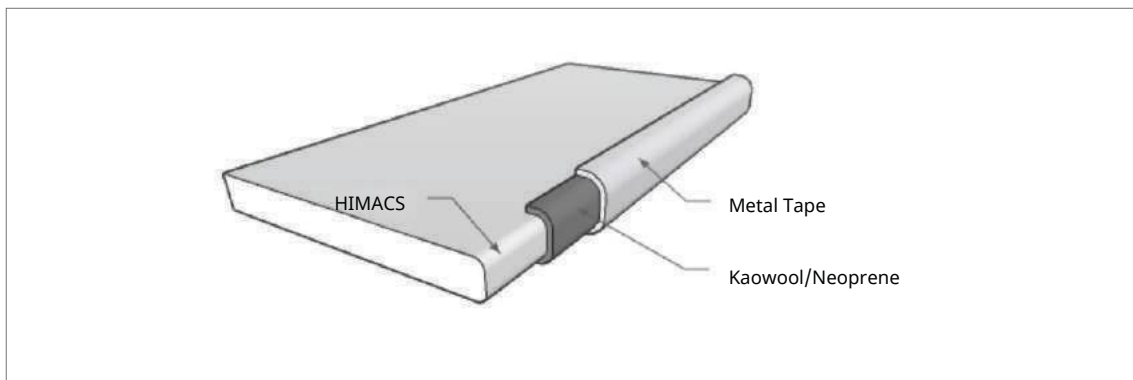


Fig.5

Hint:

Never ever place any seam through a hob cut-out or any kind of heating zone. Always leave a minimum of at least 3mm (but even more is better) space between the insulated edge and the appliance – (check chosen hob unit and its flange size before making any cutout in the HIMACS top).

3. Preparing Hob Cutout and Installing A Flush Mounted Hob

- Prepare hob cutout as described above, round and sand the edges smooth.
- The installation of a flush mounted hob needs to be fixed best into the sub-frame construction of the counter top.

Hint:

Do not screw directly into the HIMACS sheet.

- Fix the flush mounting hob according to manufacturer installation guides with its foreseen fixing items. When the hob is in right position and fixed, close the gap between the edge of the cutout and the flush-mounted-hob with an moisture and heat resistant permanent elastic adhesive (exp. Elastic PU adhesive from Sika) (Fig.6)
- adhesive from Sika) (Fig.6)

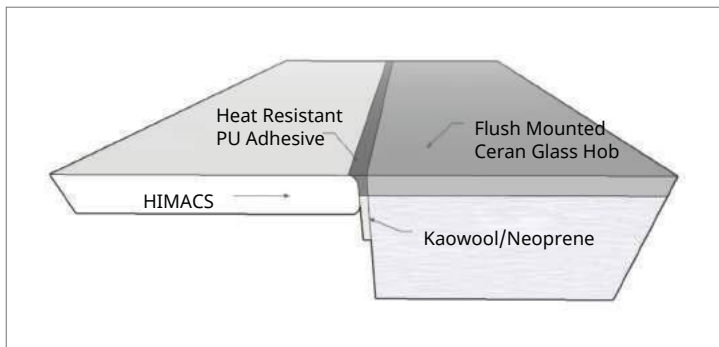


Fig.6

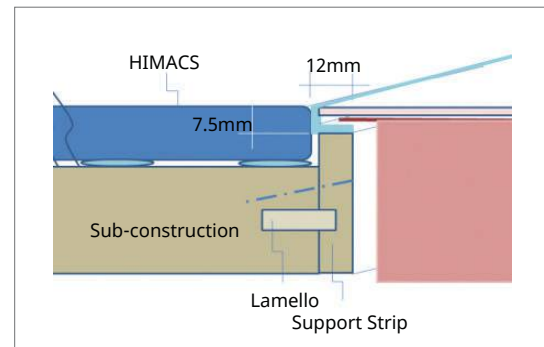


Fig.7

4. Kitchen Unit Construction of Hob Cut-out - Sample

To avoid standing hotness underneath of the hob device it is necessary to prepare the cabinet unit accordingly.

- All measures recommended are based on a minimum of a 600mm deep counter top. Ensure to
- have a proper air circulation around the installed heating device of the counter top: The
- distance of cut-out to the wall should not below 60mm.
- Keep a distance of the cut-out to the next unit min. 100mm.

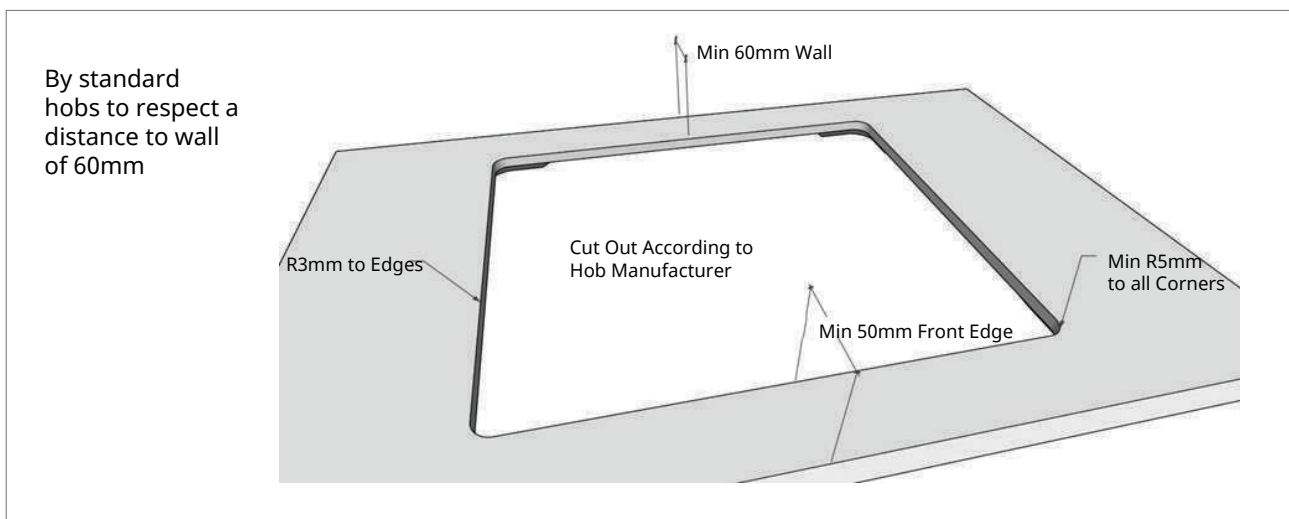


Fig.8

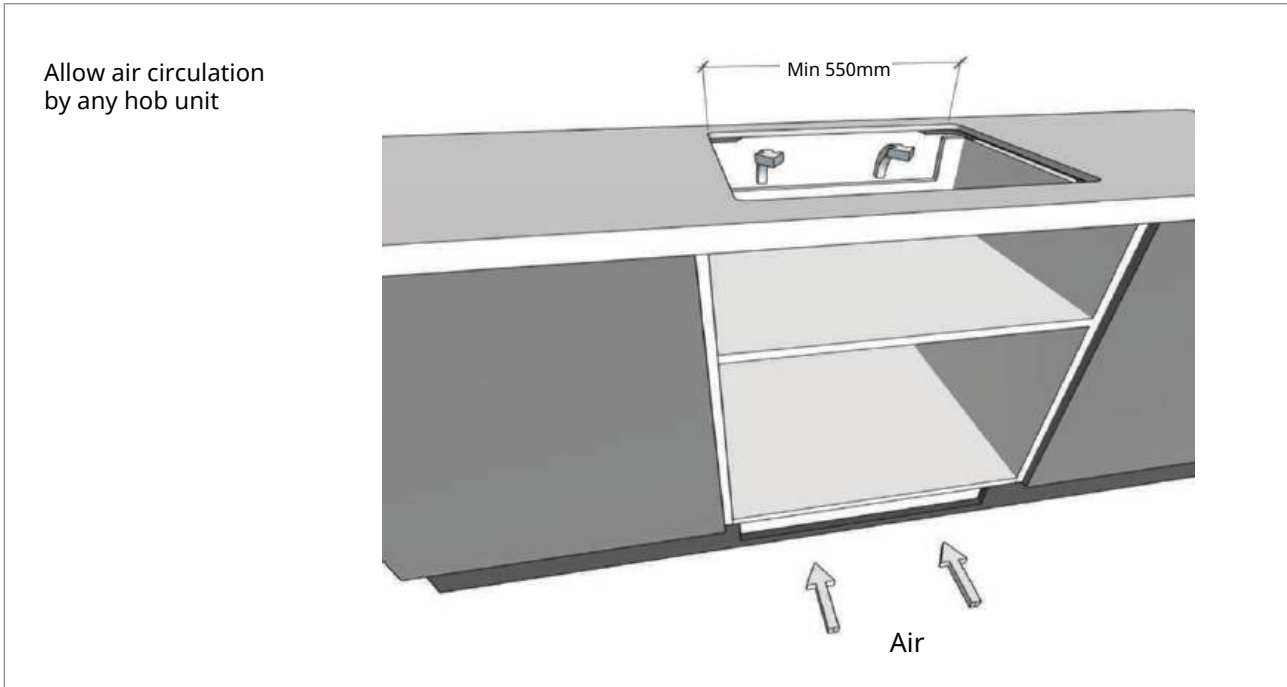


Fig.9

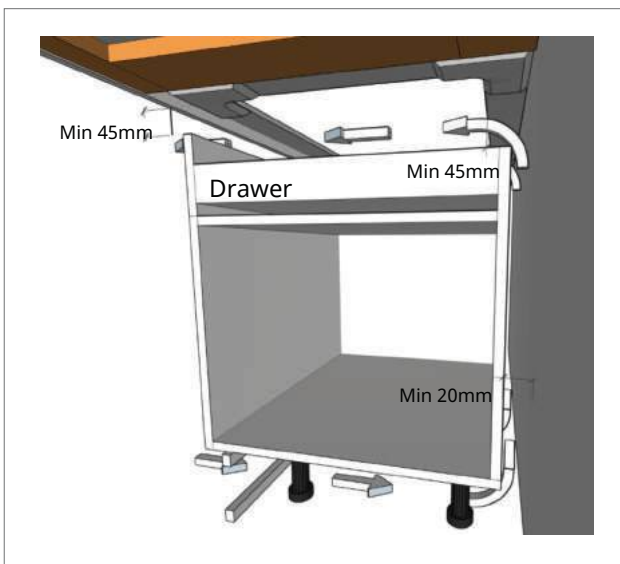


Fig.10

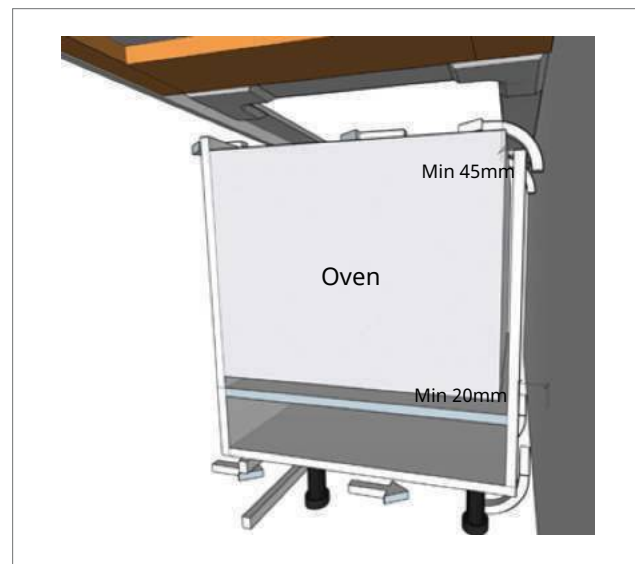


Fig.11

When preparing a general cutout – best to do it with a router or stationary machine, like CNC:

- Internal corner supposed always to have a min. radius of $\geq 5\text{mm}$. (as larger as better)
- Smoothen all edges.
- Break all edges (up & down side of the cutout) or put a radius of at least $\geq 1.5\text{mm}$ all sides.

- Ensure the cut-out is not squeezed to the wall and that it always can easily move back forward when temperature change happens.

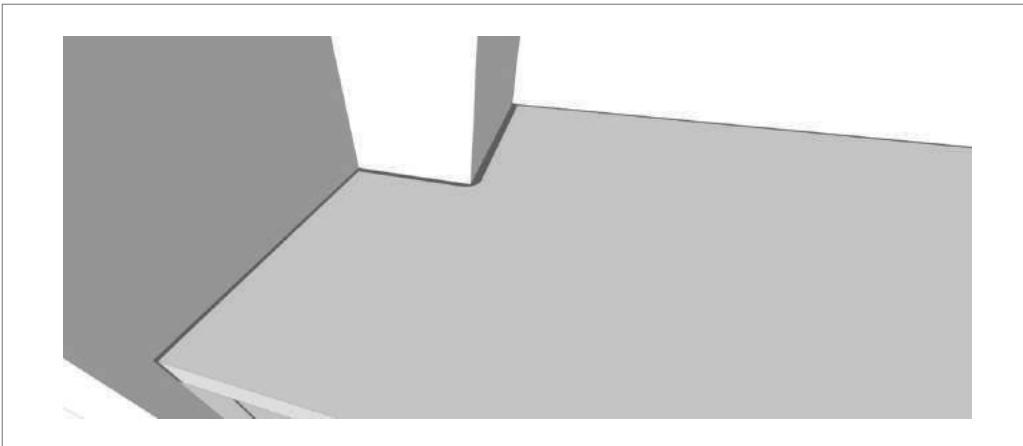


Fig.12

- Keep proper possible distance to other heat sources or additional cut-outs.
- Never place a seam through a cut-out which will be influenced with any heat source, like a hob, heating lamp, washing machine, dishwasher, refrigerator, etc.

Hint:

Never place a seam through a heating device! Do anything to protect HIMACS against heat!

- Carry out proper support at any cut-out and protect against settling down of the top by time.

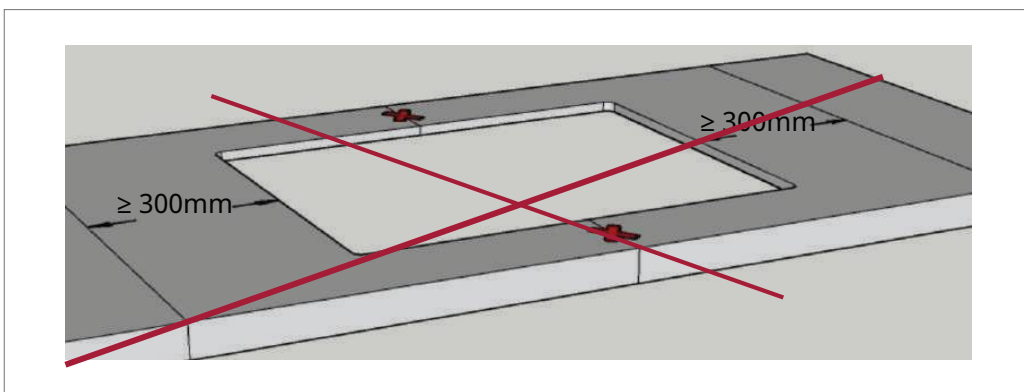


Fig.13

5. Installing a Gas-Top-Unit - Sample

To install a gas top unit in the HIMACS counter top is under normal conditions and its standard use no problem and can easily be handled. Proceed cut-out as described above and with a respective distance from a HIMACS curved backsplash:

a) Backsplash up to max. 50mm height

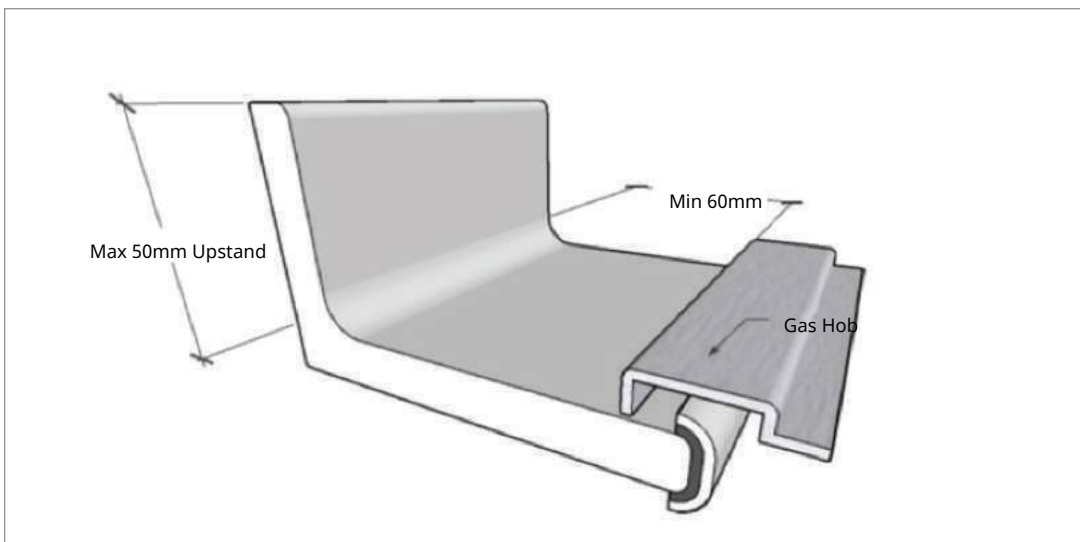


Fig.14

b) Backsplash more than 50mm height

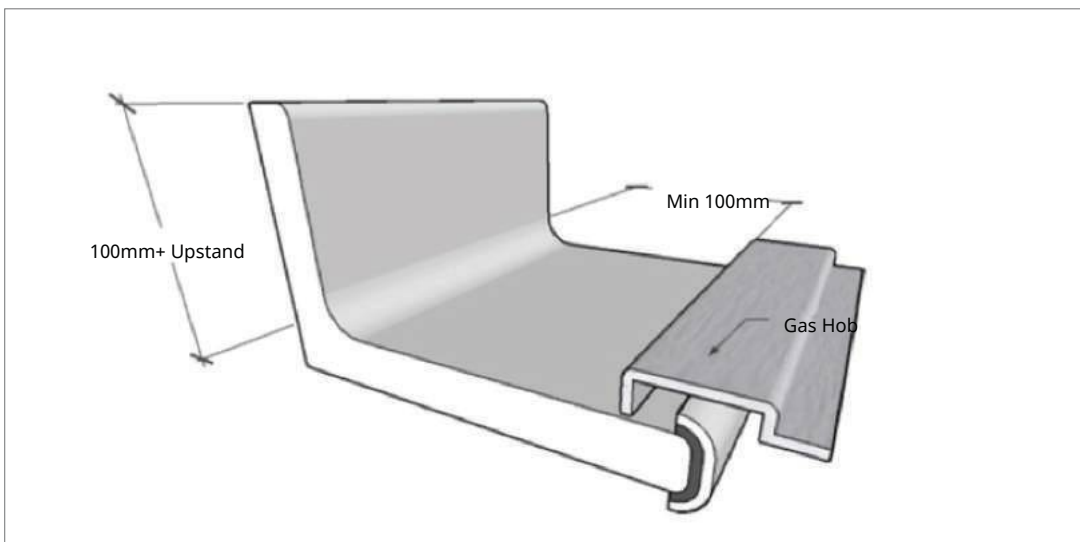


Fig.15

Hint:

To avoid extreme hotness on the surface or even burning the surface with the flames of the gas-unit ensure you do not overheat/over burn the pot on the gas-hob. Flames should never ever go around the pot.

Hint:

Be aware, that burn marks direct on the unit or surface is not applicable to the HIMACS Warranty Program.

Hint:

HIMACS highly recommend following strictly the use and care manual as well as the handling instructions of the gas-hob unit manufacturer.



Fig.16

Any damage causing from non-respecting instructions will not be applicable to any Warranty.

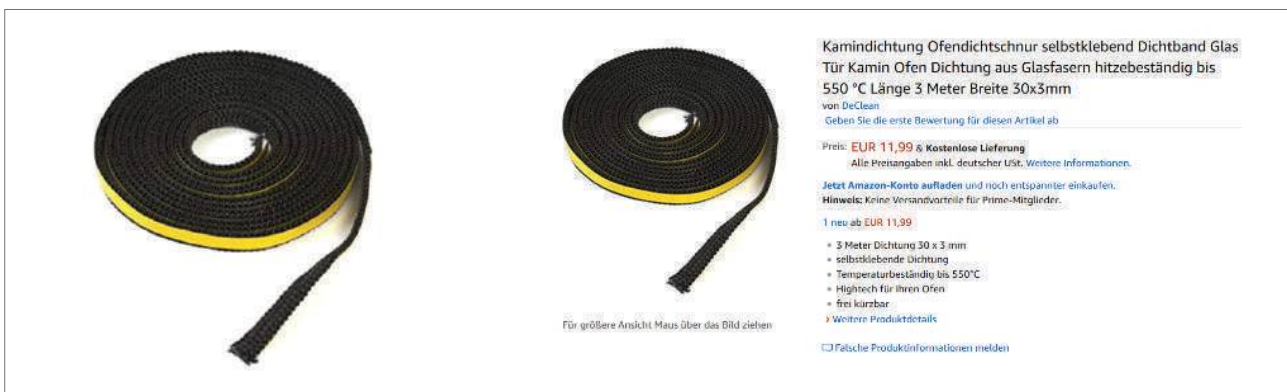
6. Appendix

Insulation tapes: samples

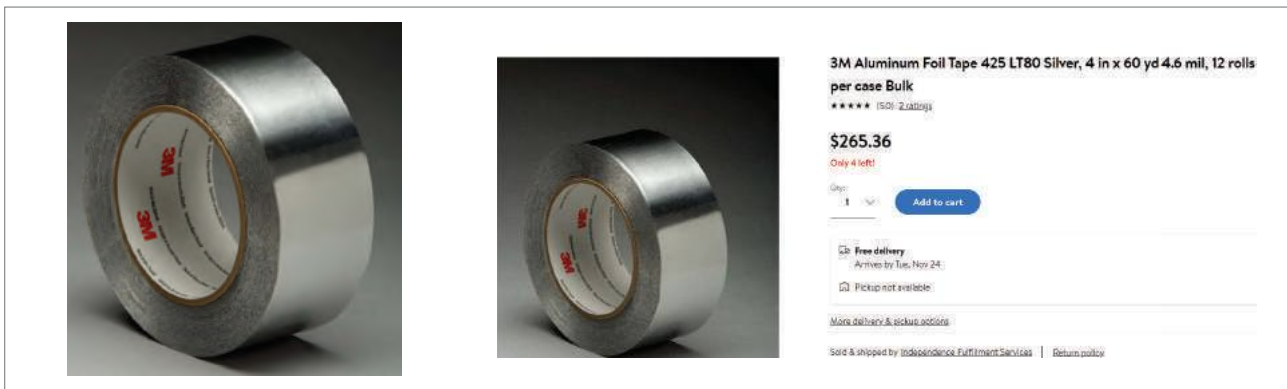
Kaowool tape



Oven insulation tape



3M 425 Aluminum tape



Neoprene tape



OEM Arctic Cat 0717-052 Neoprene Tape Foam NOS

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Qty: 1

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Kaowool tape



Home > Heating Parts > Furnace Control & Insulation > Kaowool Strip 240"x 1" x 1/4" 1000 Degrees

Manufacturer: LYNN MANUFACTURING, INC.

Kaowool Strip 240"x 1" x 1/4" 1000 Degrees

Item #: 633-91

Lynn 9505 Soft Ceramic Fiber Kaowool Strip, 240 Inch L x 1 Inch W x 1/4 Inch T
Manufacturer Item: 9505

View additional images

Overview | Technical Specifications | Downloads

Lynn 9505 Soft Ceramic Fiber Kaowool Strip, 240 Inch L x 1 Inch W x 1/4 Inch T

- Soft ceramic fiber blanket strips commonly used as gasket material.
- Bagged and labeled for individual re-sale

Sid Harvey Item #633-91; Replaces Part #13-20439

Disclaimer

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TECHNICAL DATA SHEET SHAPE INSTALLATION



The new HIMACS shape generation - from 2018- has a different formulation and causes an improved material and quality performance in accordance to EN 13310 with more than 1000 cycles of thermal shock resistance. Cast shapes of ours are covered under the 15year- Limited Installed Warranty Program.

1. Shape Installation

HIMACS cast sinks and bowls, HIMACS Thermoformed sinks and bowls can be fitted with or without a rebate. Using the rebate method **is mandatory** when sheet and shape have the same color to be covered by the 15-year Limited Installed Warranty Program. (Fig.1)

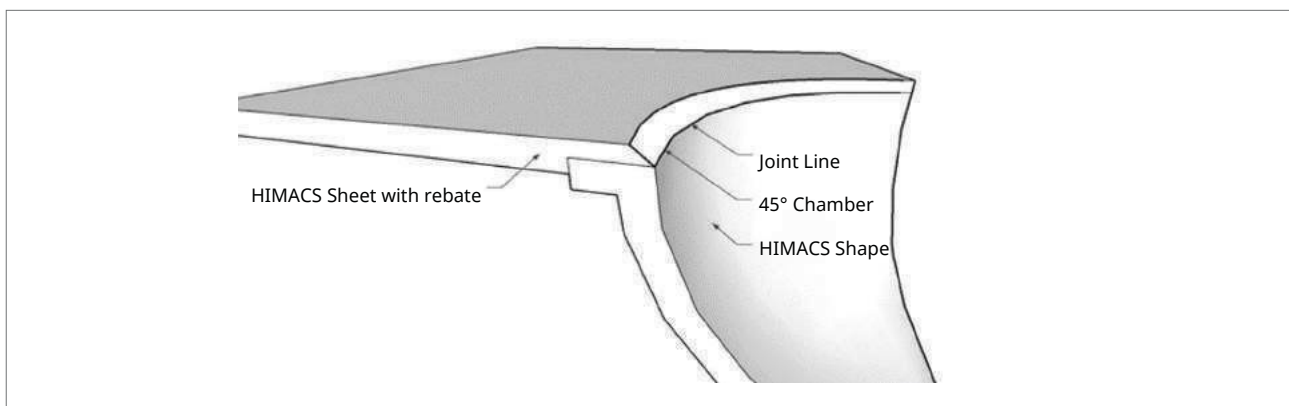


Fig.1

When the color of the sheet and shape is different an easy butt seam under-mount technique can be done. Ensure the surface where you bond is smoothing. (Fig.2)

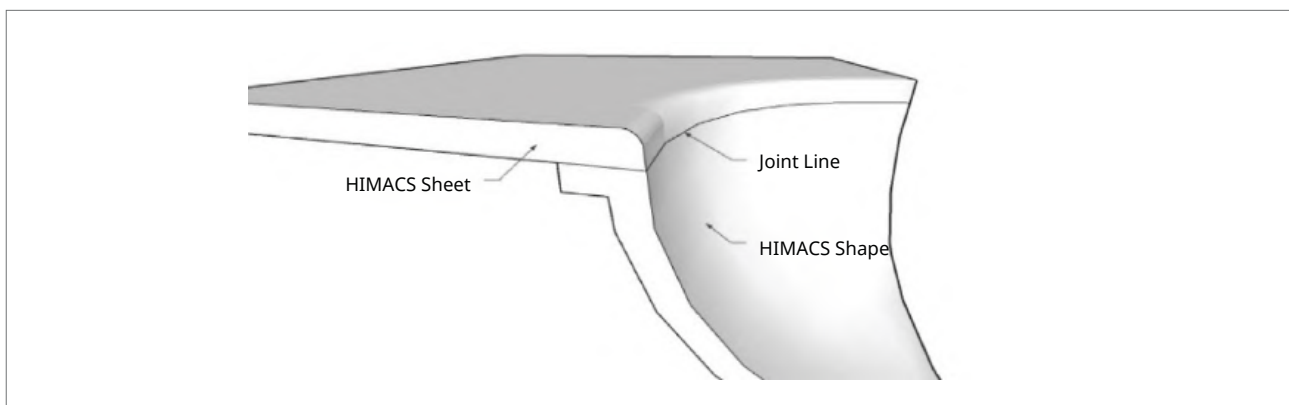


Fig.2

Other shapes like stainless-steel or ceramic shapes can be installed as shown in Fig. 3 under-mount and Fig. 4 top-mount.

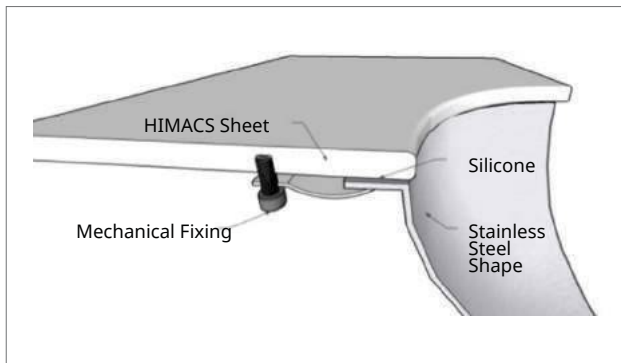


Fig.3

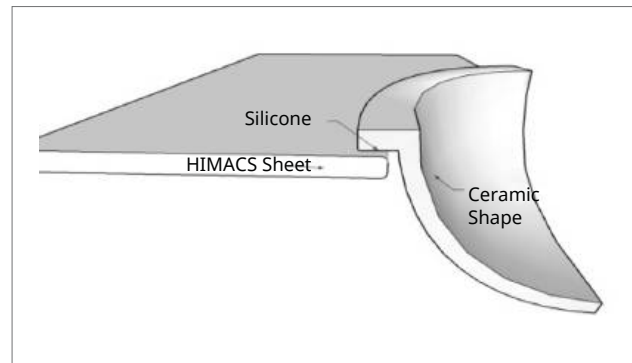


Fig.4

■ 2. Shape Installation with Rebate

Use a pre-made cut-out template made out of MDF or any other wooden material. Calculate the cutout so, that the whole of the final cutout in the sheet is smaller than the inside diameter of the shape. An overhang (oversize) of 2 to 3mm is fine. Bring the "cutout template" in position and fix it properly with clamps. Ensure the work-piece is in a straight position and properly supported. Rout the cutout (clockwise) by using a hand router with a min. of 1.8KW power and which is able to take a 12mm shank, a 10mm single flute carbide router bit with a 12mm shank and a 30mm sleeve guide. (Fig. 5)

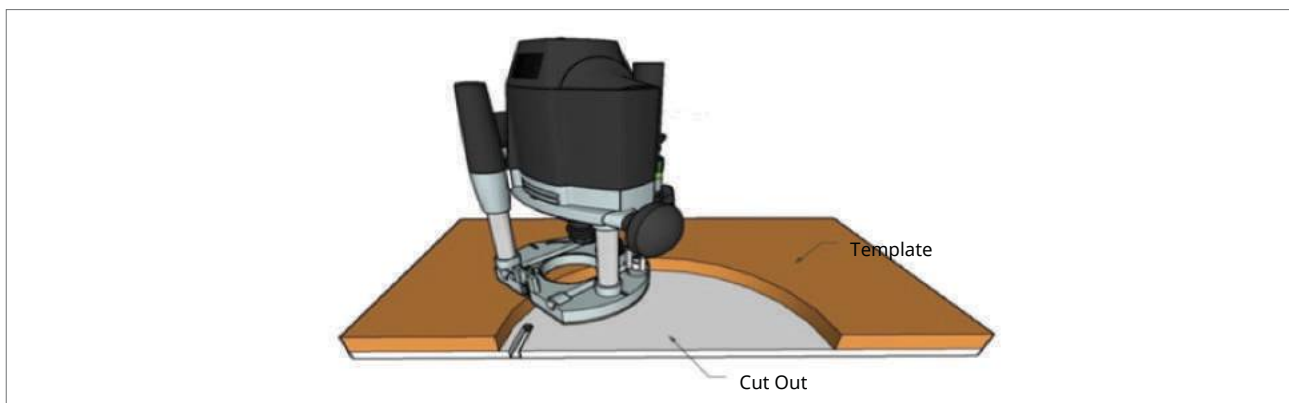


Fig.5

Remove the “cutout template” and position the “rebate template”. Use a sharp 20mm double flute carbide router (side and ground cutter) with a 30mm sleeve guide. Install the depth of the router in a way that at least 4mm of material thickness of the HIMACS sheet will be left. After finishing this step, take off the “rebate template” and proceed with the normal cleaning procedure, using denatured alcohol and a white clean cloth or a white industrial paper. (Fig.6)

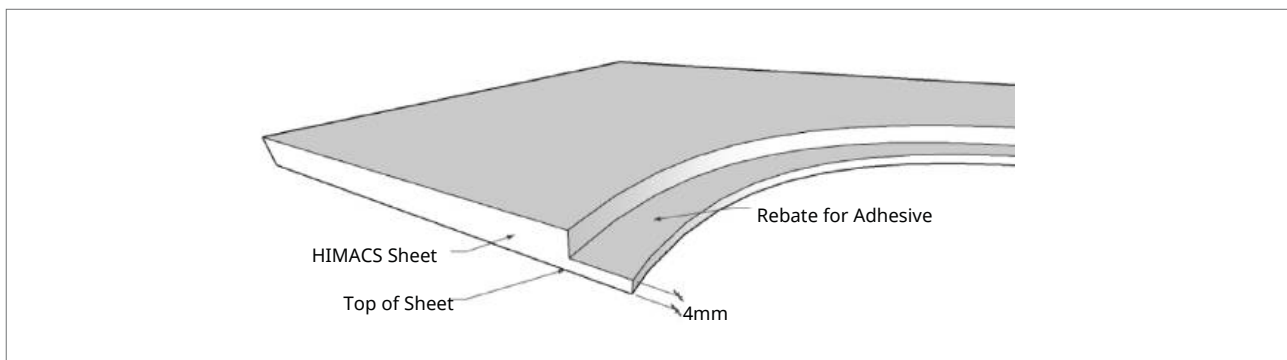


Fig.6

Clean the rebate and the edge of the shape which will be bounded to remove any dust, grease or pen marks – best with denatured alcohol and a white cloth. After cleaning do not touch with your fingers. If so, clean it again because dirt may show up in the glue line later.

Prepare HIMACS-Adhesive. Fill in the tube with the filler component of the tube with the hardener. Squeeze out some air and close the top of the tube with the plug. Put the tube in an orbital sander and mix it properly for at least 1.5 min. by moving the tube to the left and to the right direction. Ensure the mixing of the adhesive is properly done. Put on the adhesive in a continuous line into the rebate or on the edge of the shape. (Fig. 7)

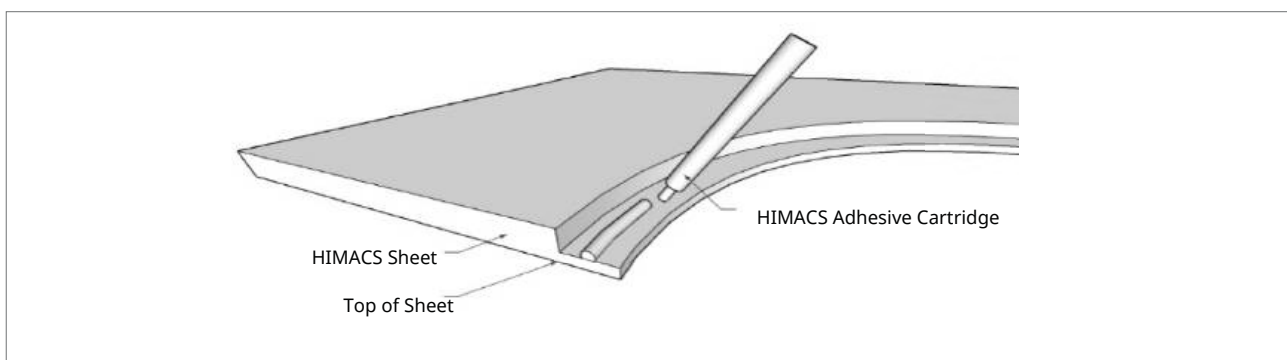


Fig.7

Turn over the shape and position it into the rebate. Ensure the drain whole is on the right place when turning the sheet later and that the shape is placed square.

When the shape is in the right position, clamp it down with clamps or with a thread through the drain whole protected by a thick sheet of wood and additional clamps in front if needed. Ensure not to over tighten the strip. (Fig.8)

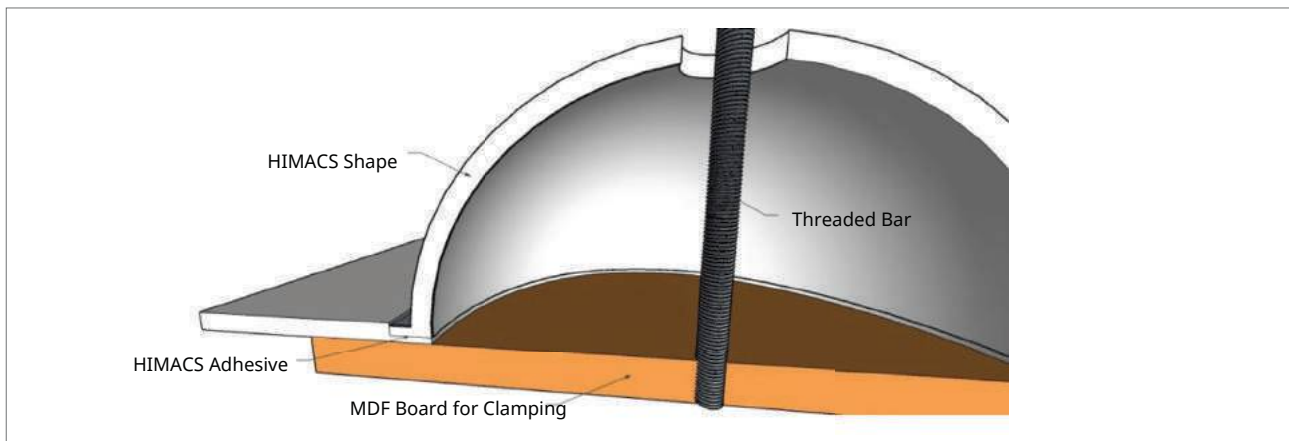


Fig.8

Leave the HIMACS-Adhesive cure for at least 35min. by min room temperature of +17°C.

Take off the clamping systems and turn over the sheet. Trim the cutout with a tungsten carbide profile router bit with Nylon bearing and a shank of 12mm.

Always use a profile of 45° and start exactly at the glue line between shape and sheet. Do not use any radius it causes to see more of an eventual slight color difference between sheet and shape of the same color. (Fig. 9)

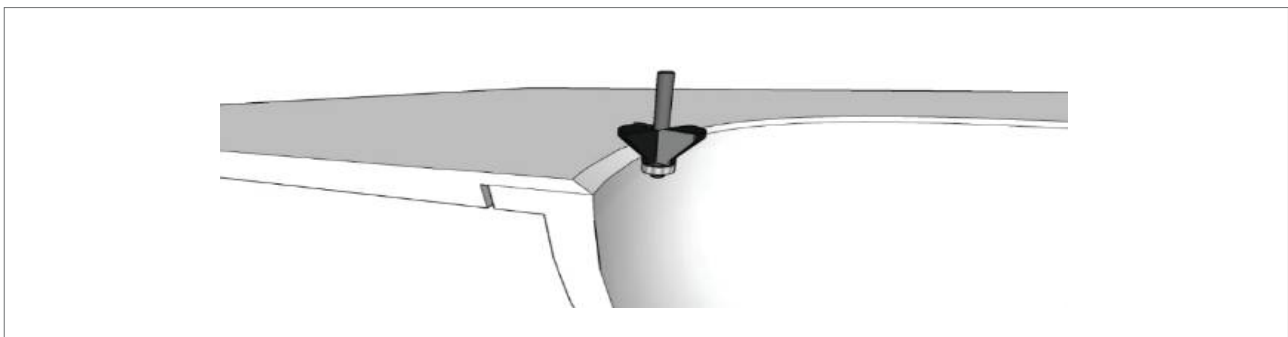


Fig.9

Sand and finish off to a standard "Semi-Gloss-Finish" as recommended.

3. Shape Installation Without Rebate (Butt Under-mounting)

Mark position of the shape from the back of the sheet. Ensure the position of the shape is correct when turning over the sheet later on. (Fig.10)

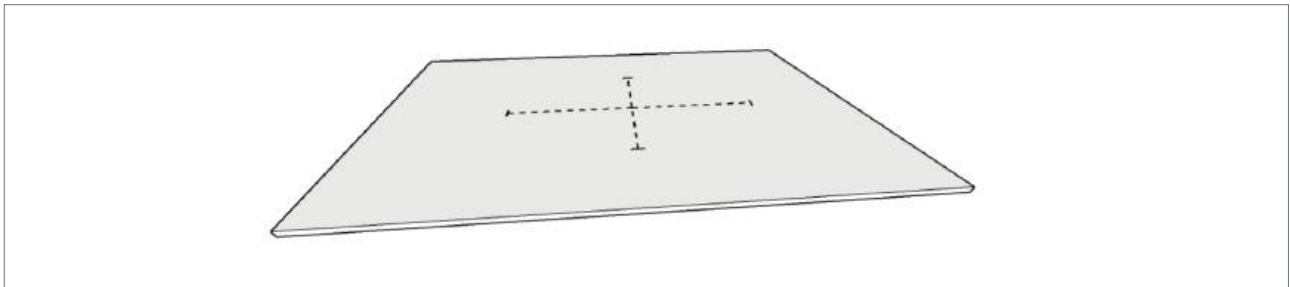


Fig.10

Bring the "cutout template" in position and clamp it down properly with clamps. Ensure the work piece is in a straight position and properly supported.

Cutout the hole with a hand router of at least 1.8 KW power and which is able to take a 12mm shank, a 10 mm single flute carbide router bit with a 12mm shank and a 30mm sleeve guide (*). Ensure the work length of the router bit is well measured.

Sand a stripe of approx. 80 mm next to the cutout on the back of the HIMACS sheet smooth by using a random orbital sander with sandpaper of 100 and 60 micron (or 150/180 grit sandpaper).

Ensure all marks and scratches of the pre-sanded back of the sheet are removed. (Fig.11)

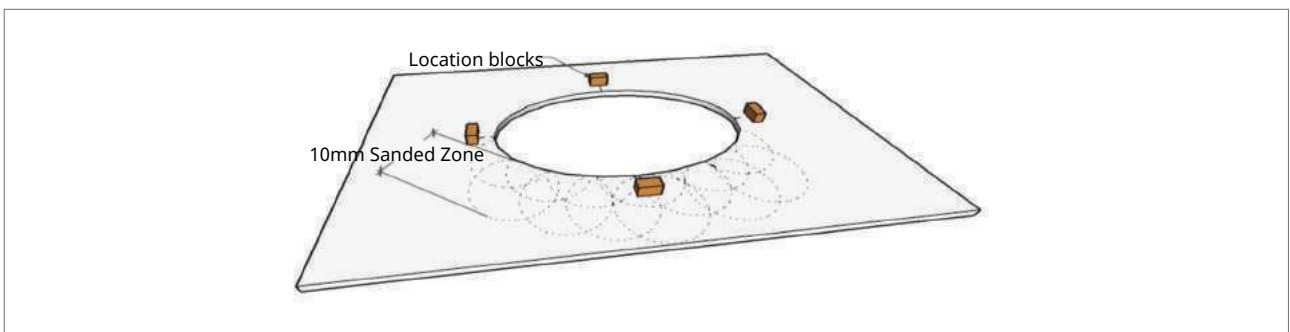


Fig.11

Bring the shape in the right position again and glue 3-4 position blocks (with a size of approximate 2cm x 2cm made of HIMACS or in wood) and fix them with hot-melt glue. (Remove them after finishing).

Clean parts, the sheet and the edge of the shape which will be bounded to remove any dust, grease or pen marks – best by using denatured alcohol (or Acetone) and a clean white cloth. After cleaning do not touch with your fingers. If so, clean it again because dirt may show up in the glue line later.

Prepare HIMACS-Adhesive. Take a 45ml or a 250ml cartridge with the right color as needed. (check your color sheet/adhesive list). Squeeze out some of the liquid without mixer tip to check if both: hardener and liquid are been moving out of the cartridge. Add the mixer tip and put the first 2cm of the adhesive on side and start bonding process.

Ensure the mixing of the adhesive is properly done.

- Put on the adhesive in a continuous line, best onto the edge of the shape.
- Turn over the shape and position it. Ensure the drain whole is on the right place when turning the sheet later and that the shape is placed square.
- When shape is in the right position, clamp it down with clamps or with a thread through the drain whole protected by a thick sheet of wood and additional clamps in front if needed. Ensure not to over tighten the strip.
- Leave the HIMACS -Adhesive cure for at least 35min. by min room temperature of +17°C.
- Do not clean off non cured adhesive with Acetone or denatured alcohol. This could cause weakness of the adhesive.
- Install additional mechanical fixings to a 4-corner cross-level.

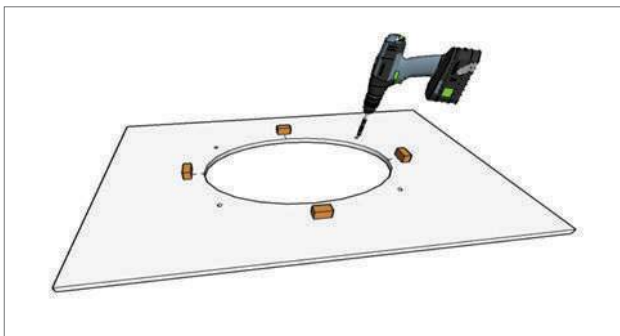


Fig.12



Fig.13

- Use Keil undercut-anchors best



Fig.14



Fig.15

- Take off the clamping systems and turn over the sheet.
- Trim cutout with a tungsten carbide profile router bit with Nylon bearing and a shank of 12mm (exp. Titman, XC201-12,7-12-25*12).
- Sand and finish off to a standard “Semi-Gloss-Finish” as recommended.

Note:

Every kitchen sink requires additional support when the countertop is installed. While a HIMACS kitchen sink is not as heavy as cast iron, the overall dimension means that full of water, dishes, and cookware, the weight is substantial. Due to the variety of sink-and-cabinet combinations We do not recommend a specific product from the many resources available. However, the guideline for installing a cast iron sink indicates the type of support that must be provided.

Other shape installation:

- With a separate template make a smaller cutout into the top, so that the shape fit in and the flange of the shape can properly fixed into the top whilst the edge of HIMACS-top meets the inside wall of the shape.
- Put a radius on both edges of the sheet (cutout) – top and bottom.
- Sand edges – best with 150/180 grit sandpaper (or 100/60 micron sandpaper) smooth.

For TOP-mount:

Install the sink from the top when insert into the cutout and fix it with permanent elastic adhesive (like silicone). Fig.16

For UNDER-mount:

Install the shape from underneath with a permanent elastic adhesive (like silicone) and additional mechanical fittings. Fig.17

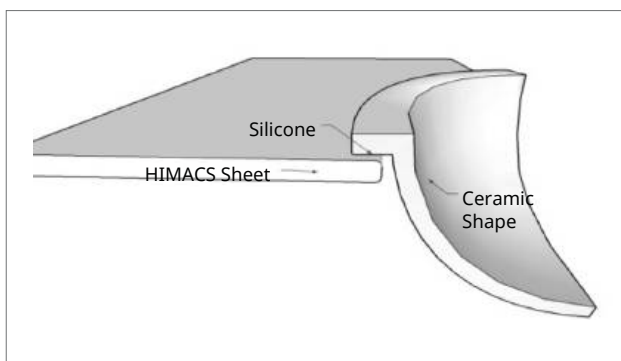


Fig.16

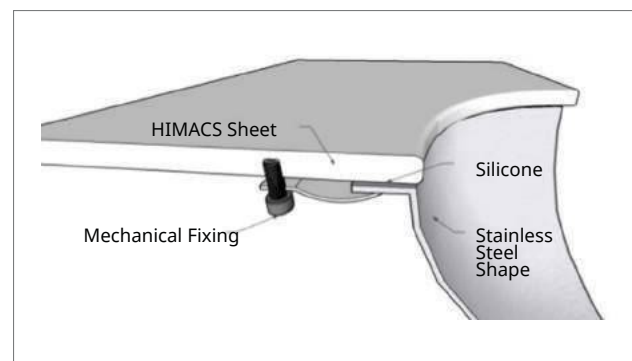


Fig.17

KEIL undercut anchor specifications:

Undercut anchor KH AA						
						ETA DIBt
6,0	4,0	1,5	M6x8,5	14		555 020 820
6,0	4,0	3,0	M6x10	14		555 020 742
8,0	5,5	0,0	M6x8,5	14		555 020 856
8,0	5,5	1,5	M6x10	14		555 020 724
8,0	5,5	3,0	M6x11,5	14		555 020 712
8,0	5,5	9,0	M6x17,5	14		555 020 846
9,5	7,0	0,0	M6x10	14	*	555 020 804
9,5	7,0	1,5	M6x11,5	14	*	555 020 780
9,5	7,0	3,0	M6x13	14	*	555 020 830
11,0	8,5	0,0	M6x11,5	14	*	555 020 823
11,0	8,5	1,5	M6x13	14	*	555 020 752
11,0	8,5	3,0	M6x14.5	14	*	555 020 777
13,0	10,0	0,0	M6x13	14	*	555 020 809
13,0	10,0	1,5	M6x14.5	14	*	555 020 734
13,0	10,0	3,0	M6x16	14	*	555 020 715
14,5	11,5	0,0	M6x14.5	14		555 020 700
16,0	13,0	1,5	M6x17,5	14		555 020 802
18,0	15,0	0,0	M6x17,5	14	*	555 020 815
18,0	15,0	1,5	M6x19	14	*	555 020 756
18,0	15,0	6,0	M6x23.5	14	*	555 020 826

Fig.18

4. Shape-Quick-Guide-Installation

Step by Step

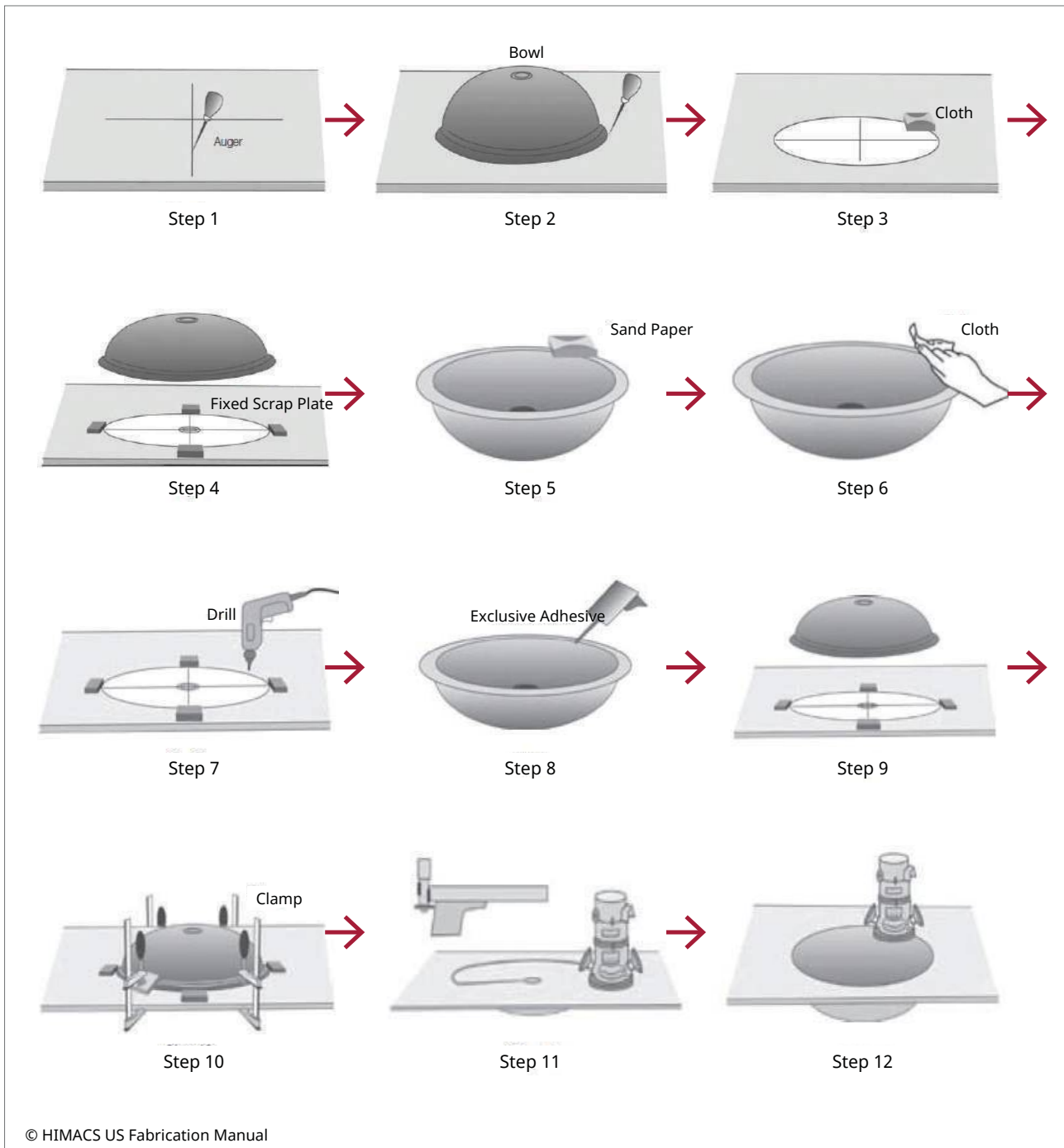


Fig.19



Fig.20

5. Technical Specifications of HIMACS Shape Offering

HIMACS shapes are delivered with a clear identification and easy readable label. The label looks as the sample shown below and provides the information's like following sample:

Bar code of product

- Producer name: HIMACS
- Product name: CB422 A / CS528 R
- Product code:
- Shape has overflow / has no overflow
- Colour code of the shape: S028 Alpine White

Company name
HIMACS
CB422 A / CS528 R





In case of complaint of shape please always provide this production-no as reference to be filled in a QC-Complaint Request Form.

- ▶ Further Information about shapes you can find in:
 - TDS "Product Shapes"
 - TDS "Storage, Handling and Transportation"

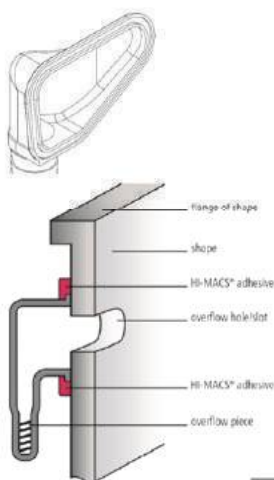
6. Overflow Piece

Overflow piece is not fixed on the shape body. Overflow pieces are added to the box and need to be assembled from the fabrication shop before installation starts. Each shape delivery includes the overflow piece and its installation instructions.



This shape has been running through a precise Quality Control check. If some outstanding defects have been missed, please do not fabricate this shape and report this via our claim portal “sugar-crm” and replace this item via your local Distributor. Fabricate goods only in good conditions. Later complaints will be not covered under the LG Hausys 15-Year Warranty Program.

This is exclusively valued for Authorized HIMACS Fabricators of LG Hausys Quality Club members only.



The overflow and the sink/bowl that you received are not yet bonded together. Before installation, please proceed as follows:

1. Place overflow piece into the right position behind the overflow hole on the back side of the sink/bowl.
2. Use a WHITE HIMACS adhesive and place an adhesive bed around the plastic part as per figure 1.
3. Ensure that adhesive does not drop down.
4. Hold the overflow piece in position with a removable tape.
5. Ensure that the positioning of the overflow piece is correct and not too much adhesive is squeezed out from inside of the plastic overflow piece as this may not look nice when looking at the shape after installation.
6. Keep overflow still and in place until adhesive is totally cured then remove tape.

NOTE: the overflow piece can be connected to the flexible part of the sets.

Fig.21

Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs our approval for Warranty.

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TECHNICAL DATA SHEET SUB-STRUCTURE



© Dominik Obertreis

1. Sub-construction For Horizontal Applications / Interior

HIMACS Natural Acrylic Stone™ mainly needs to be supported to avoid any kind of dip. Depending on the application, the following support materials are recommended:

- Steel/stainless steel profiles
- Aluminum/aluminum profiles
- Moisture-resistant MDF, Moisture-resistant plywood or Moisture-resistant Particle Board
- Particle board
- Plasterboard or other alternative constructional boards

Ensure the sub-construction is resistant according to its requirements and specifications needs. When used as a kitchen work surface, a frame substructure is strongly recommended. A full sub-structure can, but need not, be used (Fig.1).

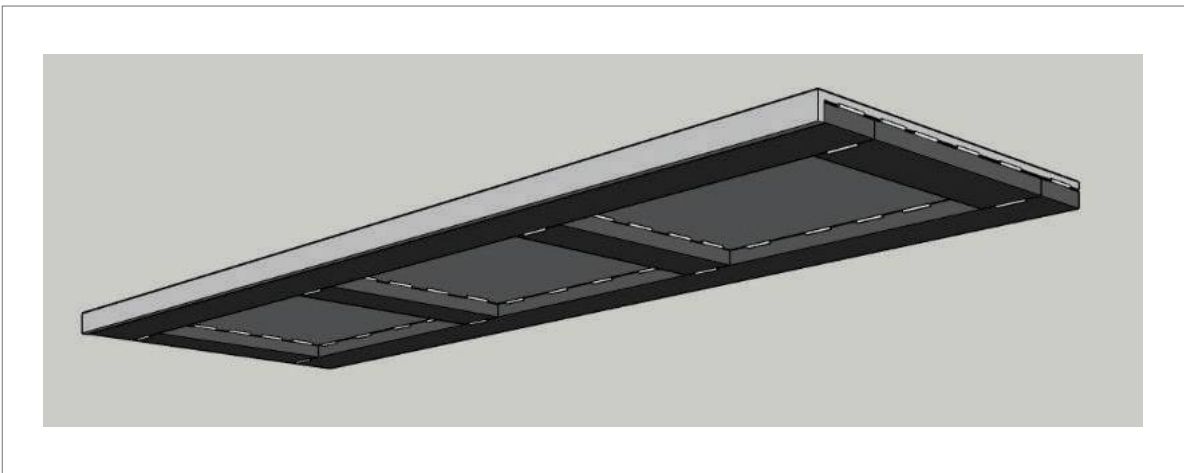


Fig.1

Adjust all substructures with **permanent elastic adhesive** or with permanent elastic PU adhesive to the back of the HIMACS sheet; preferably in dots at a maximum spacing of approximately 100 mm or accordingly to the construction needs.

Use a mirror tape in between the dots to avoid long waiting time of the silicone or PU curing time.

The use of a mirror tape with a foam base is also practical as it ensures an even placing of the sub-construction without any uneven moves.

When to expect some weight to be placed on the surface at a later time some plastic or wooden strips may be placed between HIMACS sheet and sub-construction to avoid any unexpected move or warping of the top due to heavy weight placed for a long time on one position. Fig.2

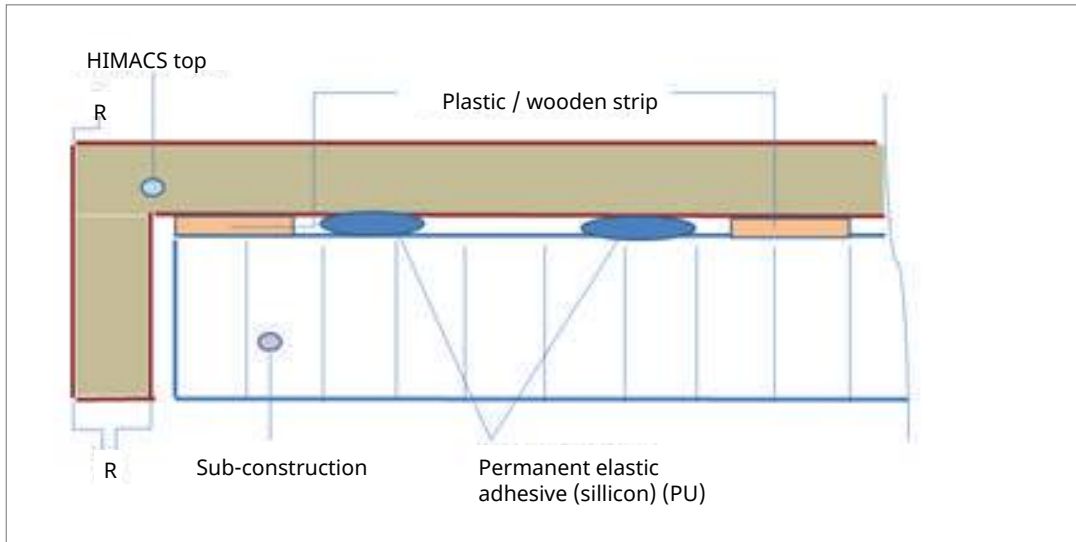


Fig.2

Sub-construction strips made in wood for a standard kitchen counter should have at least a width of approx. 80 mm and a material thickness of approx. 26mm; or accordingly to the calculation of static needs of the used material.

Rebate for reinforcement strips should also be taken into the material preparation work for the sub-construction application and pointed out when special parts may outsourced to metal work.

Be aware that the sub-construction will be different with reference to the material thickness, its use and its application. Ensure to take each single point of necessary job issue into consideration.

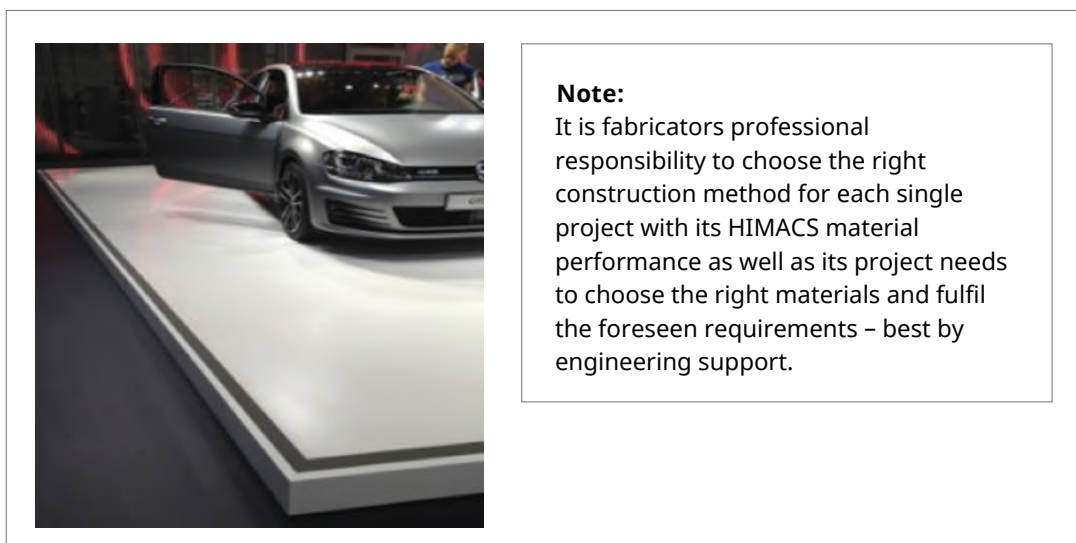


Fig.3 Example: Steel construction for a car platform / show room

Where no heat source is foreseen, like breakfast bar tops or table, counters or furniture's a full underlayment (Fig.4) can be placed, when taking into consideration the dilatation and expected weight foreseen for the top - choose the right thickness of material for the right job.

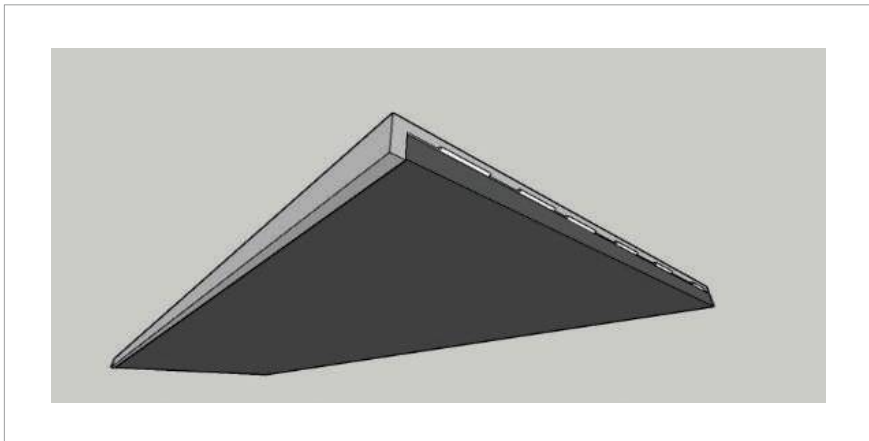


Fig.4

2. Sub-construction For Vertical Applications / Interior

With regards to the product thickness the right sub-construction must be chosen to avoid any shadowing or warping during the time of use.

Ensure - where heating sources - such as lamps or sunshine - the panel always need to move according to its dilatation.

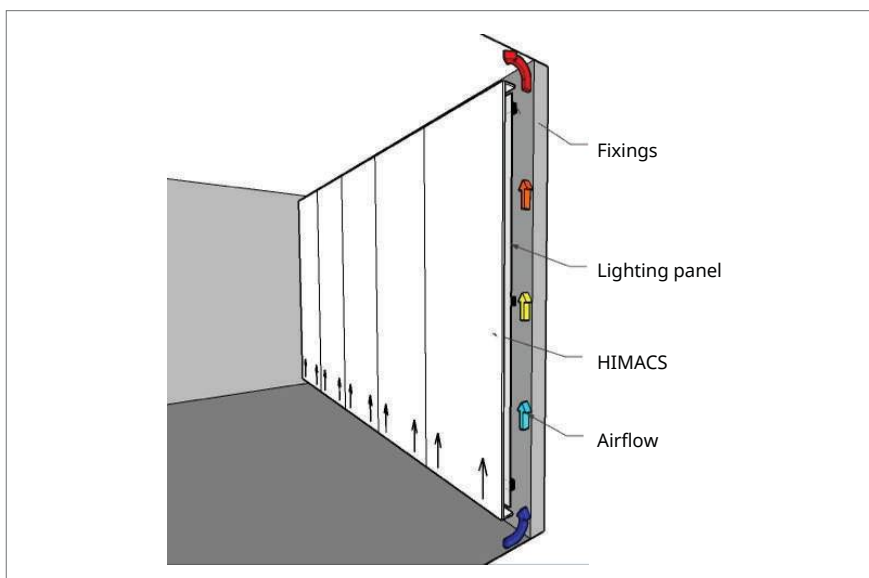
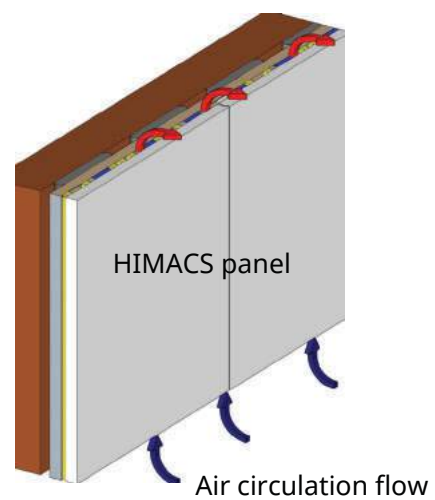
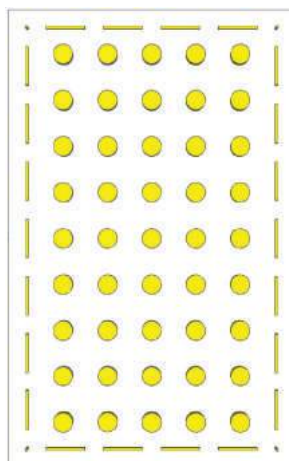
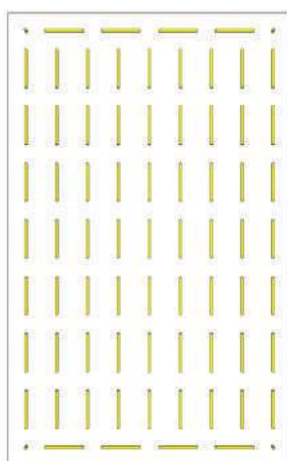
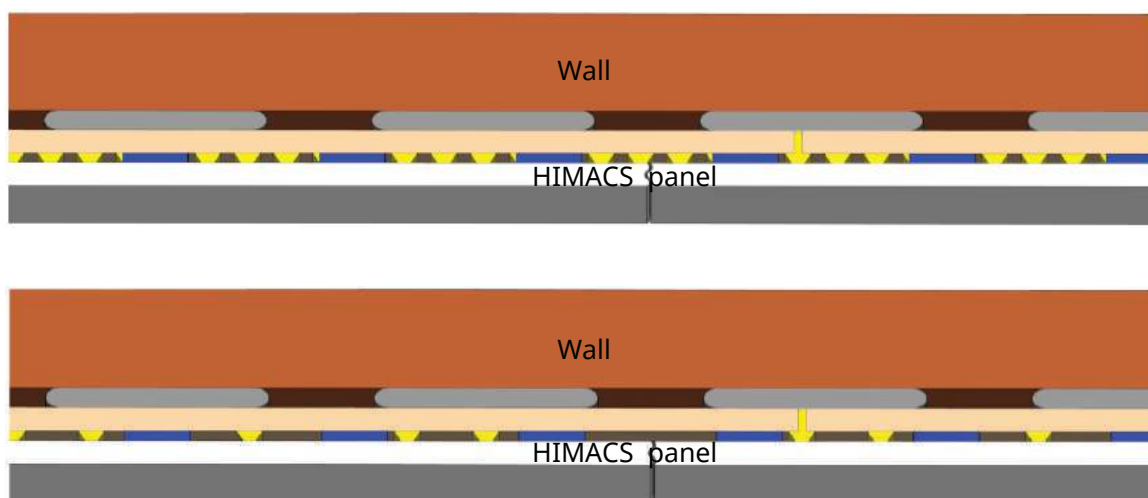


Fig.5

Avoid any creation of moisture of the backside of HIMACS panel. Best to reach with:

- All-over adhesion with toothed spatula and with permanent elastic adhesive (especially when using thin sheets of HIMACS(like 4.5mm thickness)
- Stripes of permanent elastic adhesive and air circulation*)
- Mechanical fixing and air circulation *)



Glue application systems*) for HIMACS panel


*) = not recommended for thin sheet material of HIMACS

Here some samples of different kind of fixing techniques which can be used.

Corners outside

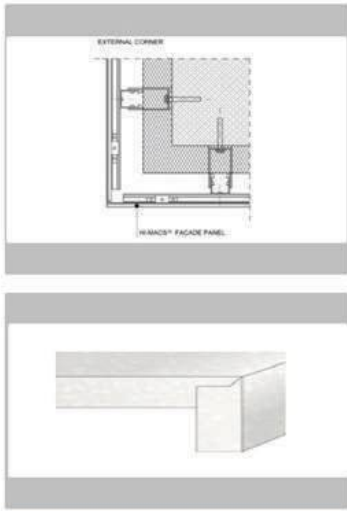
Outside corner:

- Design by 45°



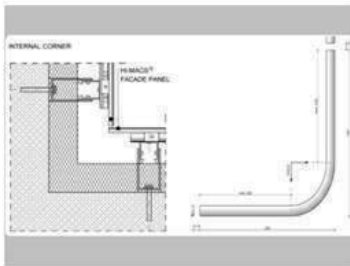
Outside corners are mainly heavy stress undertaken. Therefore it is best to strengthen from the back.

- Mechanical fixing with support from the backside



Corners inside

- Ensure the sub-construction is stable and strong enough to take its weight and is prepared for handling its expected features, like direct or indirect lights or other technical sources.
- Remember the expansion coefficient to handle the dilatation of the HIMACS Structura® - Panel
- Avoid constructions to the limits.



! Ensure the pattern design does not change the structure when thermoforming for an inside or for an outside corner element.

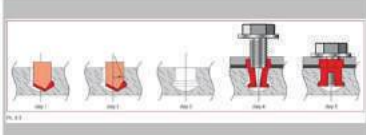
Fig.6

Fixing


! Before choosing any fixing system remember that HIMACS sheets have also different performance in translucent effects, which means: depending on the color chosen for the project the construction to fix the HIMACS Structura® panels may showing some shadowing effect, may show some unwanted shadowing effect.

Avoid shadow effect of sub-construction due to high lucent material performance

Fixing / mechanical




For any mechanical fixing LX Hausys is recommending to use "KEIL" under cut anchors. Ensure the correct size is used to prevent visibility from the front side.



Fixing

- For interior fixing you may using other well known fixing items.
- Ensure the fixing allows proper material dilatation and avoid any sheet warping
- Avoid constructions to the limits. Consult engineering support.

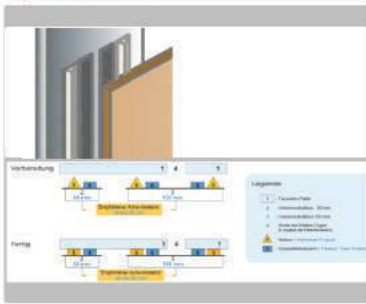


! Ensure your sub-construction is strong enough to take the weight of the wall paneling. LX recommends to consult an engineer for static calculations of your project.

Fixing / Bonding

The installation can be done with permanent elastic adhesive systems.

- There are several systems in the market available
- For facade system LG is recommending the product from INNOTEK (www.INNOTEK.de)
- Always check for proper engineering calculations to your construction wall



! Ensure your sub-construction is strong enough to take the weight of the wall paneling. LX recommends to consult an engineer for static calculations of your project.

Fig.7

Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs our approval for Warranty.

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TECHNICAL DATA SHEET REPAIR



© Dominik Obertreis

HI·MACS

HIMACS is a homogeneous material where its molecular structure is through and through the whole sheet panel thickness, length and width.

Therefore it can become repaired efficiently and easily.

As due to small production variations or other circumstances it may happen that there will be some 'color differentiations' by time. To avoid any risk of difference it is recommended keeping an original piece, like cut-out or similar lefts of the origin at a place to find it back later on.

One of the main advantages of HIMACS is that the surfaces can be repaired in the event of an accident. Depending on the type of damage, a number of solutions can be used.

1. Scratches

For scratches, it may well be possible to sand them out with Scotch Brite pads, abrasive creams or even abrasive sandpapers.

Ensure to protect and cover other areas which should not be affected by your work. Always use dust collection systems as well as vacuum cleaner.

2. Small Indentations

With small indentation marks it is possible to drill out the affected area and fill the hole with HIMACS colour matched adhesive. Be sure to over fill the hole and try to eliminate any air pockets prior to curing. Once cured the adhesive it can be sanded down in the normal standard way, however, the repaired area will need to be blended in with the existing work surface.

This may be the best method by pattern colours. Check if it could work on your final project too.

Note:

To avoid any color match issue between the installation and its repair plug it is best to use a piece of the original material.

Therefore a piece of a cutout supposed to be stored beside the kitchen or vanity or furniture. If no spare piece is available, check color match before starting repair.

Any color difference due to different production periods is not applicable to our warranty program.

3. Small Areas Of Damage

For larger areas of damage, particularly with the Granites and Sands, a plug repair is a possible alternative solution. (Fig.1)



Fig.1

4. Major Damage

For major damage, regarding cracks or burn marks, a 12 mm triangular or round piece of HIMACS (same thickness as installed) will need to be fitted. Make a template as showing Fig.2 , and clamp it to the surface around the damaged area. Machine out the section using a portable hand router. Using the same template cut another section from an offcut of colour matched HIMACS piece or better if the piece is from the same sheet to minimize any colour difference. Bond the triangular spare piece with HIMACS adhesive and reinforce the underside. (Fig.3)

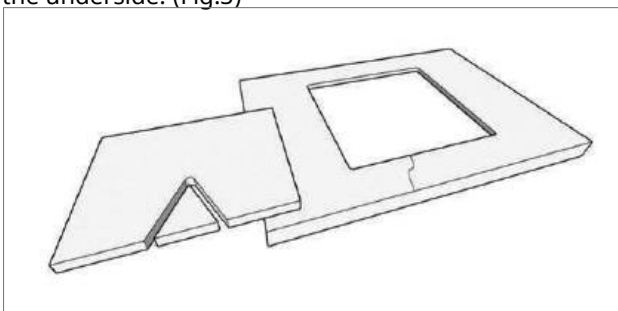


Fig.2

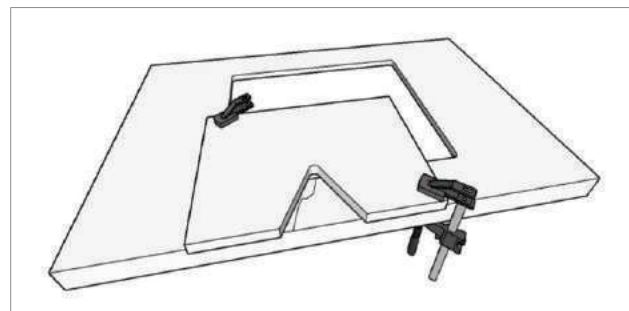


Fig.3

Regarding the intensity of damage it also may recommend best to replace sectional partly – if necessary.

Repairs through a heating section, like a hob cutout or another similar heating device will not be successful for a positive long term result and is not recommended.

■ 5. Broken Seams

To repair a broken seam, first machine a 'V' groove down the entire length of the crack. Cut a square section of matching HIMACS so that when turned through 90°, it fits the groove. Ensure no production air bubbles may appear after finishing off. (Fig.4)

Apply HIMACS adhesive into groove and push the square section home until sufficient adhesive is forced upwards. Once fully cured sand down the new section as normal. Ensure that the seam has reinforcement beneath prior to completion.

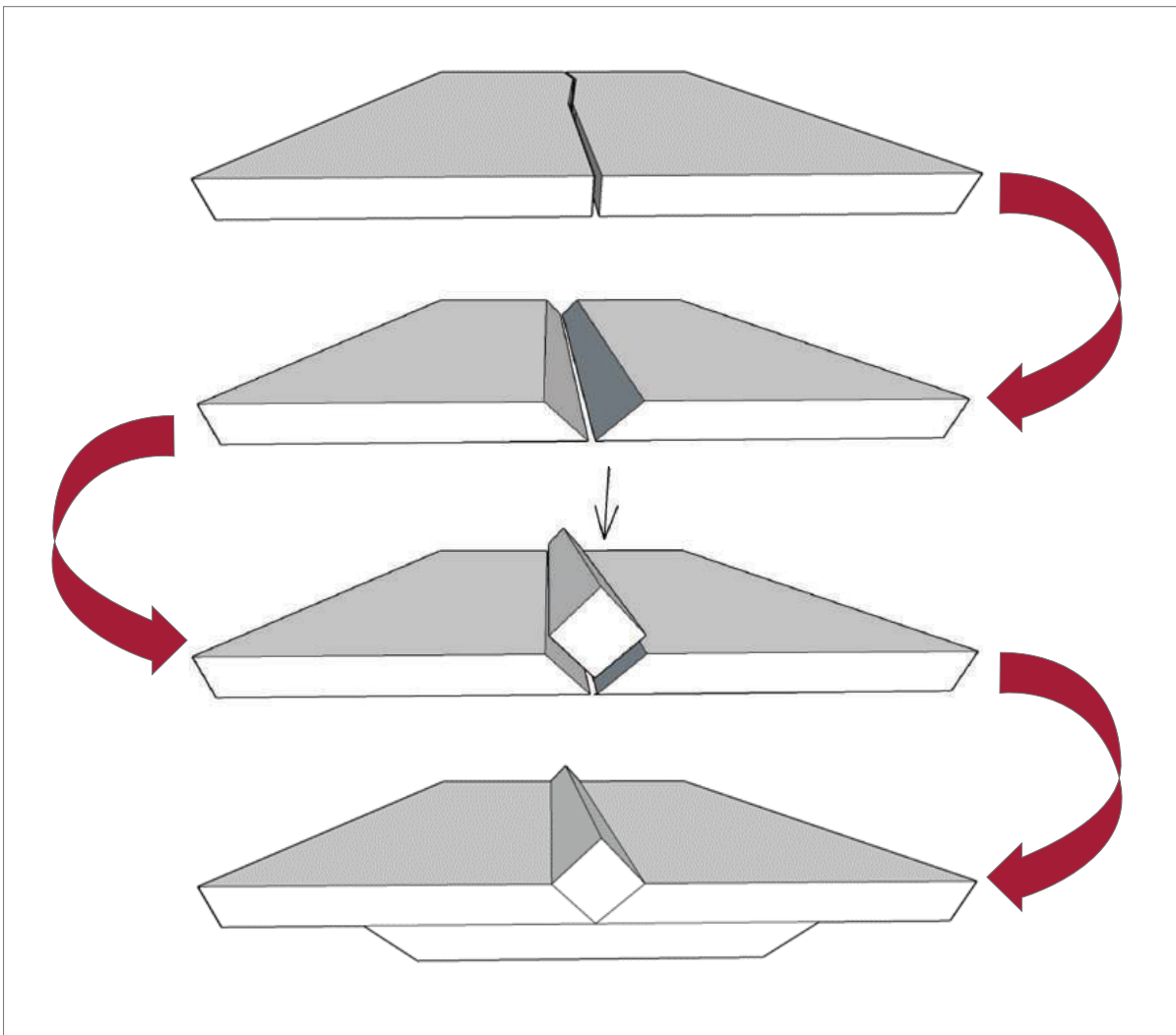


Fig.4

Hint:

Always leave the cutouts of sink or bowl or hob in customers place for any eventual repair – if needed; or for colour comparison when the project should become extended.

6. Shape Replacement

- How to repair a broken or damaged shape:
- Replace tap and any necessary items from the surrounding of the shape
- Ensure you can move with the tool you going to use in any kind of direction you may have to.
- Place the hand machine on a base blade to cover the cut out of the shape.
- Use a Four-Flute-Sink-Repair cut tool and cut around all four sides
- Before doing so, ensure you have positioned the shape so it cannot fall down at the end of your machining process.
- Do an additional cut for a new rebating of approx. ½ mm.
- Ensure the rebate is cut smoothly and even.
- Clean seam as under normal seaming process
- Prepare adhesive – shape and – threat (clamping tool).
- Adjust shape into the right position and clamp it with the threat – covered with a large thick wooden block to allow the pressure all over the seam.
- Do not over tighten the threat.
- After curing process clean off with a profile router bit and finish off with the standard sanding process.

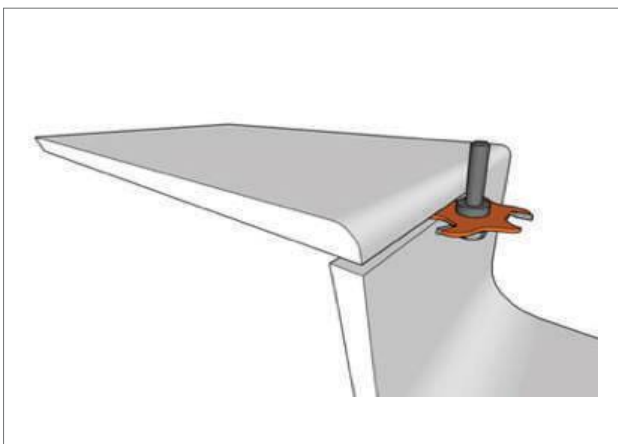


Fig.5

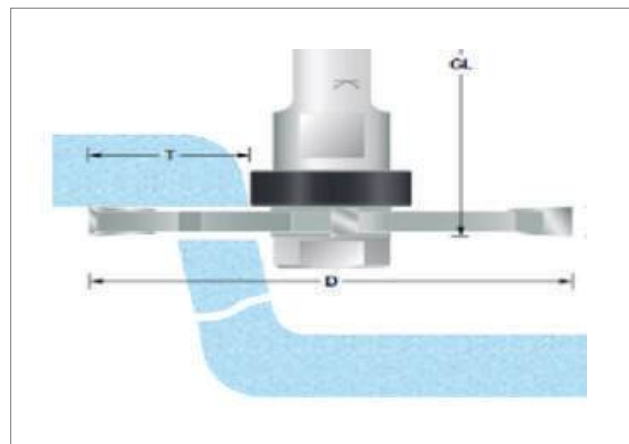


Fig.6

7. Damage In The Surface

As recommended to place cut-outs in the kitchen cabinet for later repair you always have a piece of origin whilst it will have no color match problem:
 Below schemata shows how to prepare the cut-out of damaged area and install a repair piece:

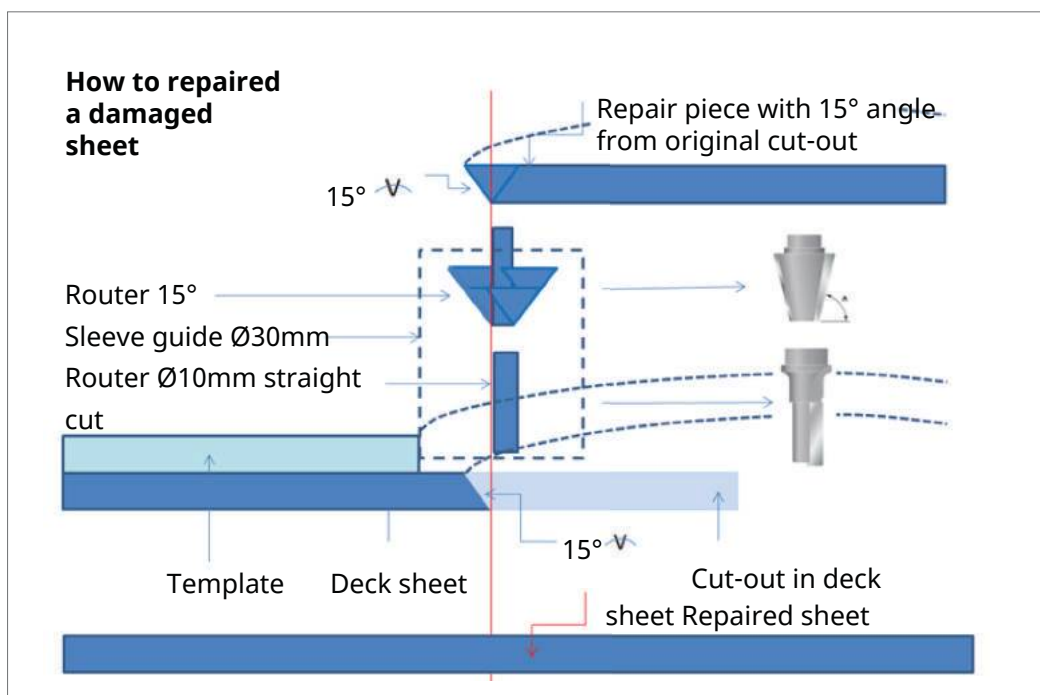


Fig.7

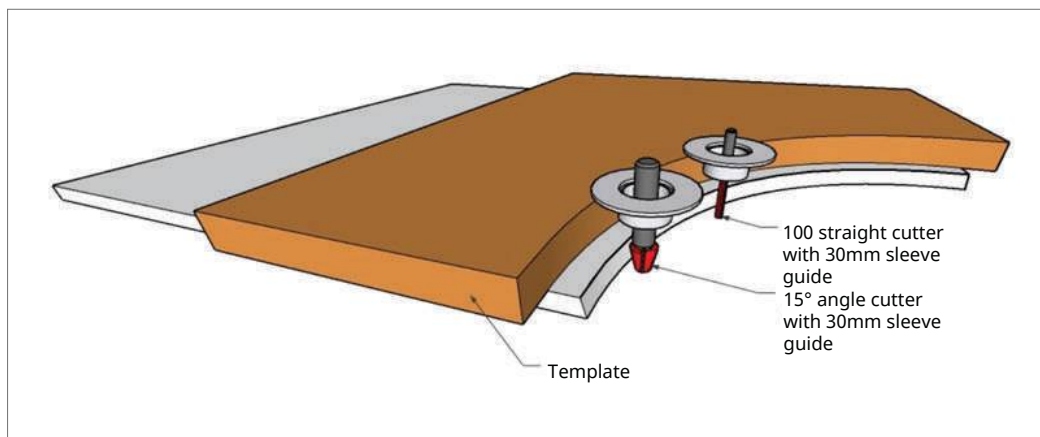


Fig.8

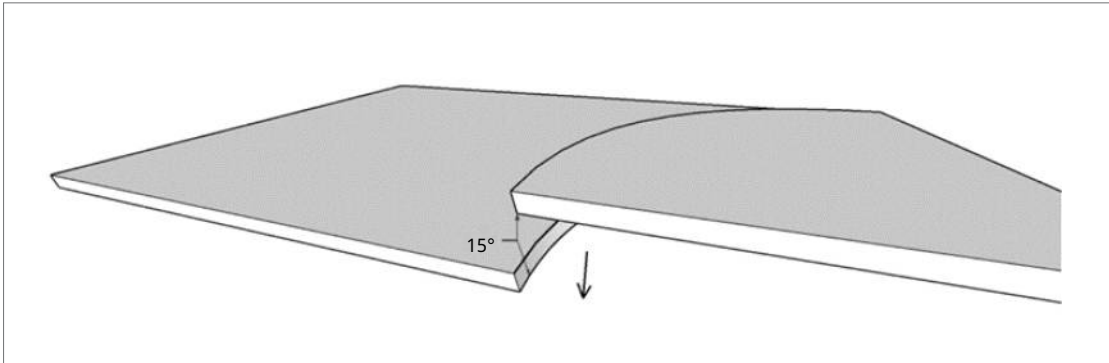


Fig.9

When completed surface repair, always place a reinforcement sheet underneath for support and strengthen the repaired part.

TECHNICAL DATA SHEET SANDING



© Dominik Obertreis

1. Tools & Technique Required

Best experiences have been made using a random orbital sander by air or electrical power.

For large areas use a sanding pad as big as possible up to \varnothing 500 or \varnothing 600mm (if available) when working with hand machines.

Most of the time working with a pad of \varnothing 150mm will be done, because sandpaper disks of this size are more available in the market.

A special sanding technique is required to minimize or to avoid sanding marks or cloudy shadow marks on the surface. (See description below)

For flat areas use a hard pad.

For edges and profiles use a soft or super soft pad or special foam connected to the pad for edges and profiles.

Do not apply too much pressure during sanding but use equal pressure and speed.



Fig.1



Fig.2



Fig.3

Large sections of HIMACS sheets can be sand best with a wide belt sanding machine having at least 3 belts in one row. Such work process allows achieving a better price of fabrication and labor costs with excellent results of a finished surface.

Run small sanding steps only, and take off not more than 0.1mm per process flow. Taking off more material in ones will great much heat and will deform the sheet flatness easily.

Ensure HIMACS sheets do not heat up because of too high or too low speed of the sanding machine.

Dust collection is always recommended by any sanding process.



Fig.4 Long belt sanding machine



Fig.5 Wide belt sanding machine



Fig.6 Dust extraction system machine

■ 2. Sanding Requirements for HIMACS Sheets

Under normal circumstances, follow the sanding steps mentioned in the spread sheet below. Ensure to run the sanding process in a professional and consistent HIMACS described in this Technical bulletin.

Be aware, that the recommended gloss finish for HIMACS standard fabrication is a "Semi-Gloss-Finish".

High-Gloss-Finish can be done as well, but should be used for art applications only and is NOT covered under our warranty program.

Be aware, that some colors of HIMACS, especially darker colors with higher color pigmentation need to have more sanding and finishing care. (This should be taken into consideration when calculating a project.)

Always use a dust extraction system when sanding.

Avoid heat during the sanding process.

2.1. Wet Sanding

For special applications or specific fabrication processes: wet sanding may be a better option to reduce and keep dust more efficient under control.

Ensure all necessary items are water proof and water resistant as well as environmental friendly to use water with a recycle system.

The advantage is having no dust in the work zone. Surface gets cooled during the sanding rotation process.

2.2. Matte Finish

To achieve a matte finish, you can either use a grit or a micron system. Remember the numbering system or grades of papers between grit and micron systems are opposite to one another.

First, use a 120 Grit or 100 micron abrasive. Once this step has been completed, remember to clean the top and switch papers to a 180 or 220 Grit or 60 Micron paper.

Finally, clean the top once again and surface the top with a Scotch Brite™ pad.

If you are working with a dark or black colour, you may have to add an additional third step in sanding. This will require a 320-400 Grit or 30 micron paper. If this is done, you will then want to clean the top and then surface the top with a Ultra Fine Scotch Brite™ pad.

2.3. Semi-Gloss Finish

If you wish to achieve a satin finish follow the same steps expressed to achieve a Matte Finish on a dark colour. Use a 120 Grit/100 Micron; clean surface from dust, Switch to 180-220 Grit/60 Micron. Wipe off the dust.

Remember to clean off the top between each single sanding step.

Then change using 320-400 Grit/30 Micron paper. Clean the top from dust.

Sand the top with a Ultra Fine Scotch Brite™ pad or by using the Superpad S/G from Joest-Abrasives. Clean the top once again and examine the final finish.

Clean off from any dust or wipe off with wet soap-water and dry cloth/paper.

2.4. Gloss Finish / High Gloss Finish

Gloss prior High Gloss finish is not recommended for any application of use and is not protected neither covered under our warranty.

Follow the steps to the Satin Finish specification, but do not use the pad yet. As you reach the 320-400 Grit/30 Micron step, you will need to add a few additional steps.

Sand the top using 600-900 Grit/15 Micron paper. Thoroughly clean the top. Remember to check the loading of your paper during the process and replace it frequently as necessary to maintain a consistent finish.

2.5. Next – polishing procedures

Remember to note that HI-Gloss finishes on dark colours are not recommended in high traffic areas, as the finish will show wear very quickly and require constant maintenance.

Remember the polisher will build a lot of heat as you buff the surface with the polishing compounds. Maintain moderate consistent pressure to prevent overheating of the top and burnishing of the gloss finish.

Use an approx. 250 / 300mm variable speed polisher. Several machine manufactures offer a few models that can maintain 2500 RPM's and 8-10 amps of power.

Install a 3M Buff Adapter to the polishing equipment. This is important so as not to allow the arbor to damage the surface in the polishing process.

You must now install a white 3M Super Duty 2+2 Pad to the polisher assembly.

Apply 3M Marine Paste Compound to the top. This paste is abrasive and will remove swirls to 30 Micron. You may need to repeat this step. Keep the buffer moving in a controlled fashion across the countertop and then from front to back across the countertop.

Clean all compound residue from the polished surface. You can do so by reversing the white pad. Then clean the top with denatured alcohol and a clean soft white rag.

Take off the White 3M Super Duty 2 + 2 Pad and replace it with a Yellow 3M Super Buff Polishing Pad.

Apply 3M "Finesse-It" Polishing Material to the countertop. Remove any remaining swirls to produce a high gloss surface.

Clean all polishing residue from the polished surface. You can reverse the Yellow Pad to remove any residue left behind from this step.

3. Sanding Technique for HIMACS Sheets

When starting with the sanding process using the manual method, following the direction < West - East > and then changing into < South - North > direction. Fig.7

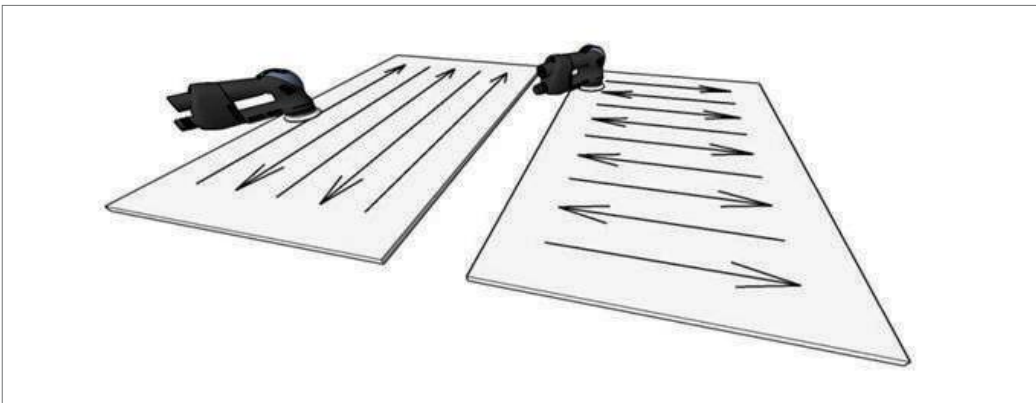


Fig.7

Use ex-center position of the machine for rough sandpaper and change the adjustment to fine sanding by using finer grid sandpaper.

Run those directions two times in moving the random orbital sander in small circulars motion, where each move will overlap the small circle before. Fig.8

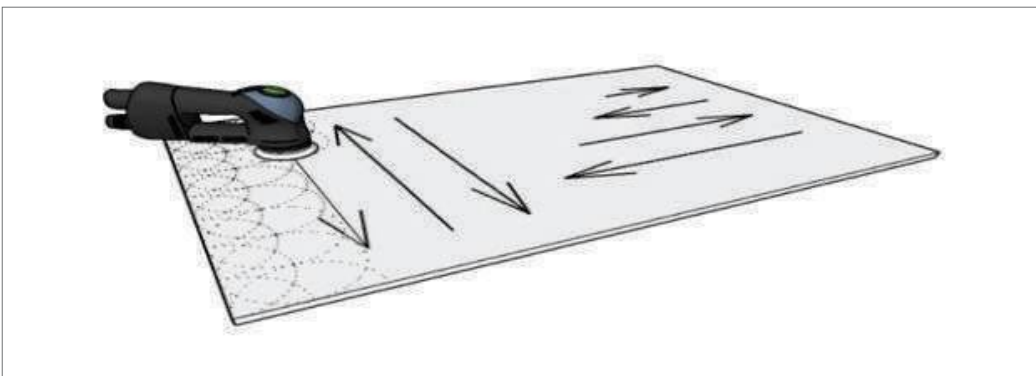


Fig.8

Ensure the sandpaper disc does not start to clog. Always take off dust when changing to the next step using a soft cloth or a special dust sanding disk.

When changing sanding process to step 3 or/and step 4 change the sanding direction into a diagonal direction and also change the sanding moves into - movements.

Always ensure to overlap the movements. Fig.10

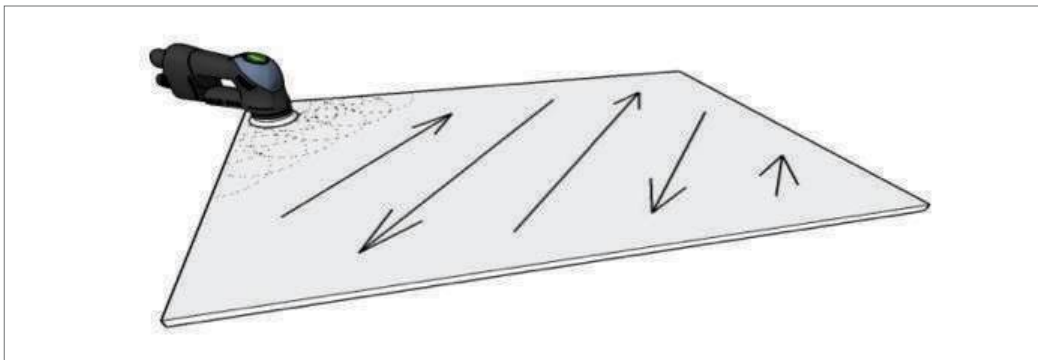


Fig.9

Work continuously – and always use same pressure to the surface.
 Uneven pressure or clocking sandpaper can cause cloudy effects of the surface.

4. Sanding Step Overview for HIMACS Sheets

		Standard recommendation				
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH	
HIMACS colour family	for all colours		for all colours		for all colours	
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper
Step 1	100/80 μ	150/180	100/80 μ	150/180	100/80 μ	150/180
	take dust away		take dust away		take dust away	
Step 2	60 μ	220	60 μ	220	60 μ	220
	take dust away		take dust away		take dust away	
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 μ	280/320	30 μ	280/320
	take dust away		take dust away		take dust away	
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 μ	380/400
	take dust away		take dust away		take dust away	
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 μ	600/800
				take dust away	take dust away	
Step 6				industrial paper towel	Finesse-it™ Finish-component	1200
					take dust away	
Step 7						1500
						1800
						2500

Fig.10

■ 5. (A) Sanding Recommendation Summary for HIMACS Sheets

In the following guidelines all sanding media is referred to in "grit" for simplicity.

5.1. Matte finish guide

1. Sand the entire surface with 120-grit
2. Clean the surface to remove all 120-grit dust
3. Sand the entire surface with 180-grit
4. Clean the surface to remove all 180-grit dust
5. Sand the entire surface with 3M brand #7447 Scotch-Brite®pad or equivalent
6. Clean the entire surface and examine the finish. Repeat any steps as necessary.

5.2. SEMI-GLOSS (SATIN) FINISH GUIDE

1. Follow steps 1 through 6 above, then...
2. Sand the entire surface with 320-grit
3. Clean the entire surface to remove all 320-grit dust
4. Sand the entire surface with 400-grit
5. Clean the entire surface to remove all 400-grit dust
6. Sand the entire surface with 3M brand #7448 Scotch-Brite®pad or equivalent
7. Clean the entire surface and examine the finish. Repeat any steps as necessary.

5.3. HIGH-GLOSS FINISH GUIDE

1. Follow steps 1 through 10 above. After the 400-grit sanding step-no.10 follow steps below Sand
2. the entire surface using 600-grit
3. Clean the entire surface to remove all 600-grit dust
4. Sand the entire surface using 900-grit
5. Clean the entire surface to remove all 900-grit dust
6. Switch to a variable speed polisher [for best results use a ten (10)-inch (250mm) pad]. If necessary use a Buff Adapter to prevent the arbor from damaging the HIMACS surface. Depending on the desired gloss level the following polishing products or equivalents are used:
7. 3M™ Trizact™ 3000 and 5000 abrasive/polishing pads
8. Remove dust pigments after each step with water and wipe off with a wet soft cloth
9. 3M brand Finesse-it™ Marine Paste Compound 06039 White
10. 3M brand Finesse-it Finishing Material 81235 White
11. Consult your polishing product and/or polishing equipment supplier for their recommendations.
12. Clean the entire surface to remove the polishing residue and examine the surface. Repeat any steps as necessary.

Sample

Sandpaper Joest Abrasives USEIT®-SUPERPAD P Gold

Thanks to their full-surface perforation, the Multi-Perforation useit® Superpad P Gold sanding disc are ideal for use on all manual grinding machines with and without suction. They guarantee 100% capability with minimum storage costs. Thanks to its stearate coating and unique design, clogging of the sanding disc is effectively avoided. Dust pollution for humans and the environment is reduced to a minimum. Compared to conventional perforated sandpaper from other manufacturers, the Gold quality achieves a much higher level of sanding performance. Precise and exquisite surface qualities with unique 'feel' can be achieved. Thanks to its stearate coating, the Gold quality is particularly suitable for sanding painted surfaces and guarantees dust and shadow-free sanding when used on mineral materials.



Fig.11



Fig.12

Technical Data Areas of use:

- Paints / Varnishes
- Composite
- Plastic
- **Solid Surface material like HIMACS**
- Wood
- Filler

Carrier material:

C-paper, extra strong Abrasive grain: Alumina.

Scattering: half-open

Grain: P40 - P800 Bonding agent: synthetic Resin paint: Gold Backing :
special foam / velour coating

Available Product for Standard Excenter size Ø 150 mm:

517-A 40	Ø 150 mm	red	P-40	in carton	25 pcs.
517-A 40/SB	Ø 150 mm	red	P-40	blister	10 pcs.
517-A 60	Ø 150 mm	red	P-60	in carton	25 pcs.
517-A 60/SB	Ø 150 mm	red	P-60	blister	10 pcs.
517-A 80	Ø 150 mm	gold	P-80	in carton	25 pcs.
517-A 80/SB	Ø 150 mm	gold	P-80	blister	10 pcs.
517-A100	Ø 150 mm	gold	P-100	in carton	25 pcs.
517-A100/SB	Ø 150 mm	gold	P-100	blister	10 pcs.
517-A120	Ø 150 mm	gold	P-120	in carton	25 pcs.
517-A120/SB	Ø 150 mm	gold	P-120	blister	10 pcs.
517-A150	Ø 150 mm	gold	P-150	in carton	25 pcs.
517-A150/SB	Ø 150 mm	gold	P-150	blister	10 pcs.
517-A180	Ø 150 mm	gold	P-180	in carton	25 pcs.
517-A180/SB	Ø 150 mm	gold	P-180	blister	10 pcs.
517-A220	Ø 150 mm	gold	P-220	in carton	25 pcs.
517-A220/SB	Ø 150 mm	gold	P-220	blister	10 pcs.
517-A240	Ø 150 mm	gold	P-240	in carton	25 pcs.
517-A240/SB	Ø 150 mm	gold	P-240	blister	10 pcs.
517-A280	Ø 150 mm	gold	P-280	in carton	25 pcs.
517-A280/SB	Ø 150 mm	gold	P-280	blister	10 pcs.
517-A320	Ø 150 mm	gold	P-320	in carton	25 pcs.
517-A320/SB	Ø 150 mm	gold	P-320	blister	10 pcs.
517-A400	Ø 150 mm	gold	P-400	in carton	25 pcs.
517-A400/SB	Ø 150 mm	gold	P-400	blister	10 pcs.
517-A500	Ø 150 mm	gold	P-500	in carton	25 pcs.
517-A500/SB	Ø 150 mm	gold	P-500	blister	10 pcs.
517-A600	Ø 150 mm	gold	P-600	in carton	25 pcs.
517-A600/SB	Ø 150 mm	gold	P-600	blister	10 pcs.



Fig.13



Fig.14

useit-abrasives® - Schleifsysteme für Mineralwerkstoffe useit-abrasives® - for Solid Surface Materials

Bearbeiten von Mineralwerkstoffen wolkenfrei, schattenfrei, staubfrei, schnell und kostensparend mit den patentierten useit®-Schleifmitteln.

Finishing of Solid Surface Materials cloudless, shadeless, dust-free, quick and cost-saving with the patented useit-abrasives®.



useit®-Superpad P

useit®-Superfinishing-Pad SG

	matt	seidenmatt semigloss	Hochglanz high gloss
useit®-Superpad P 220	x	x	x
useit®-Superpad P 400	x		
useit®-Superfinishing-Pad SG 600		x	x
useit®-Superfinishing-Pad SG 1500			x
useit®-Superfinishing-Pad SG 3000 für Spiegelglanz (nass schleifen) <i>for high gloss (wet sanding)</i>			x

(Kratzer und sonstige Fehler in der Oberfläche mit Korn 80, 120, 150 oder 180 ausschleifen)
(useit®-Superpad P grit 120, 150 or 180 to remove deep sanding marks or other surface defects!)

Bearbeiten von Aufkantungen, Radien, Rundungen und Flächen *To work on chamfered edges, radii, roundings and plane surfaces*

useit®-Adapter Schleifsystem
useit®-adapter sanding system



useit®-Feinschliff- und Polierbürste
useit®-finishing and polishing brush



useit®-Superfinishing-Bänder
useit®-Superfinishing-Belts



Fig.15

Für ein glänzendes Ergebnis

... die beste Lösung für die Oberflächenbearbeitung von Mineralwerkstoffen

... the best solution for finishing solid surfaces

useit®-Superpad P

useit®-Superfinishing-Pad SG

- staubfrei
- dust-free
- schattenfrei
- cloudless
- zeit- und kostensparend
- time- and cost-saving

JÖST
abrasives

JÖST GmbH
Beerfeldener Straße 77
D 69483 Wald-Michelbach
Tel: +49 (0)6207 - 94 10-0
Fax: +49 (0)6207 - 24 63
www.joest-abrasives.de
info@joest-abrasives.de

Fig.15

Sandpaper: 3M Hookit 266L Micon

Excenter sanding machine

Inhalt der 3M[®] Finesse-it[™] Systembox

Schleifen










Produkt	Produktbeschreibung	Durchmesser	Korn	ID/Part-Nr.	Inhalt pro Box
	3M 466LA Trizact Stikit Schleifronden	32 mm	A5	50079	100 Ronden
	3M 260L Hookit Schleifscheibe, Lochung LD801A	150 mm	P600	E62015	50 Scheiben
	3M 260L Hookit Schleifscheibe, Lochung LD801A	150 mm	P1200	E62012	50 Scheiben
	3M 443SA Trizact Hookit Feinschleifscheibe	150 mm	P1000	E50341	15 Scheiben
	3M 443SA Trizact Hookit Feinschleifscheibe	150 mm	P3000	50414	15 Scheiben





Fig.17

Inhalt der 3M[®] Finesse-it[™] Systembox



Schleifen

Produkt	Produktbeschreibung	Durchmesser	Korn	ID/Part-Nr.	Inhalt pro Box
	3M 466LA Trizact Stikit Schleifronden	32 mm	A5	50079	100 Ronden
	3M 260L Hookit Schleifscheibe, Lochung LD801A	150 mm	P600	E62015	50 Scheiben
	3M 260L Hookit Schleifscheibe, Lochung LD801A	150 mm	P1200	E62012	50 Scheiben
	3M 443SA Trizact Hookit Feinschleifscheibe	150 mm	P1000	E50341	15 Scheiben
	3M 443SA Trizact Hookit Feinschleifscheibe	150 mm	P3000	50414	15 Scheiben

Schleifzubehör

Produkt	Produktbeschreibung	Abmessung in mm	Inhalt / Farbe	ID/Part-Nr.	Inhalt pro Box
	3M Stikit Handblock	Ø 31,7		E50199	1 Stück
	3M Hookit 1/2-Handschleiffeller	Ø 150	schwarz	05792	1 Stück
	3M Sprühflasche		500 ml	05793	1 Stück
	3M Gummispachtel	70 x 110	schwarz	05517	1 Stück
	3M Schutzhandschuhe PU-beschichtet	Größe 10	grau	63512	1 Paar

Polieren

Produkt	Produktbeschreibung	Inhalt	Farbe	ID/Part-Nr.	Inhalt pro Box
	3M Finesse-it Schleifpaste	1 l	weiß	09639	1 Flasche
	3M Perfect-it III Extra Fine PLUS Schleifpaste	1 l	weiß	E80349	1 Flasche
	3M Finesse-it Ultra Fine Polierpaste	1 l	weiß	60168	1 Flasche

Polierzubehör




Produkt	Produktbeschreibung	Abmessung in mm	Farbe	ID/Part-Nr.	Inhalt pro Box
	3M Finesse-it Polierfell	Ø 133,3	weiß	81471	2 Stück
	3M Finesse-it Polierschaum „Extra Life“	Ø 133,3	orange	60107	2 Stück
	3M Perfect-it III Antihologramm Polierschaum	Ø 133,3	schwarz	05727	2 Stück
	Scotch-Brite Mikrofaser-Poliertuch „Premium“	320 x 360	gelb	2022	2 Stück

Fig.18

Sandpaper: 3M

Sanding moves:



Um ein perfektes Oberflächenfinish zu erzielen, wird die handgeführte Maschine in einem schlangenförmigen Kreuzgang eingesetzt, d. h. von oben nach unten und von rechts nach links.

Fig.19

Acrylgas und Mineralstein

Mit dem 3M 2402, Heißt Schleifschreiben werden Kratzer entfernt. Der nachfolgende Zwischenanschiff mit der 3M 4435A Triact Feinschleifschleife P1000 sorgt für ein konstantes und feines Schälbild. Als letzte Schleifstufe kommt die 3M 4435A Triact Feinschleifschleife P2000 zum Einsatz. Sie erzeugt eine maximale Rauheit und reduziert den nachfolgenden Polierprozess auf ein Minimum. Mit der 3M Flexa-2™ Schleifschleife und dem 3M Flexa-2™ Polierpulver wird die Oberfläche im Anschluss poliert.

Feinschleifen und Polieren von Acrylgas und Mineralstein

Anwendung

3M™ 2402 Heißt Schleifschleife P600
3M™ 2402 Heißt Schleifschleife P1000
3M™ 4435A Triact™ Feinschleifschleife P1000
3M™ 4435A Triact™ Feinschleifschleife P2000
3M™ Flexa-2™ Schleifschleife Polieren

Fig.20

Mineral Grading Comparison

FEPA	Micron Grade	3M Flexible Diamond		3M Triact
		Nickel Bonded	Resin Bonded	
P14000			R2*	
P9000	3			
P3800	6			
P3000	7			A6
P2500	9			
P2000		N10		
P1500			R10*	
P1200	15			A16
P1000	20			A20
P800		N20		
P600				A30
P500	30		R30*	A40
P400				A45
P360	40	N40		
P320				A60
P280				A65
P240	60			A80
P220				A90
		N74		A100
P180				A110
P150				A130
P120	100	N125		A160
P100				
P80				A300
P60		N250		
P50				
P40				
P38				
P36				
P24				
P20				
P16				
P12				

Fig.21

6. (B) Sanding Recommendation for HIMACS Sheets

Alternative Sanding Products & Sanding step

HIMACS Surface Sanding Process

FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:	FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:	FINISH LEVEL	SANDING STEP	REMARK: DRY SANDING USED SANDPAPER:
Matt	P 60/100	3M Hookit dust remove	Semi gloss	P 240	3M Hookit dust remove	High gloss	P 600	3M Hookit 51156
	P 120 / 150	3M Hookit dust remove		P 320	3M Hookit dust remove		Cleanup / dry	Wipe off
	P 180	3M Hookit dust remove		P 400	3M Hookit dust remove		P 1200	3M Hookit 51156
	Scotch-Brite	Marron dust remove		Scotch-Brite	Grey dust remove		Cleanup / dry	Wipe off
							P 1000	3M Trizact
							Cleanup / dry	Wipe off
							P 3000	3M Trizact
							Cleanup / dry	Wipe off
							Finess-it	Polish paste with felt-disk
			Dust remove	3M Scotch-Brite MS-DC 150x8mm type T white			Wipe off	With cotton cloth

Fig.22

If there are no other products listed yet does not mean that other products would not work on HIMACS surfaces but maybe can bring a good finish result on its surface.

And what really matters is the final perfect result for customer satisfaction under best professional practice.

7. (C) Sanding Recommendation for HIMACS Sheets

Alternative Sanding Products & Sanding steps

SIA




MIRKA:

Mirka Gold Schleifscheiben, 15-Loch, Ø150mm,
100St./Pack Product number: 2361109980
Manufacturer: Mirka




Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs our approval for Warranty.

This Technical Document is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since we cannot anticipate all variations in actual end-use conditions, We make no warranties and assume no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

TECHNICAL DATA SHEET THERMOFORMING



Tulip by Pierre Cabrera
©Franck Foucha - Xavier Muyar

1. Thermoforming

The material property of HIMACS allows with specific controlled heat to thermoform HIMACS sheets into 2- or 3-dimensional forms, like shapes or other rounded applications. During this fabrication process many different parameters will have an influence to the results of the finished products.

The technology of thermoforming is one of the most sophisticated fabrication techniques of HIMACS.

Thermoforming allows designers' and architects' dreams to come true. The LGCE-team would like to share some basic thermoforming knowledge to allow everybody working with HIMACS products to join us on the road of customers', architects', designers' and specifiers satisfaction. – The future begins now!

Everything starts with the right tools for the right job.

Therefore we would like to announce that we have a special partnership with Global Machines/ Nabuurs Development to offer you the widest and most complete range of tools and equipment needed for your thermoforming job. Please visit the website: www.globalvacuumpresses.com



To ensure that the job will take place successfully you have to understand the HIMACS material's performance and its thermoforming process with all the positive and negative issues that may possibly occur during the fabrication process. Although the information given in this Technical Information is to the best of our knowledge at the present time,

LX Hausys Europe GmbH does not protect any material defects or mistaken results of Thermoforming under its Warranty of the Quality Club Program.

Therefore, please check the material quality before starting with the project and keep record of following items:

- Sheet-no.
- Temperature accuracy
- Environmental conditions (ambient temperature etc.)

For your own safety: ensure to handle the project with all due care whilst the material is very hot. Protect any parts of your own body and take necessary care of your colleagues working with you to avoid any serious injury.

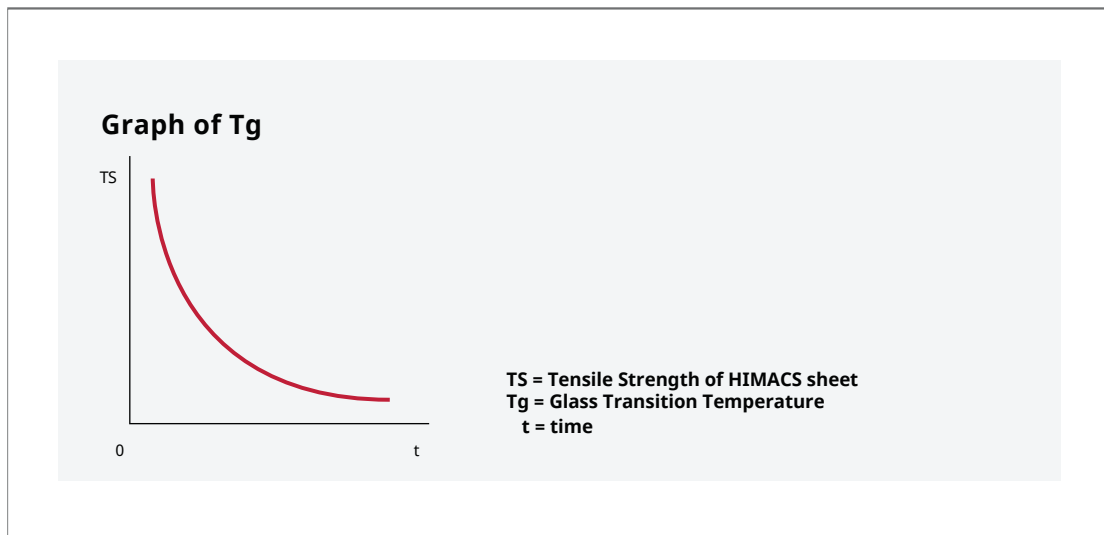
Based on its molecular structure HIMACS belongs to the group of Thermoplastics and can therefore, by preheating, be changed into a thermo-elastic material.

Definition:

Thermoforming means a deformation of thermoplastic material under the influence of heat with moulds under suction, pneumatic pressure or vacuum.

(Meyers Lexikon, Bd. 3 , Mannheim 1970)

It is important to reach the “glass transition” temperature (Tg) of the HIMACS;
This means it is best to get the ideal softness of its material performance.
The ideal point is, where the material has the best softness for optimum thermoforming performance
for most thermoforming applications.



Heating temperature for HIMACS

approx. + 155 ° C up to + 175 ° C

Danger heating point: + 204 ° C

The correct temperature depends on many different factors and needs to be

- established,
- analyzed and
- tested

before starting the job.

Criteria which influence the thermoforming possibilities

- Colour
- Colour family
- Batch of product
- Design: large/small radius
- Pre-Heating devise: Air circulation heat or contact
- heat Accuracy of temperature
- Environment

Thermoforming Analysis

Positives and negatives of thermoforming

POSITIVES	NEGATIVES
High production output When large quantities are fabricated	Higher energy costs Depending on available heating system Availability of photo-voitac-system
2D thermoforming	Small volume Relative highly fabrication costs
3D thermoforming	
Special effects like : pressing of motifs expl : logos into the surface	

The only limitation in thermoforming is the size of the oven used for the heating process. Although all HIMACS sheet products can be thermoformed, not all HIMACS products will produce satisfactory or visually pleasing results. The best results will be achieved with solid colour or small-particulate material.

SOME PRODUCTS, WHEN THERMOFORMED, MAY NOT PRODUCE ACCEPTABLE RESULTS	
Sheet material with large particulate	Particulate may be distorted on the radius due to "stretching"
Sheet material with veining or stripes	Veins or stripes on the radius may spread or lighten changing their appearance
Sheet material with "motion"	As above, like vein or stripe material the new shape will negatively affect the appearance
Any dark colour and/or a tight radius	The darker the colour and/or the tighter the radius, the more likely the result will show "whitening" on the thermoforming area









Regardless of the oven size, all thermoforming must be completed before any joints (adhesive or silicone sealant) are created. Adhesive joints cannot be thermoformed.

HIMACS sheet material can shrink about 5% to 7% during the thermoforming process. Material to be thermoformed should be oversized by at least 25mm and up to 7% of overall dimensions to allow for this shrinkage.

Remove the protective film before placing the HIMACS material in the thermoforming oven.

Achievable recommended minimal radii:

Be aware that choosing a smallest possible radius may cause some whitening by heavy pigmented or dark colors (see remarks above). If so, choose a larger radius to avoid this whitening effect. Check before all parameters are correct. Make a test piece (prototype) according to the design before starting the fabrication and assembling process and get customer approval.

<p>Ri ≥ 16 mm</p>  <p>4.5mm Solid</p>	<p>Ri ≥ 50 mm</p>  <p>12mm Solid, Sand, Pearls, Lucent, Sparkle</p>
<p>Ri ≥ 200 mm</p>  <p>12mm Volcanics, Aster, (Galaxy), Terrazzo</p>	<p>Ri ≥ 20 mm</p>  <p>6mm Solid</p>
<p>Ri ≥ 85 mm</p>  <p>12mm Granite, Quartz</p>	<p>Ri ≥ 40 mm</p>  <p>9mm Solid, Sand, Pearls</p>
<p>Ri ≥ 100 mm</p>  <p>12mm Lucia, Eden, Marmo, Aurora 20mm Solid</p>	<p>Ri ≥ 6 mm</p>  <p>12mm Solid Ultra Thermoforming</p>

Ri = Radius inside

Information of smallest: possible radius is based on standard light colors which can be from some variation of result when using dark colors.

2. Fabrication Process

2.1 Work-piece preparation

Before pre-heating the work-piece:

- Quality control
- Check if there is no damage on the work piece or other defects.
- Rebate all edges or put a radius (min. R= 1,5 mm) on all edges.
- The smaller the chosen radius – the more the edge should be rebated or a larger radius should be used.
- Make cut-outs in the work-piece after the thermoforming process only.
- If your work-piece has an engraved motif or logo – handle with care.

Do not heat up a seamed sheet due to higher visibility of the adhesive after thermoforming process. The edges will become deformed and widen the seam.

The smaller the radius chosen, the more critical the area of the seam will be. It is best to trim off after thermoforming process and bond two pieces when it has reached room temperature again.

Before heating the HIMACS sheets pull off the protective film on the surface side.

2.2 Keep record

- Temperature of work-piece
- Temperature of device / accuracy check
- Heating time
- Environmental conditions (winter/summer time/place in workshop/next to door/windy position/etc.)
- sheet production-no etc. (for later reference if needed)
- cooling position / environmental influences / air flow & air circulations

Be aware that there may appear to be a colour difference when working with dark or highly pigmented colours. Eventually check project result with your customer and keep record.

2.3 After thermoforming process

- Let the work-piece cool down evenly and continuously from all sides.
- Do not make a "shock cooling".
- Allow the work-piece to shrink in the mould without stress.
- When the work-piece has reached a min. of + 82°C the work-piece can be taken out of the mould
- Ensure even further cooling until room temperature is reached.
- Trim off the edges when necessary and bond the work-pieces as needed.
- Finish off as under normal standards or as decided by specifier and recommended in the "sanding" section of the fabrication manual.

According to the design: the work-piece can be thermoformed best with a:

- positive and negative mould (male and female)
- vacuum machine or
- pneumatic press or
- high pressure mould system ...

Also with reference to the production it needs to be decided which kind of mould will be the best option to reach the best and most efficient result for the project.

- Quantity
- Quality
- Time &
- Frequency

are the first important items to meet.



MDF-mould



Thermoformed HIMACS piece



Mould preparation with HOMAG CNC



Global press & alu cooled mould



Thermoformed HIMACS work piece



GlobalPress & high density foam

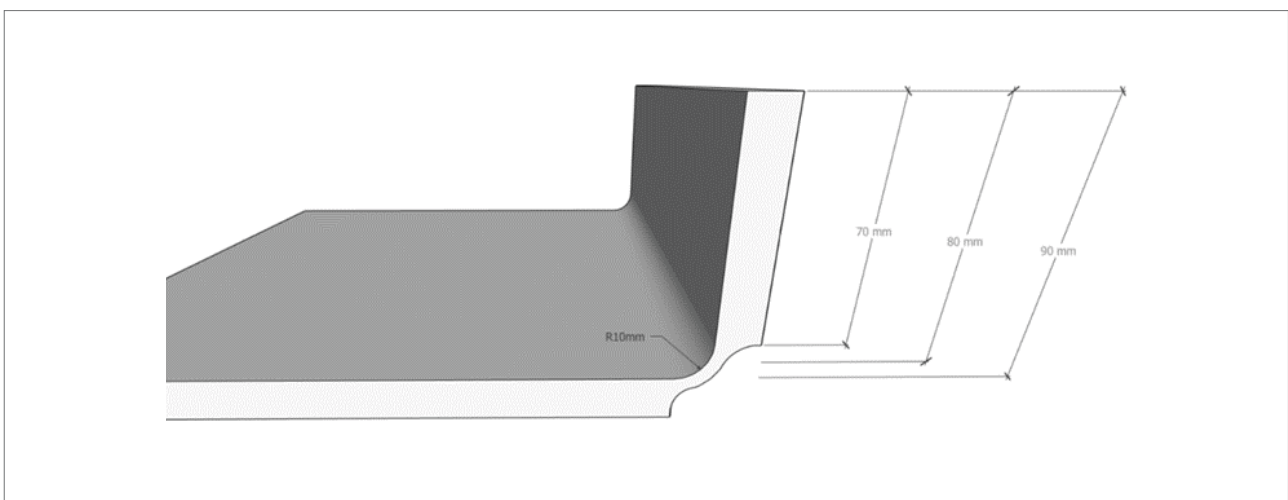
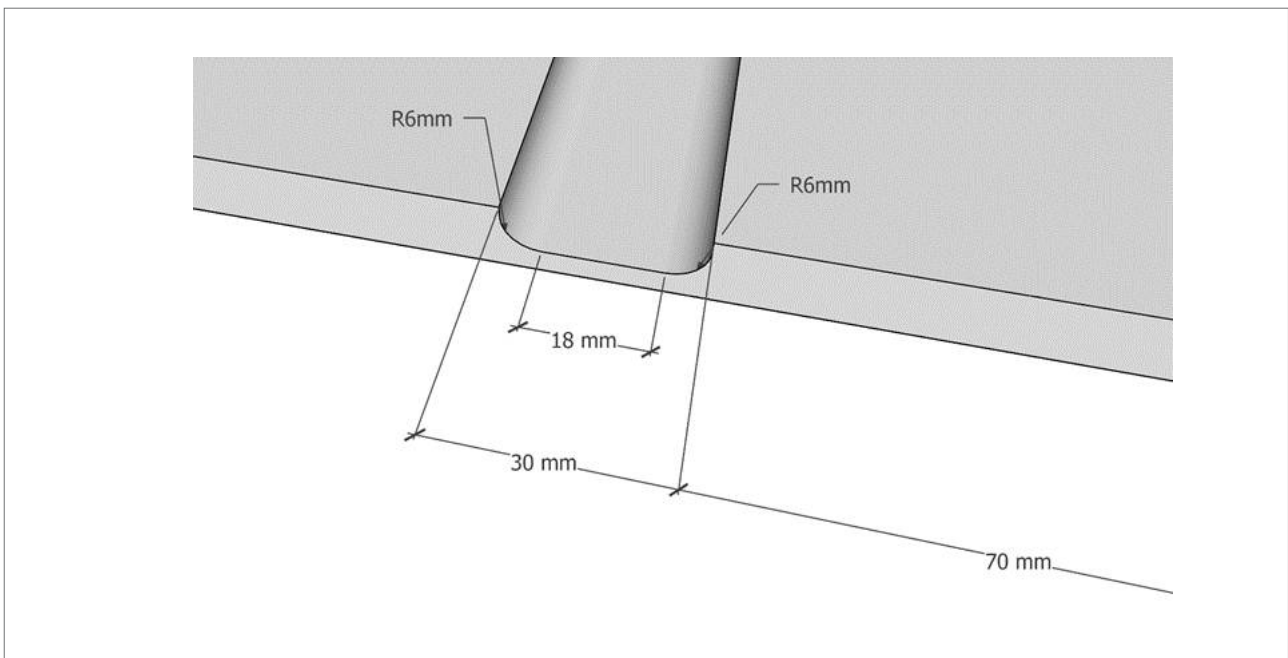
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2.4 Thermoformed Curved Backsplash

For simple, but attractive curved backsplash there is an opportunity of hygienic building instead of traditional build-up curved backsplash.

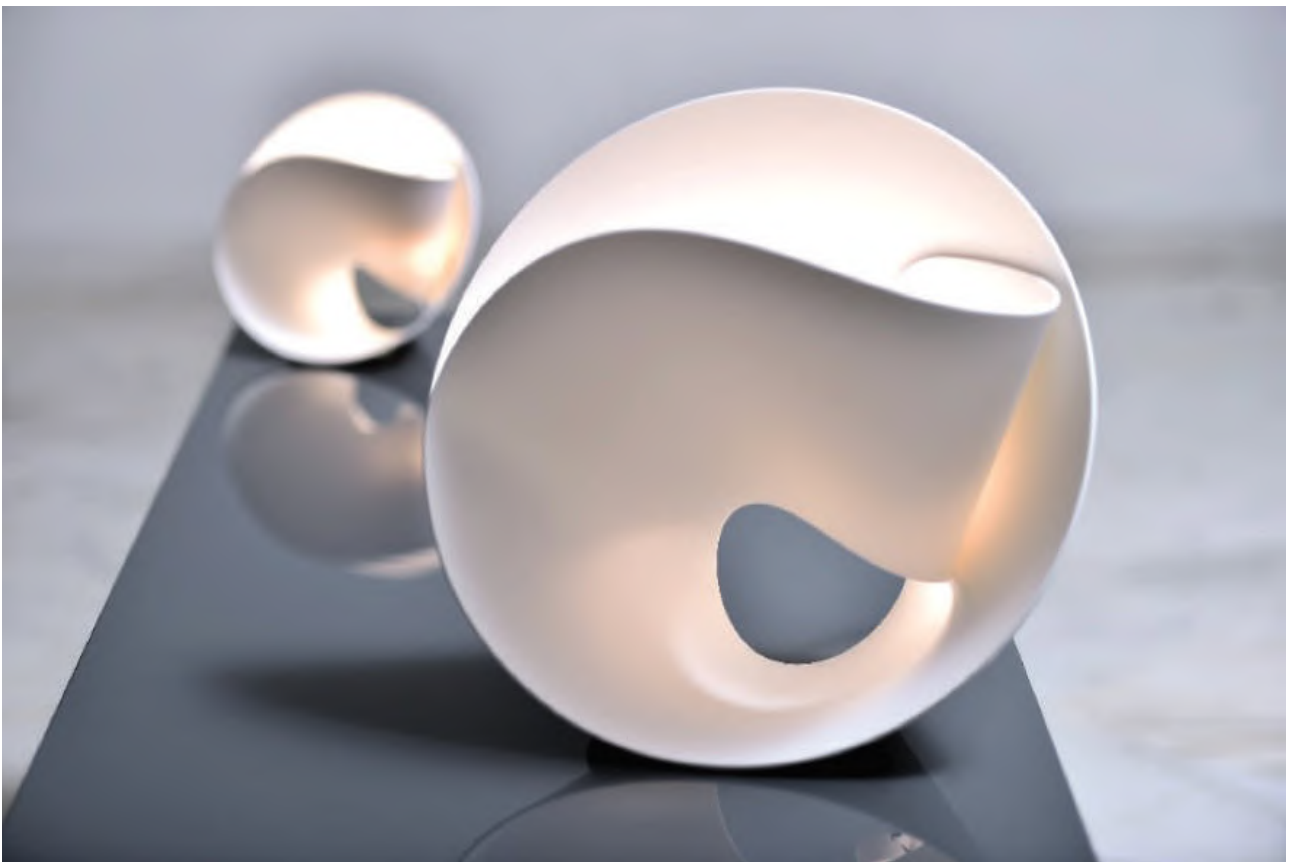
At 12mm HIMACS material under standard condition a 50mm radius using for curved backsplash has no estatic look of design values. When the curve is smaller, like a radius of 20/25mm the design becomes valuable and be able to be created by thermoforming process.

Inside- and outside corners are limited and are not recommended to this method, but possible to use with an 45° degree-cut.



To avoid any warping of the curved backsplash during thermoforming process:

- Support the radius with a filling piece according the radius you have to create: here 10mm
- Ensure your backsplash stays up at 90° without any warping in length and height.
- Re-sand after thermoforming process
- Put an radius on the above front edge and brake all edges to a radius of R=1,5mm.
- Never ever leave sharp corners or sharp edges anywhere.
- Break the edges or put a small radius on.



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Photos ©Uwe Röder

Wall Cladding 3D with backlight Train station Schwäbisch-Gmünd,



Photos ©Volker Mai and Andreas Mikutt

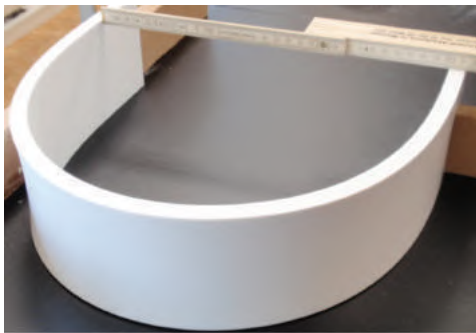


Wall Cladding Design of bubbles with air- and sound absorption holes Schönhauser Tor, Interior Wall Cladding; Berlin, Germany

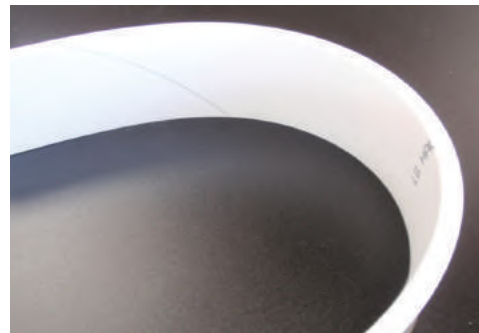
3. Special Products

3.1 HIMACS S728 CE MED Alpine White

Due to a different formulation HIMACS S728 CE MED Alpine White cannot be bended as much as HIMACS standard product, like S028 Alpine White. S728 has very good fire classification values, but in terms of thermoforming we only can reach a smallest Radius of **Ri = 150mm / or Ø 300mm**



S728 Ri = 150mm



S728 Ø = 300mm

Ri ≥ 150 mm

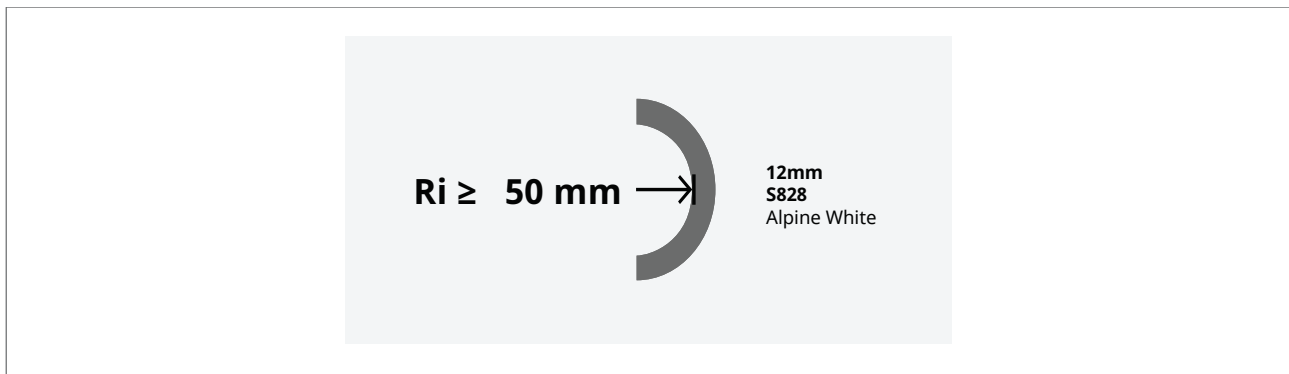


12mm
S278 CE MED
Alpine White

3.2 HIMACS S828 Alpine White

Due to a different formulation HIMACS S828 Alpine White cannot be bended as much as HIMACS standard product, like S028 Alpine White. S828 has good UV resistance values, and will reach same min Radius as HIMACS Standard products:

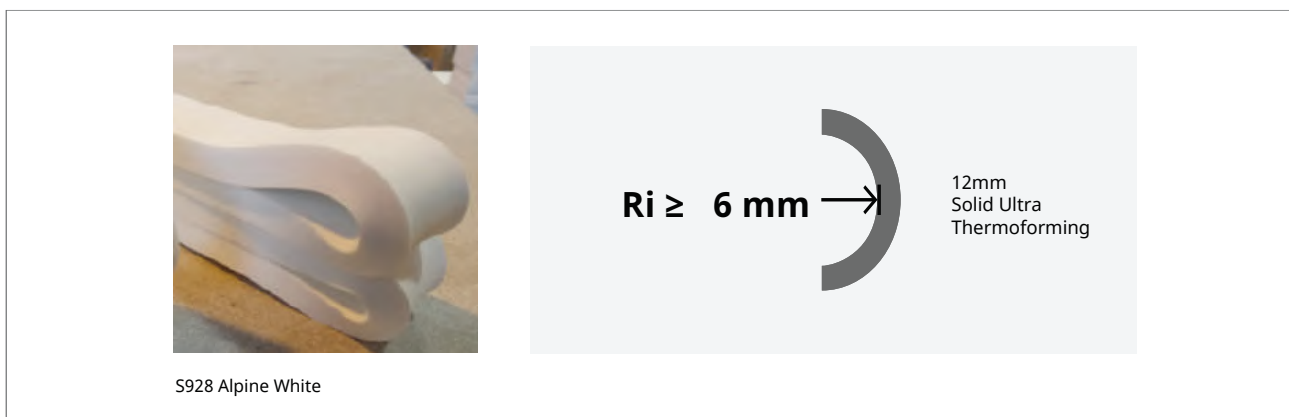
Ri = 50mm / or Ø 100mm



3.3 HIMACS S928U Alpine White Ultra thermoforming:

Due to a different formulation HIMACS S928U Alpine White Ultra thermoforming can be bended much more as the HIMACS standard product, like S028 Alpine White. S928U has very good thermoforming values, and can reach a smallest Radius of

Ri = 6mm / or Ø 12mm



S928 Alpine White

3.4 HIMACS Intense Ultra Thermoforming

S922U Intense Ultra Black ; S923U Intense Ultra Grey & S924U Intense Ultra Dark Grey

Due to a different formulation

- HIMACS S922U Intense Ultra Black,
- HIMACS S923U Intense Ultra Grey and
- HIMACS S924U Intense Ultra Dark Grey

can be bended much more as the HIMACS standard product, like S028 Alpine White. S922U / S923U and S924U have high intensive pigmentations and have very good thermoforming values. Those can reach a smallest Radius of

Ri = 6mm / or Ø 12mm:



S922U Intense Ultra Black



S923U Intense Ultra Grey



S924U Intense Ultra Dark Grey

3.5 HIMACS Terrazzo

Due to a different formulation HIMACS Terrazzo, like Q001 Classico and Q002 Grigio cannot be bended as much as HIMACS standard product, like S028 Alpine White. We only can reach a smallest Radius of **Ri = 200mm / or Ø 400mm:**



Hint:

Be aware that the chips used in Terrazzo easily can break. Handle the thermoforming process with care and do not over-tighten the pressure when it's placed in a bending shape.

Warranty Terms

LX Hausys covers within the Warranty Program such products only, where all parameters (like e.g.: smooth and stable mould materials and mould conditions, range and proof of temperature as well as heating time, cooling time and cooling temperature of the mould, "Tg" of the sheet material, smallest minimum radius (Ri = inside radius) is not undertaken, etc.) **are recorded and approved.**

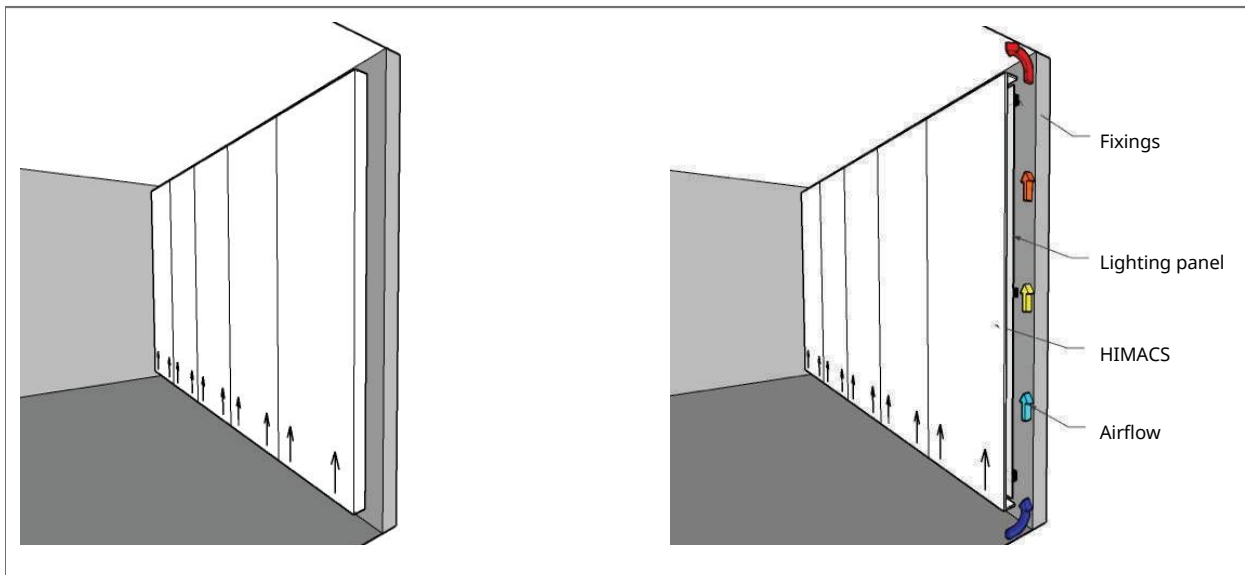
Note:

Any Non-recorded and a non-approved processes will not be applicable to the LX Hausys Europe Warranty Program.

■ TECHNICAL DATA SHEET INTERIOR WALL CLADDING



HIMACS sheet materials can be used for many wall covering applications. Choosing the right thickness for the right job depends on the desired fixing method and also performance requirements.



When considering a HIMACS Wall Cladding application check if the desired wall is an exterior or an interior wall of the building. Covering the internal face of an exterior wall made of stone, brick or concrete may lead to condensation forming. To prevent this LX Hausys would recommend installing walls with air-rotation-flow only.

Hint:

When planning a HIMACS Wall Cladding application as shown above ensure all the panels are installed to one another, running in the same direction as production and following sequential sheet number order.

When bonding HIMACS Wall Panels with HIMACS Adhesive consider expansion and contraction, and also the limitation of movement in the substructure being bonded too.

Be aware, that seamless wall covering needs special preparation for construction, ensuring it is even and level will aid the HIMACS panel final finishing process.

Ensure the surface finish looks uniform and same sanding level from different views of the room.

1. Sanding / finishing

The reference is as recommended with our standard products: For further details: See Technical Guidelines: "Sanding".



Festool RO150 & Festool Langhalsschleifer

		Standard recommendation					
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH		
HIMACS colour family	for all colours		for all colours		for all colours		
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	
Step 1	100/80 µ	150/180	100/80 µ	150/180	100/80 µ	150/180	
	take dust away		take dust away		take dust away		
Step 2	60 µ	220	60 µ	220	60 µ	220	
	take dust away		take dust away		take dust away		
Step 3	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	280	40/30 µ	280/320	30 µ	280/320	
	take dust away		take dust away		take dust away		
Step 4	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	380/400	15 µ	380/400	
	take dust away		take dust away		take dust away		
Step 5		industrial paper towel	industrial paper towel	"useit®" Superpad S/G Scotch Brite™ Maroon 7447	9 µ	600/800	
				take dust away	take dust away		
Step 6				industrial paper towel	Finesse-it™ Finish- component	1200	
					take dust away		
Step 7						1500	
						1800	
						2500	

HIMACS can be used as Wall Cladding application in many different designs and fixing methods. If adding some type of mechanical fixing (recommended), drill a hole into the HIMACS panel sheet and insert a flexible rubber tube (or plastic insert), so that the metallic hug does not cause a crack through impact stress.

■ 2. Wall Coverings

There is a wide range of thicknesses of HIMACS depending on application and design needs with a wide range of sizes to use HIMACS material; from 4,5mm up to 20mm available product. Panels are easy to install and can be attached to nearly any type of solid substrate:

- Waterproof plasterboard
- Water resistant plywood
- Phenol resin board
- Water resistant MDF board
- Plaster board
- Fire cement board
- Fermacell cement board for wet rooms
- Aluminum frame systems
- etc

Hint:

Ensure to choose the right product & the right system for the right application of wall cladding.

Choice of fixing:

Mechanical fixing or Bonding with permanent elastic adhesive (based on PU or alternative Silicone)

Hint:

LX strongly recommending to take measurements; using templates when necessary and prepare the panels in the workshop for easy and quick installation.

HIMACS is not a structural or waterproofing material, it is a decorative surfacing material. When making cut-outs for electrical outlets or switches etc, always use a router, making these openings at least 12mm larger in overall height and width than the insert, radius all corners at least 3mm and smooth - sand the cut of the edges with a 150-grit sand paper. Larger openings require corners to have a radius of ≥ 5 mm.

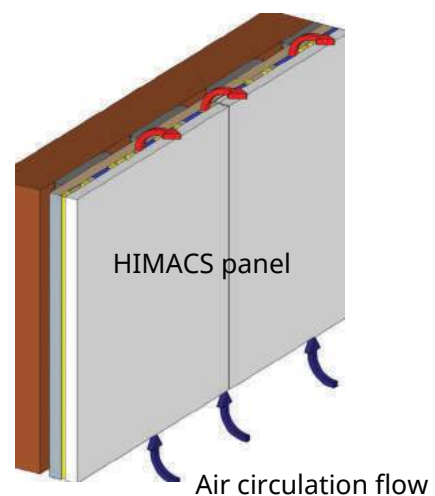
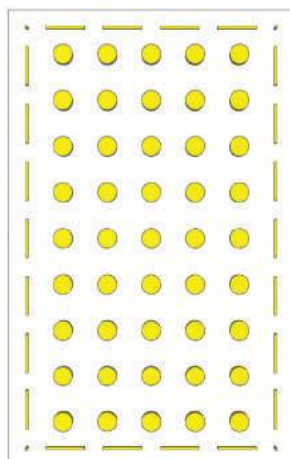
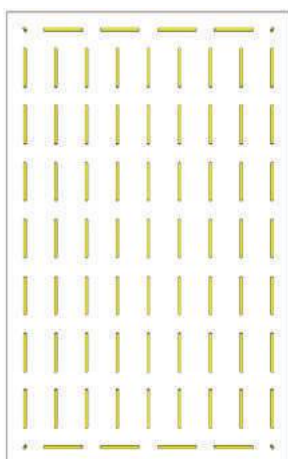
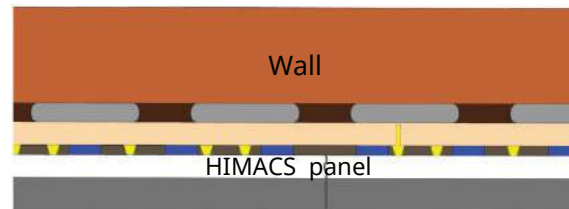
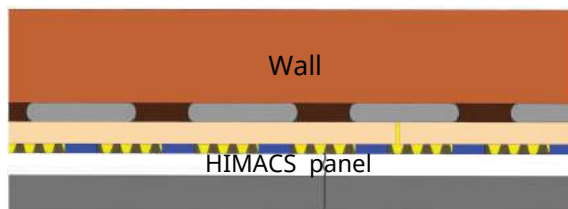
Bond the material to the existing wall material using 100% silicone sealant or alternative using a permanent elastic PU-adhesive (Poly-Urethane) only. If required use a primer for each surface. Apply the silicone sealant in 25mm diameter "spots" of a thickness of minimum 2mm spaced 100mm to 150mm apart. Apply a continuous broken bead of silicone sealant along the entire perimeter of the HIMACS material including any cutouts. Do not use a dark-colour silicone sealant because it may be visible through the HIMACS material translucent performance.

When using thin material, like 4.5mm thick HIMACS make a all-over adhesion with a tooth spread and ensure the material is placed leveled to a sub-construction board.

Hint:

Avoid any creation of moisture of the backside of HIMACS panel.
Best to reach with:

- All-over adhesion with toothed spatula and with permanent elastic adhesive (especially when using thin sheets of HIMACS(4.5mm thickness)
- Permanent elastic adhesive and air circulation*)
- Mechanical fixing and air circulation *)



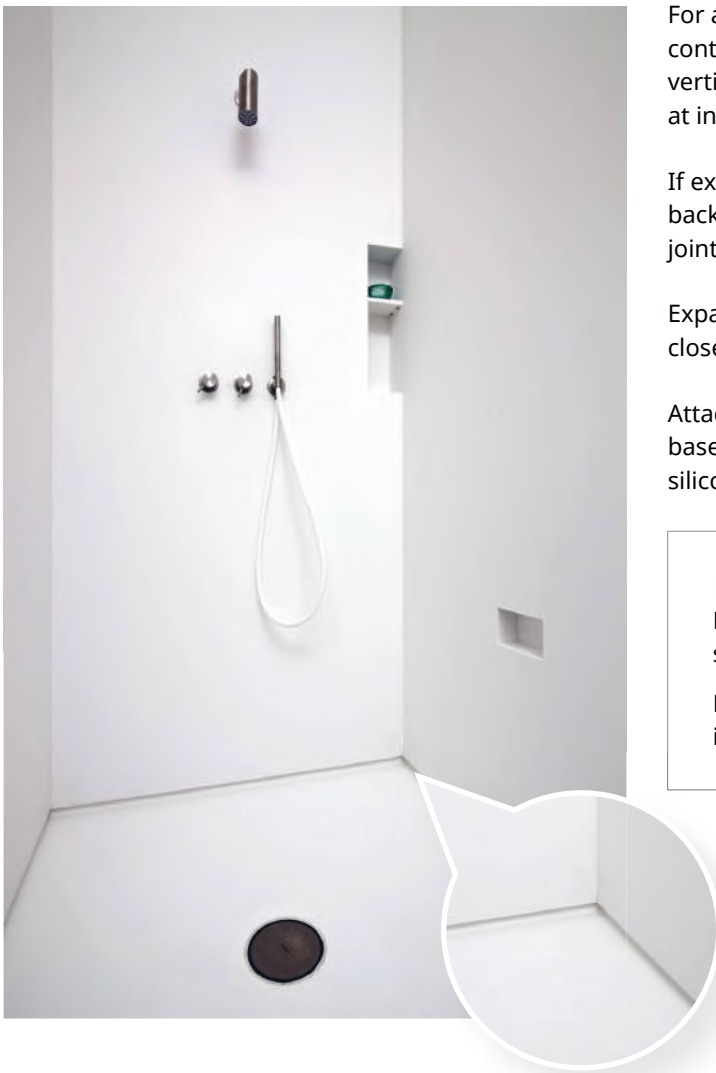
Glue application systems*) for HIMACS panel

*) = not recommended for thin sheet material of HIMACS

For applications larger than sheet dimensions the HIMACS can be seamed using joint adhesive or colour-matched silicone sealant. Adhesive joints should be completed one after the other but carefully cleaned to avoid time consuming sanding. Also using 100% silicone sealant joints can be done with the material in place. In dry applications the seams can be either vertical or horizontal. For wet environments seams should be vertical to facilitate draining.

Hint:

Be aware that any flexible adhesive which becomes visible after several years of use and care maintenance is not covered under any Warranty Program of LX Hausys Europe GmbH.



For any thickness material provide expansion control joints of not less than 6mm of 3,5meter vertically and horizontally. Provide the same space at inside corners and at floors and/or ceilings.

If expansion/control joints are present in the backer material the HIMACS expansion/control joint must be placed at the same location.

Expansion/control joints and other spaces are closed with matched 100% silicone sealant.

Attach batten strips, seam reinforcement, crown or base trim, and corner trim as required using 100% silicone sealant.

Hint:

Do not fix skirtings' made of HIMACS in saunas, swimming pools or steam rooms.

Dark, sensitive colours should not be used in a shower application.

2.1 Installation of Wall Covering

ADHERING HIMACS TO SURFACES

Once all the parts are scribed and seamed, the critical stage of bonding HIMACS to the wall commences. Use silicone or permanent elastic polyurethane (PU) to bond HIMACS to the wall; do not use LX HIMACS Adhesive.

Best steps to follow:

1. Clean off dust and grease off the walls to be covered.
2. Lay HIMACS panels face down and remove any dust, grease, pencil marks and labels.
3. Place installation tape strips (2-3mm thickness) in a distance of 200 – 250mm on the backside of HIMACS sheet.
4. Using permanent elastic PU adhesive in between, put dabs of adhesive evenly on the back of the sheet and a perimeter bead about 35 mm from the edges of the sheet. Allow air circulation from bottom to top
5. Push LX HIMACS panel firmly onto the wall and make sure it is lying evenly. Check with water level or laser level units.
6. Repeat this procedure for all parts.
7. Seaming: caulk out all seams with colour-matched silicone .
8. Clean off silicone with plastic spatula .
9. Wipe off sheets with water and liquid soap (mixed 4:1) and dry with a soft paper towel.

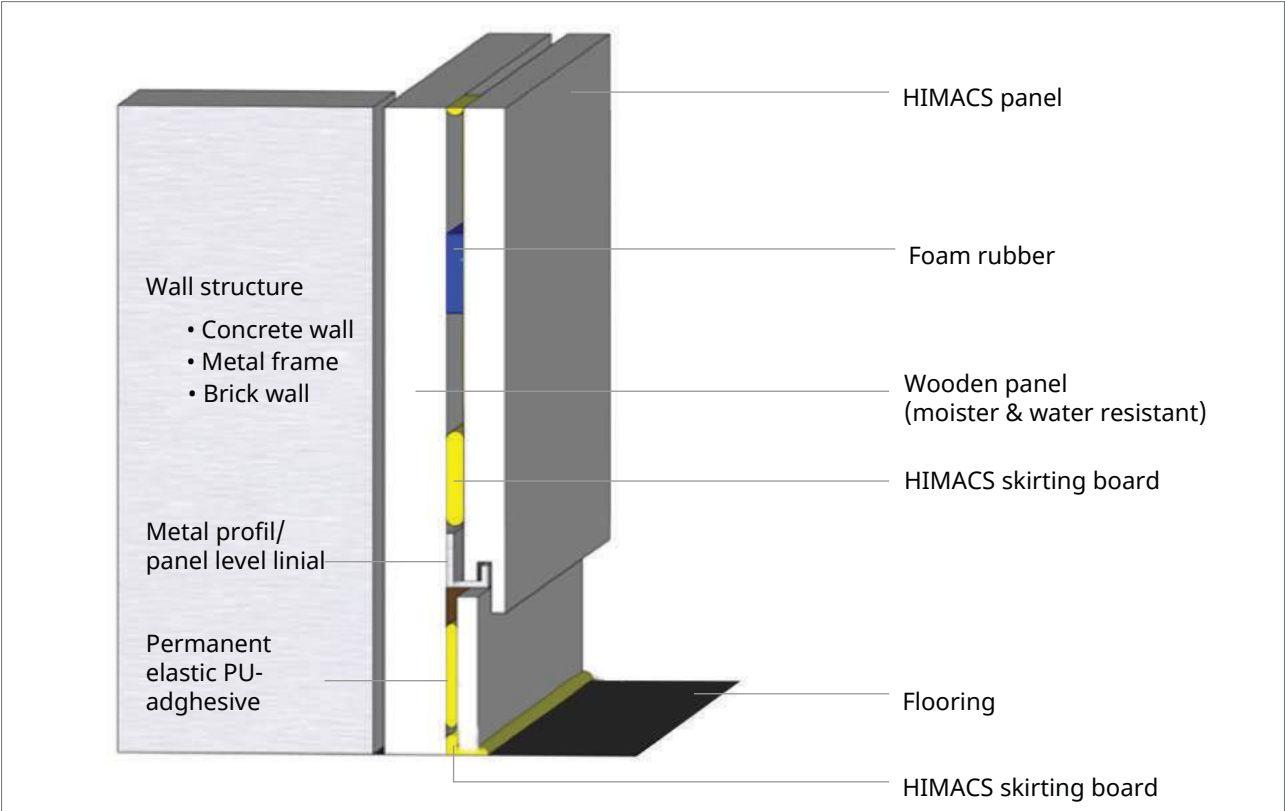
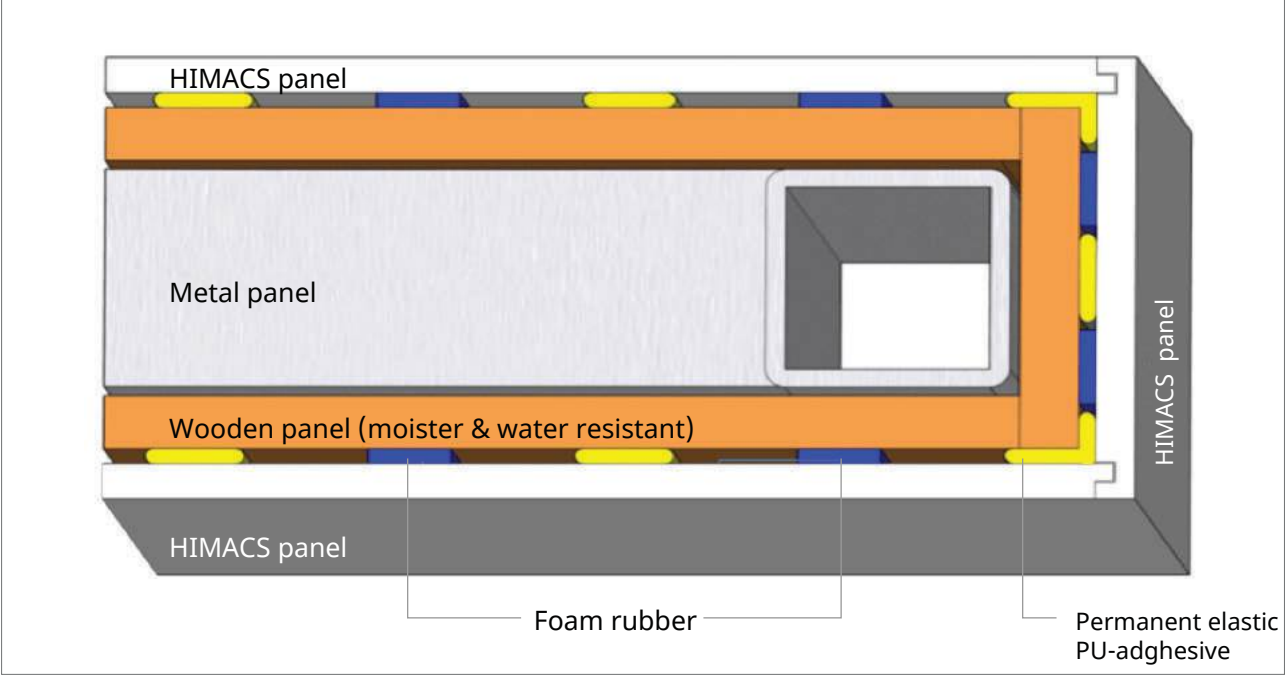
Hint:

When working with 6 mm HIMACS, especially in large sheet as is usual for vertical applications, be careful with handling.

Do not install an inappropriate thickness of LX HIMACS for the impact to which the vertical application is to be subjected.

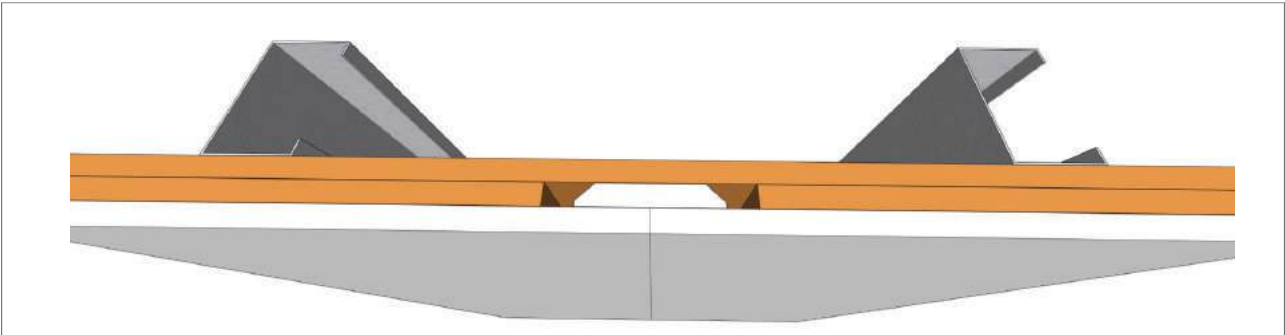
In case of using HIMACS Lucent Collection or any other highly lucent effect colour, extra care is required due to high risk of substrate visible shadowing. The substrate will need to be painted to a matching colour of the sheet to be used. Only translu-cent flexible adhesives should be used when bonding the sheet to the substrate. Make a test sample to ensure professional evidence adhesive or frameworks are not visible once installed.

Partition Walls: self-supporting metal construction

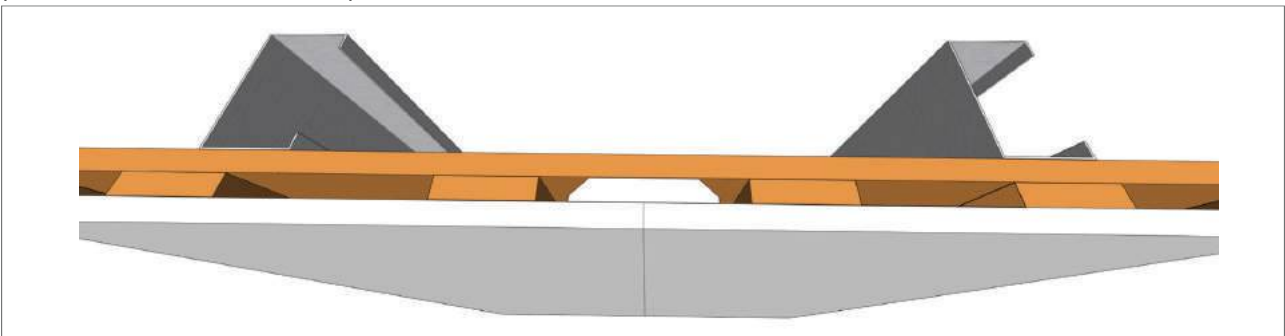


3. Seam reinforcement

The seams must be reinforced from behind to ensure a correct bond. You may need to cut a groove into the supporting wall so that the reinforcement strip fits.

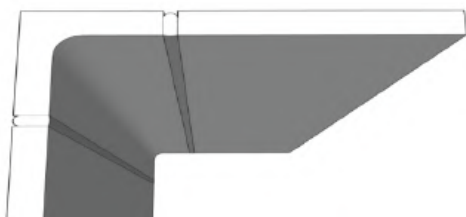


Also, if you use strips to level the wall, you can use the gaps between them to position the reinforcement strips.



There are different possibilities to create internal corners and integrate some space. You may use silicone to fill in the space. Create the corner section and cut it to the required size. Attach the corner piece in place and bond it to the walls of HIMACS using silicone or permanent elastic PU adhesive

Sample 1: Create a corner by connecting two strips using a curved corner.



Sample 2: Create a corner by connecting two strips using a thermoformed curved corner.



HIMACS also can be used to create window ledges or shelves. Make sure you leave a gap of 2 mm between the HIMACS and the wall to allow the standard material.

Attach the shelf with flexible adhesive to allow for movement (P-404, outdoor silicone, etc.).

Always round the edges and never leave sharp corners. Make sure shelves have substantial support.

Hint:

Be aware sanding vertical application are sensitive and time consuming during installation. Special care is a goal for an unique look of the wall cladding panels.

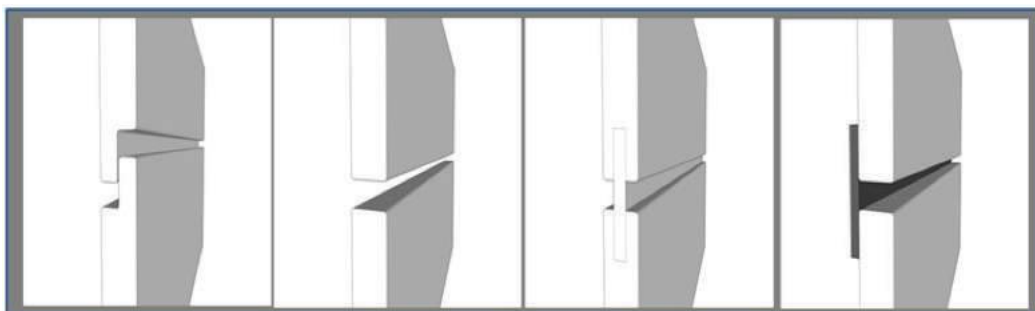
Hint:

Due to the special material performance of HIMACS translucency at many HIMACS family products be aware to choose the right product and its thickness to avoid shadowing after installation.

To avoid time consuming installations you may choose a panel system with shadow lines:

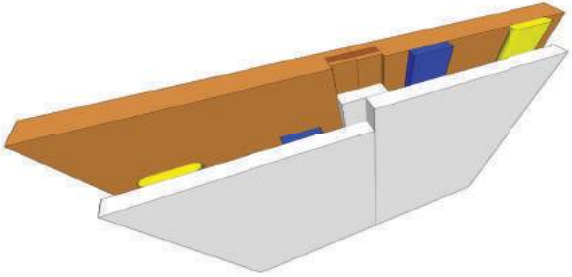
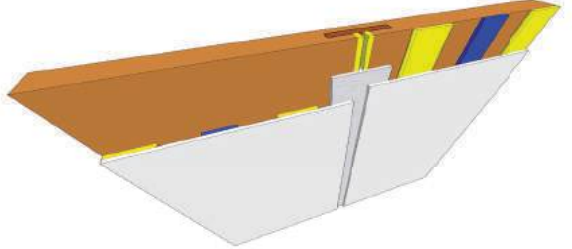
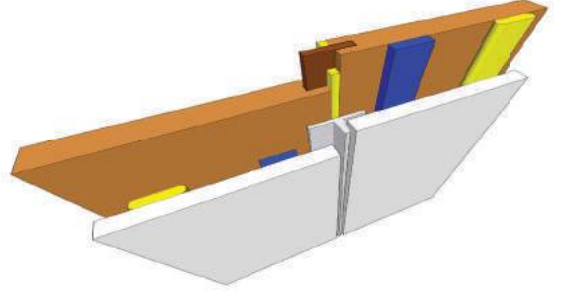
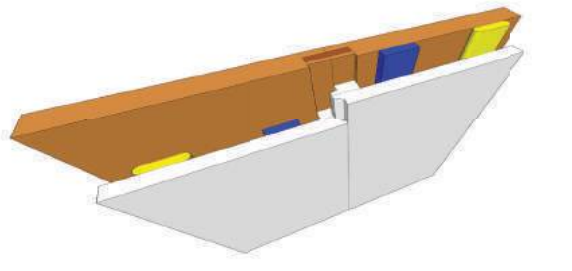
- Less time for bonding
- Less time for installation
- Preparation of unique surface finishing in
- workshop Ready to go Installation

Seam Design:



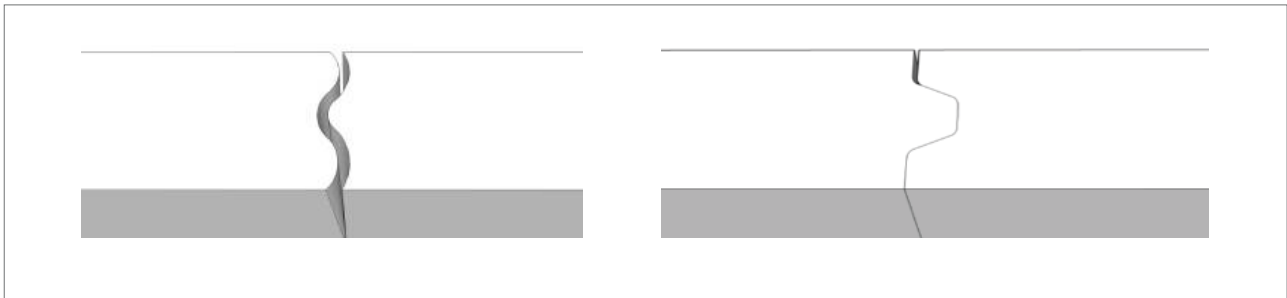
3.1 Seam Design: panel seam connections

The seams must be reinforced from behind to ensure a correct bond. You may need to cut a groove into the supporting wall so that the reinforcement strip fits.

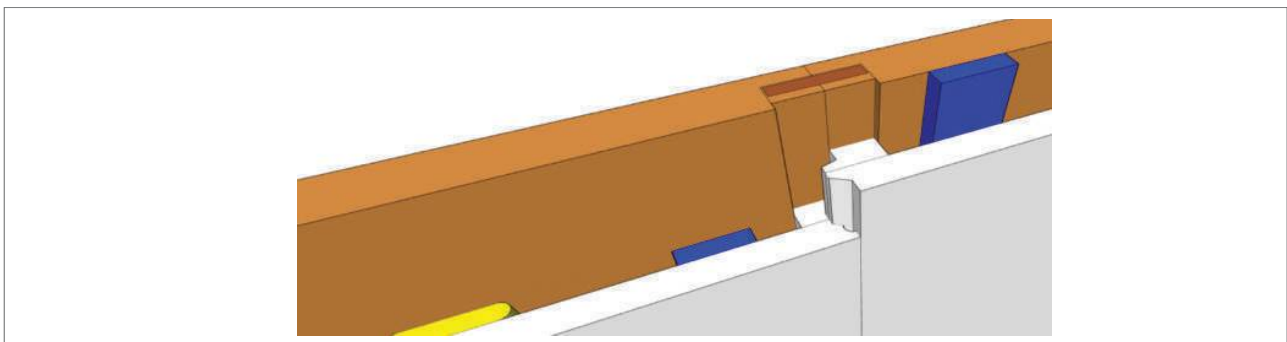
<p>Seam Design: Straight Cut (butt seam)</p>	
<p>Seam Design: Straight Cut with back strip</p>	
<p>Seam Design: Straight Cut with metal profile</p>	
<p>Seam Design: Tongue & Groove</p>	

To avoid time consuming installation on leveling issues, simply prepare a male and female profile instead a simple butt-seam:

3.2 Seam design

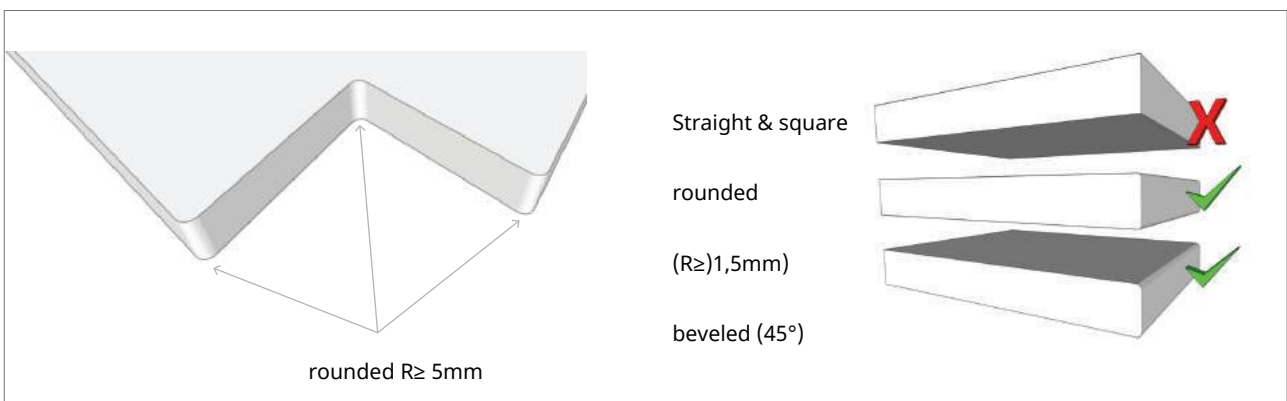


Alternative solution: to use the reinforcement strip for strengthen a feather seam opportunity:

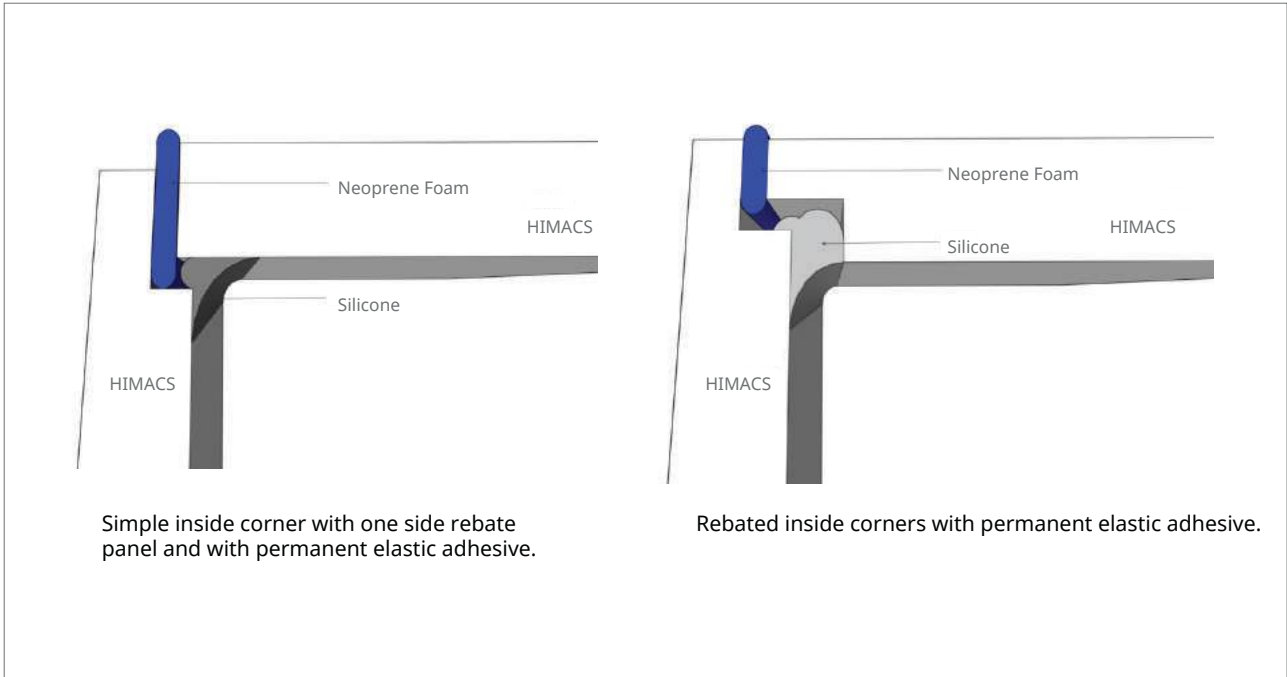


3.3 Sheet preparation

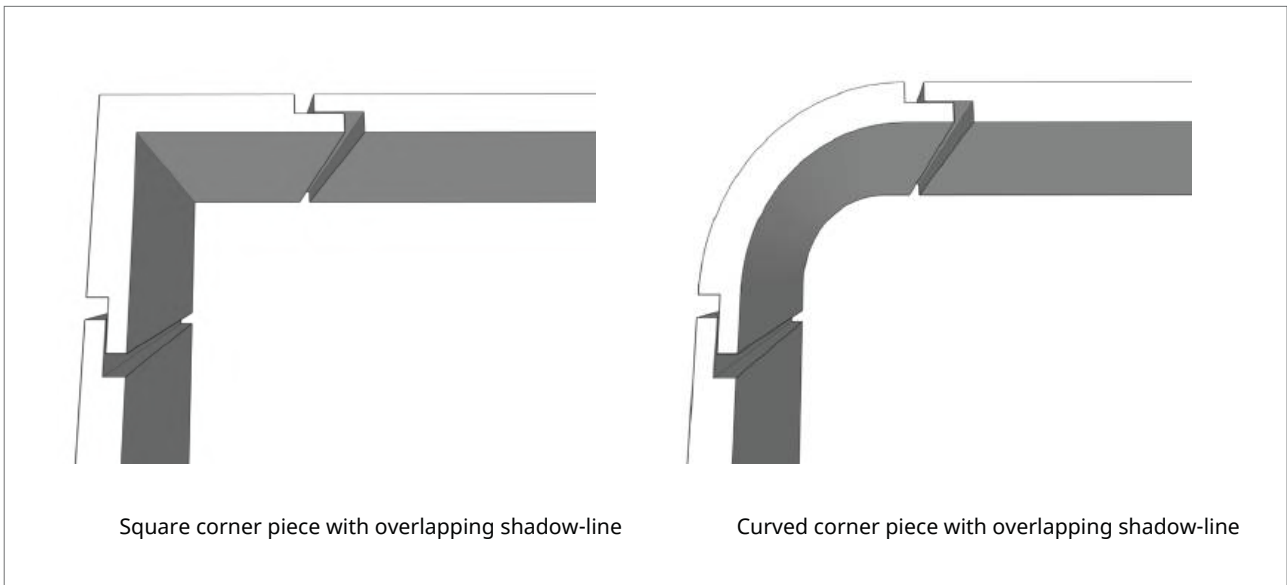
All edges and all corners of a HIMACS panel have to be rounded by at least $R \geq 3\text{mm}$ and prepared with a broken edge of $R \geq 1,5\text{mm}$.



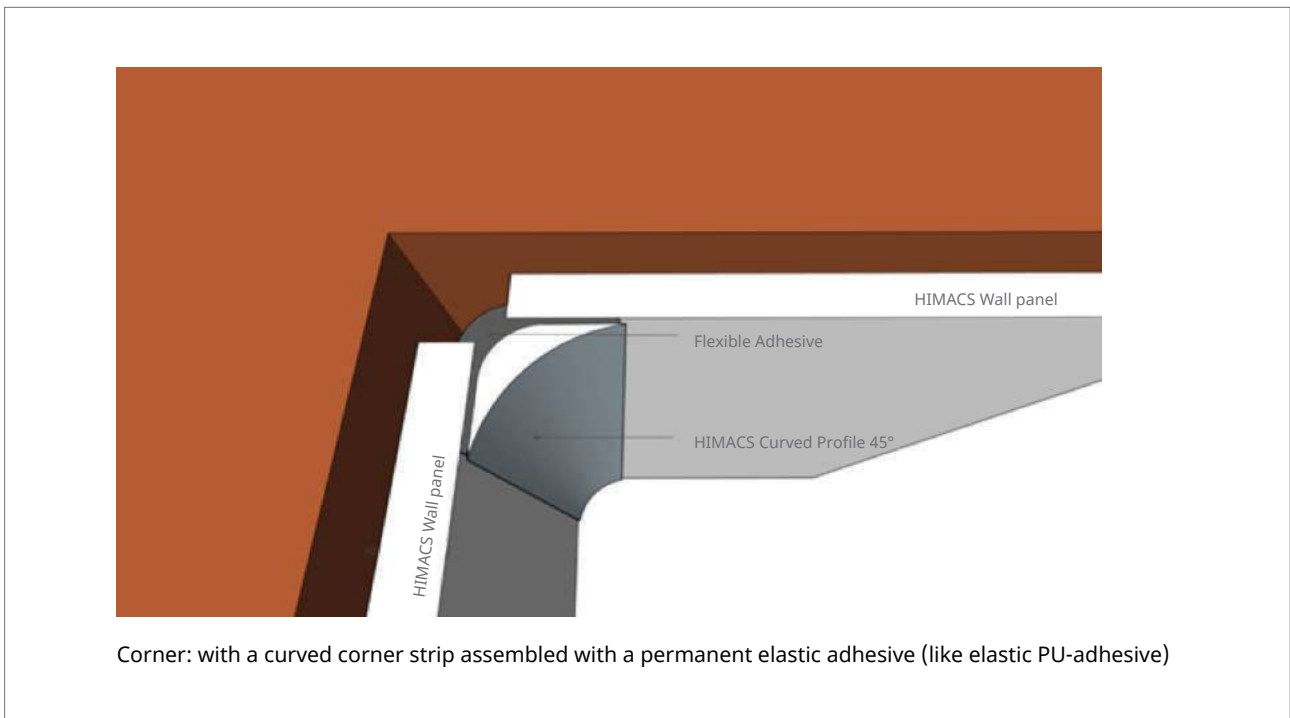
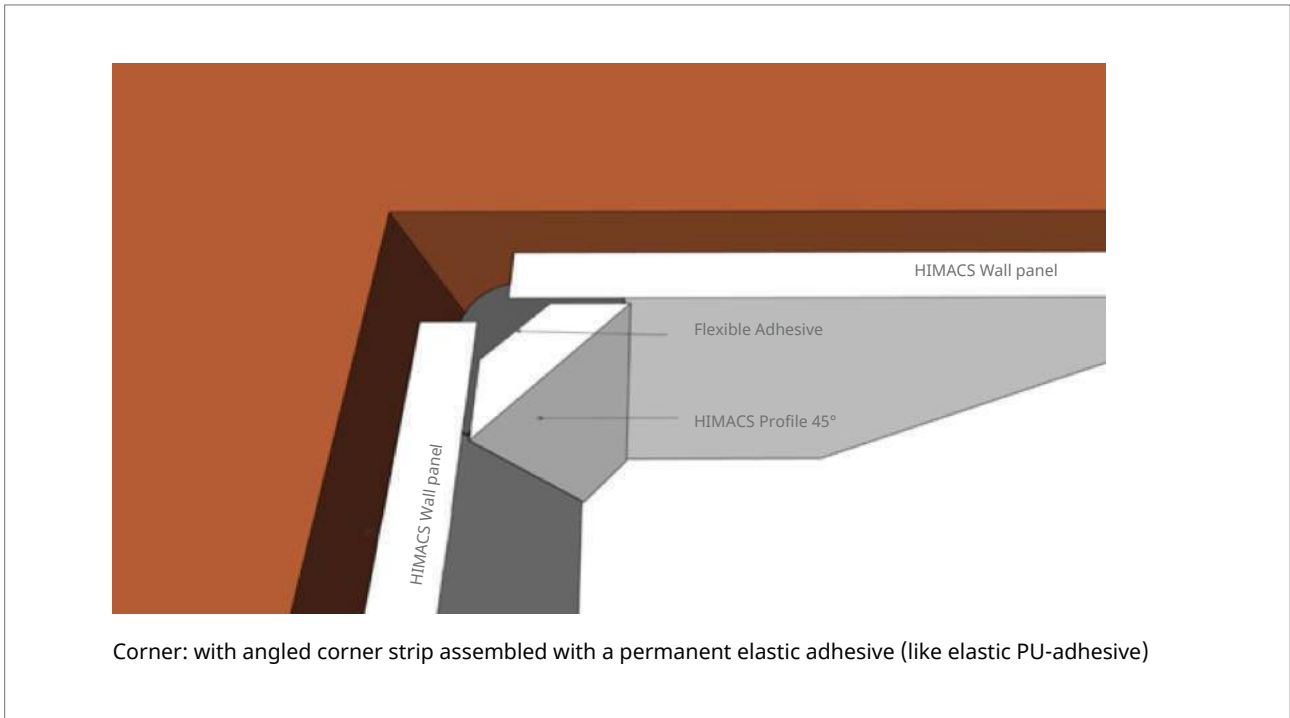
3.4 Corner I



3.5 Corner II

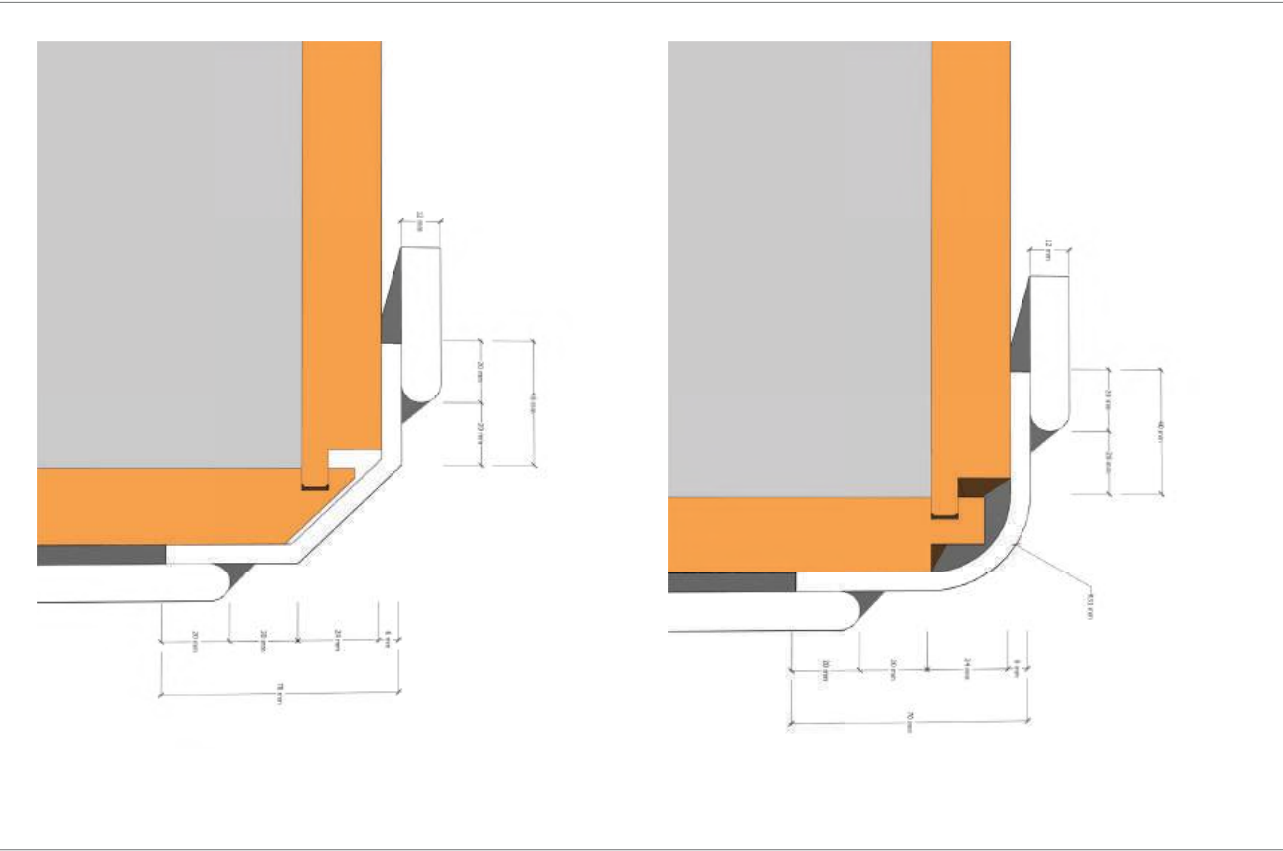
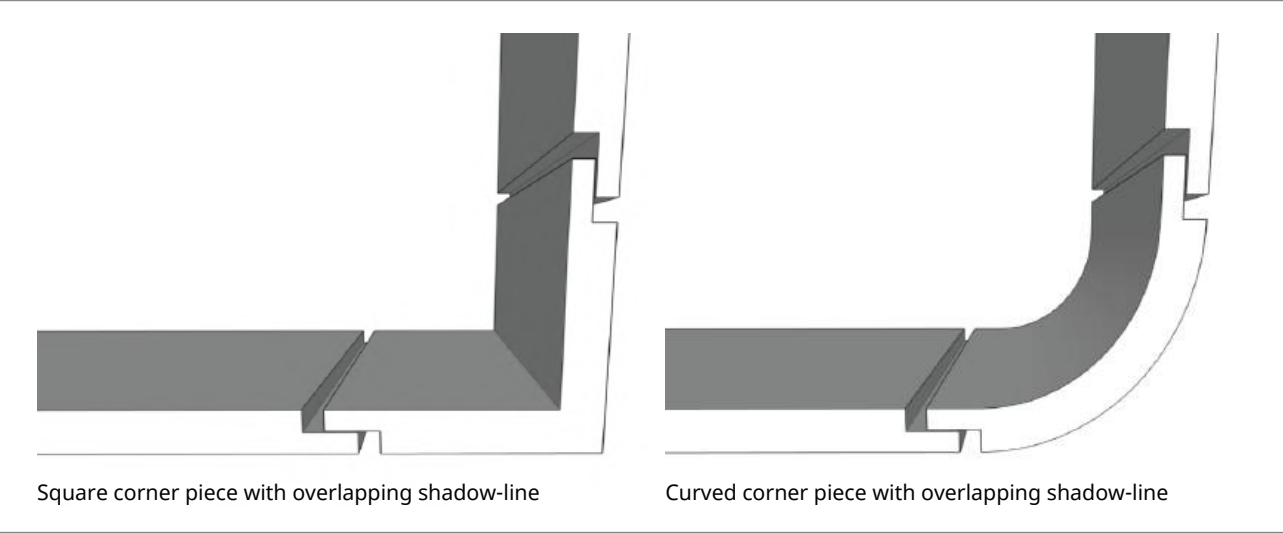


3.6 Corner III



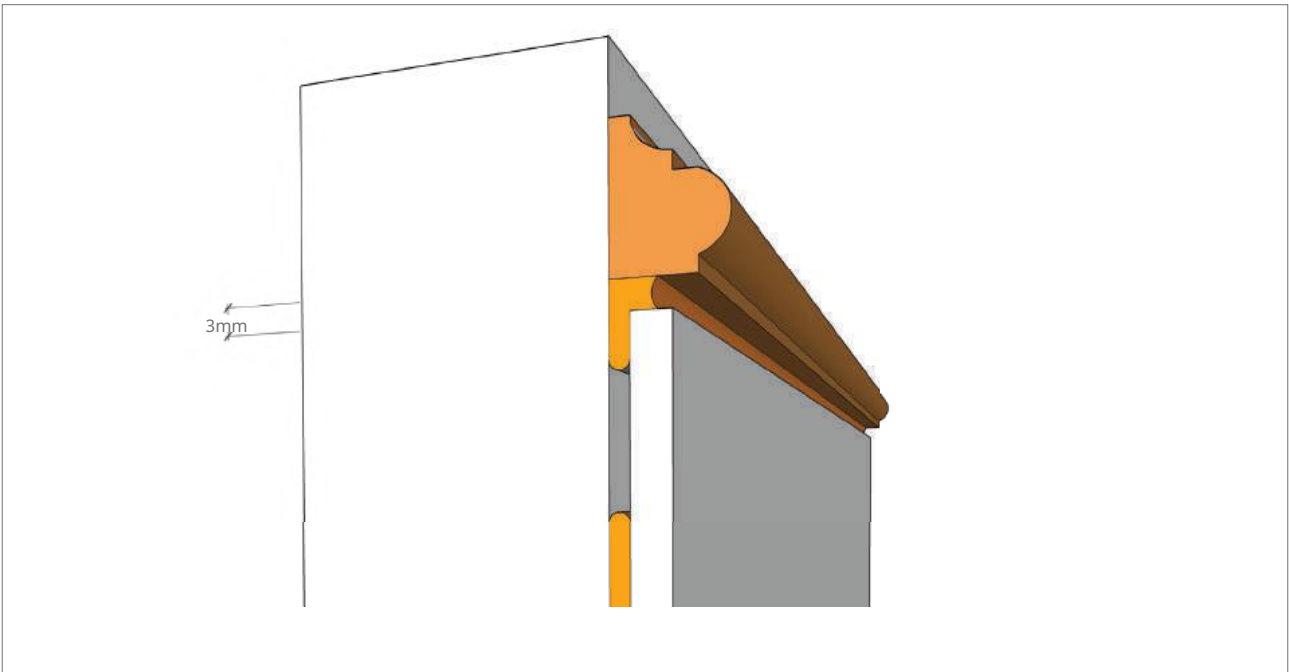
3.7 HIMACS Corners

Corners: With a calculation of a maximum dilatation of corner panels and shadow-lines

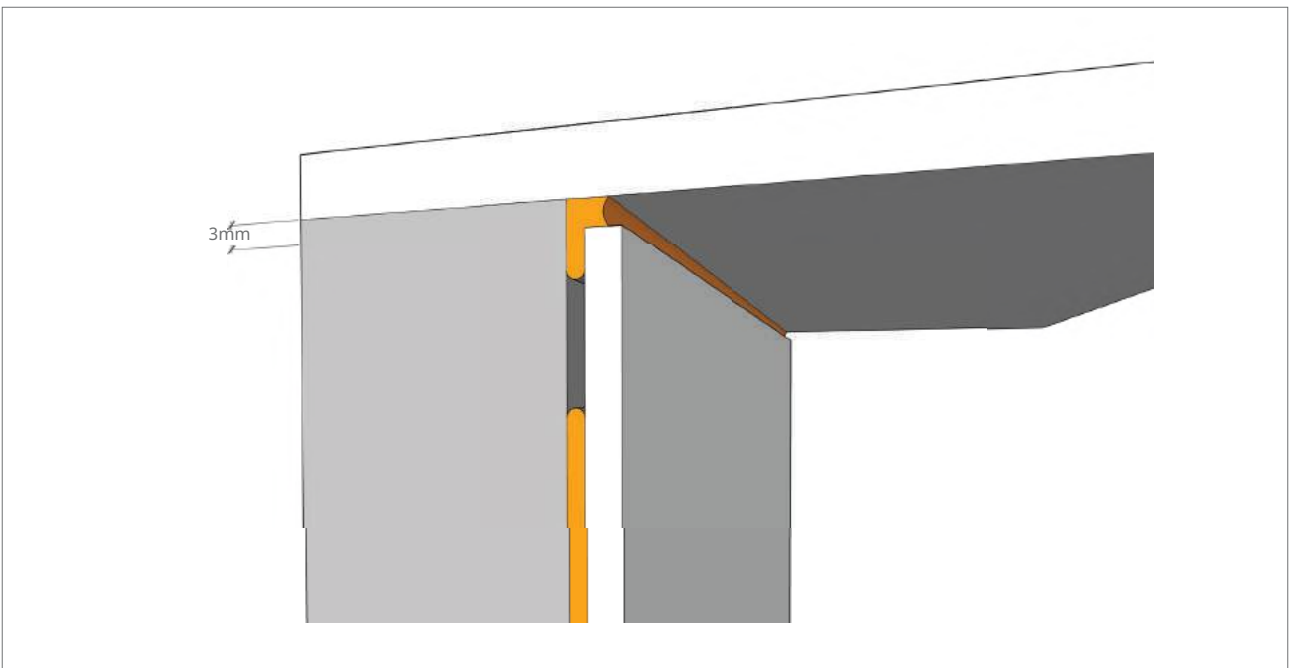


3.7 HIMACS Corners

End-Cover pieces: With a multitude of options, here are a few:



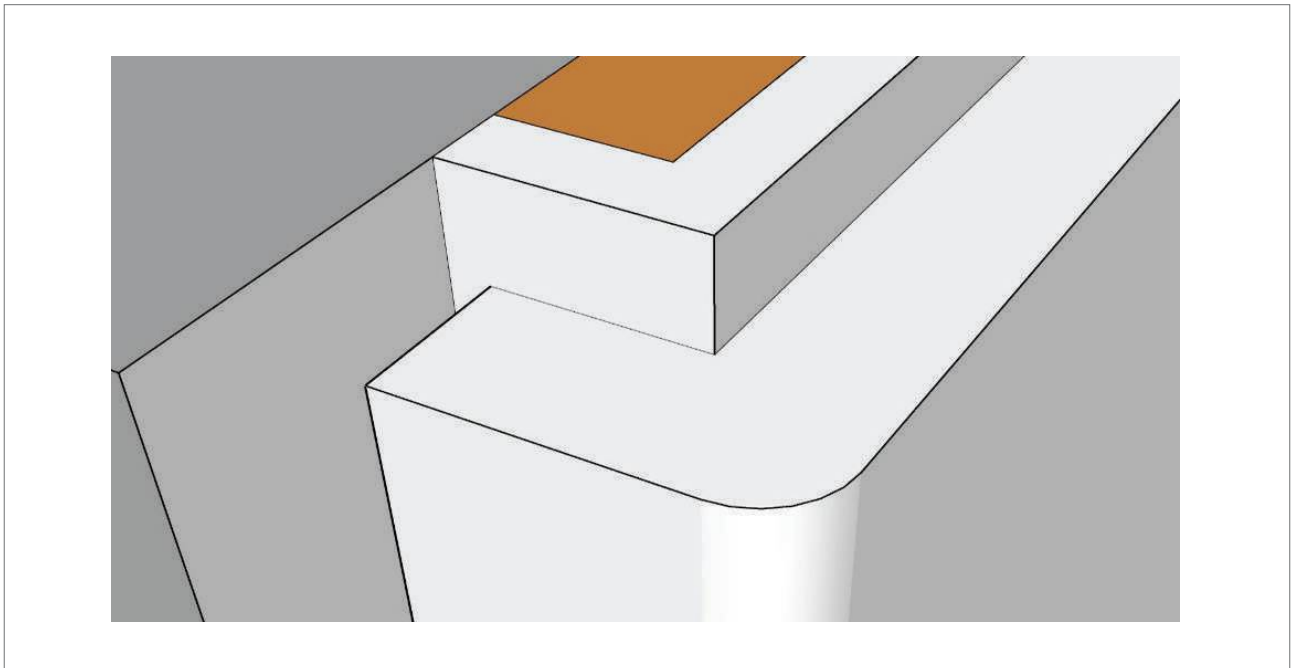
Sample 1



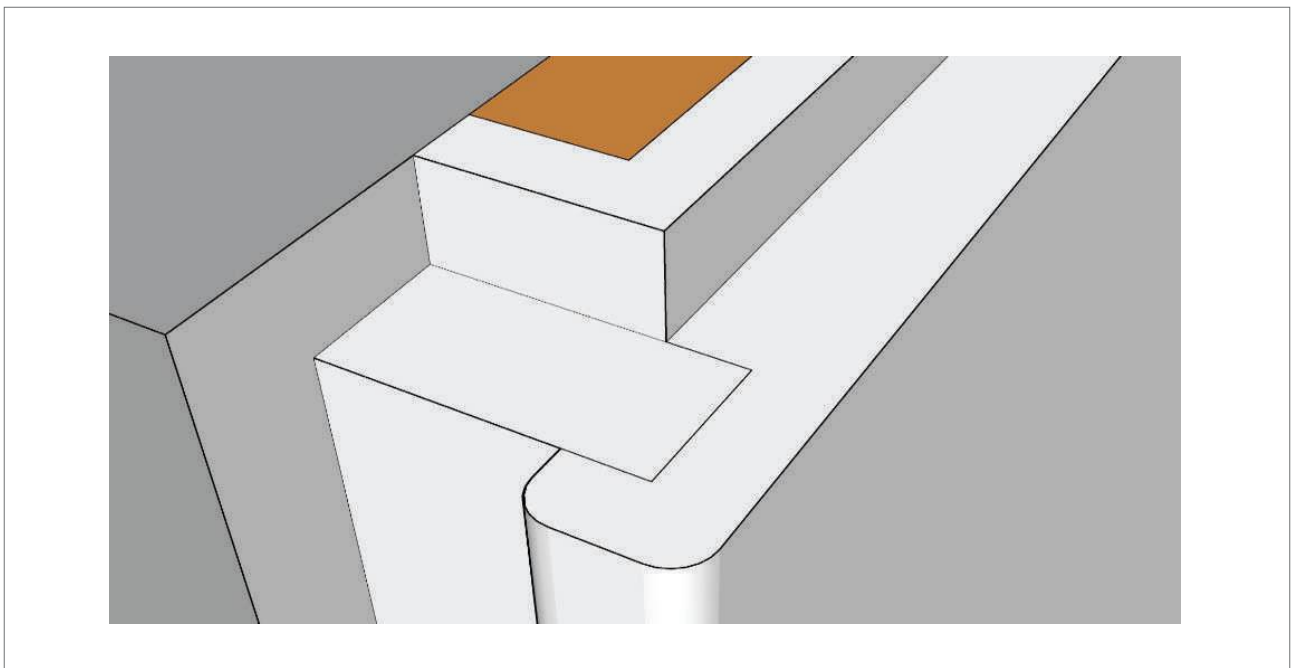
Sample 2: wet wall ceiling Interface.

3.7 HIMACS Corners

End-Cover pieces: With a multitude of options, here are a few:

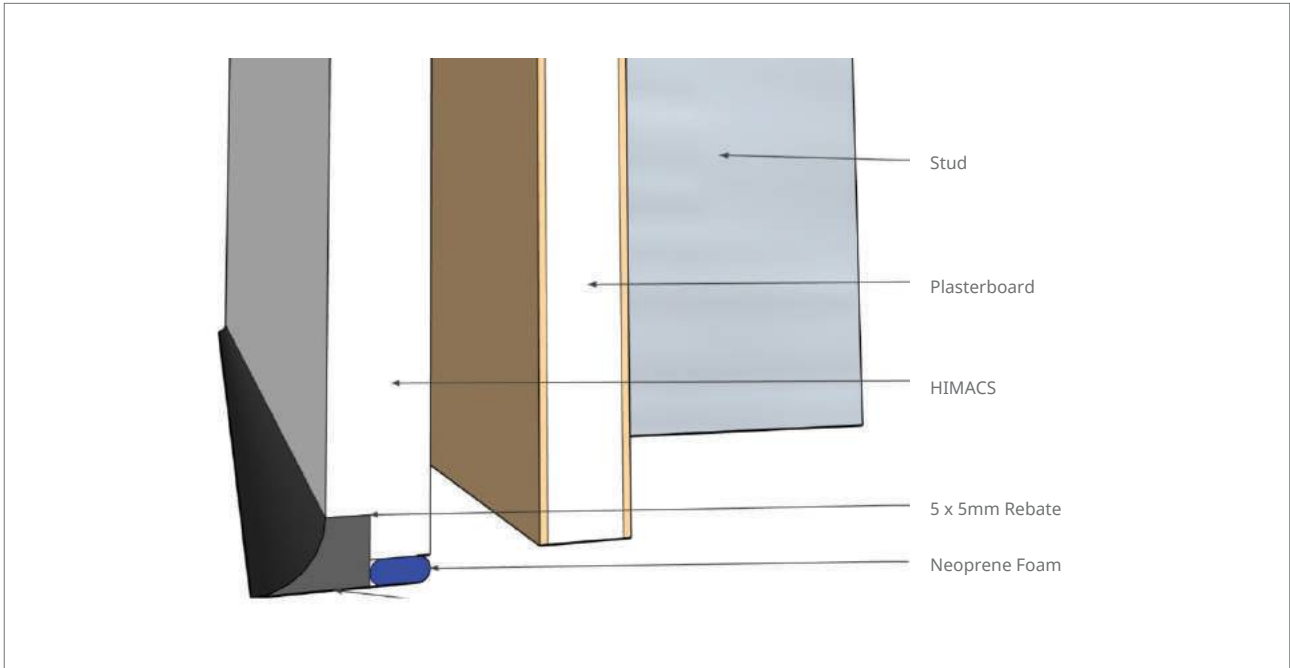


Sample 3

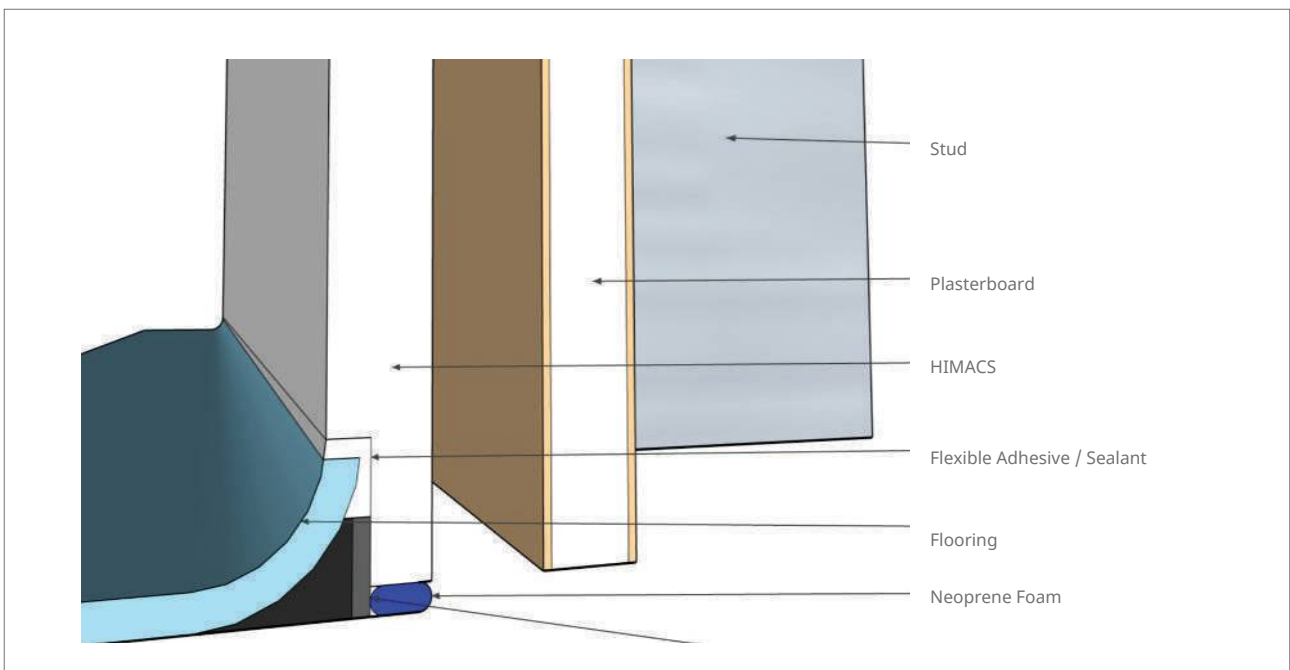


Sample 4

4. Floor connection

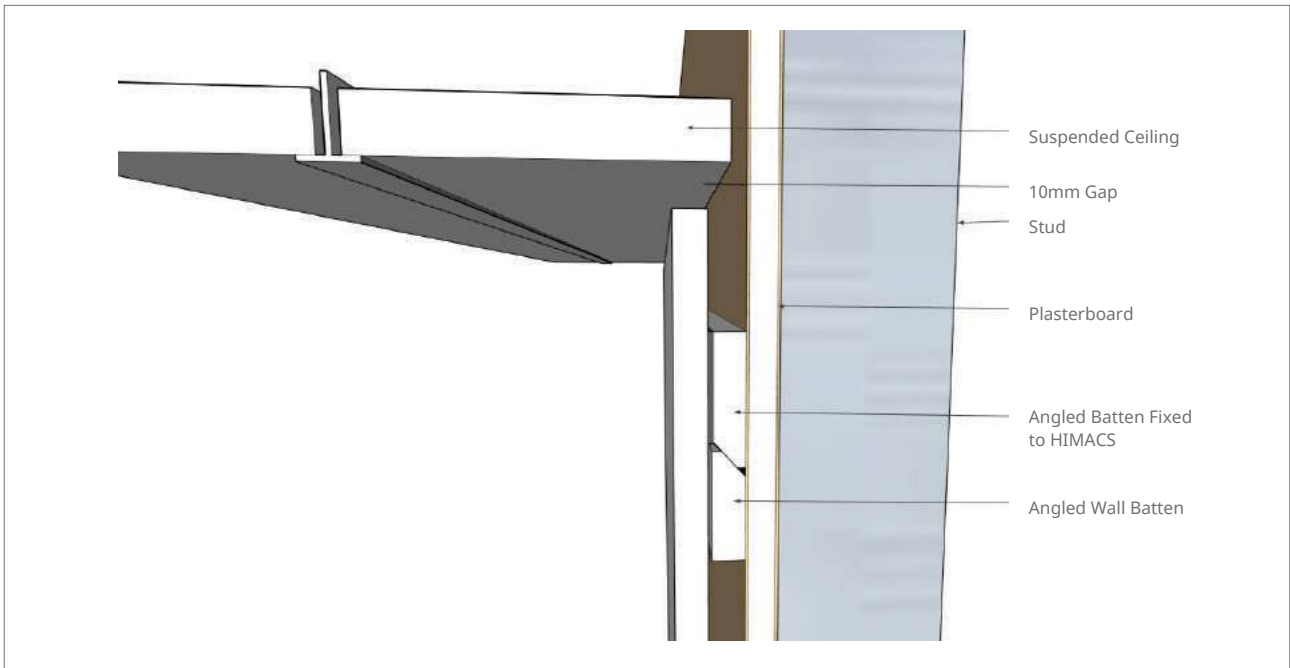


Bottom connection with elastic adhesive or elastic PU profile

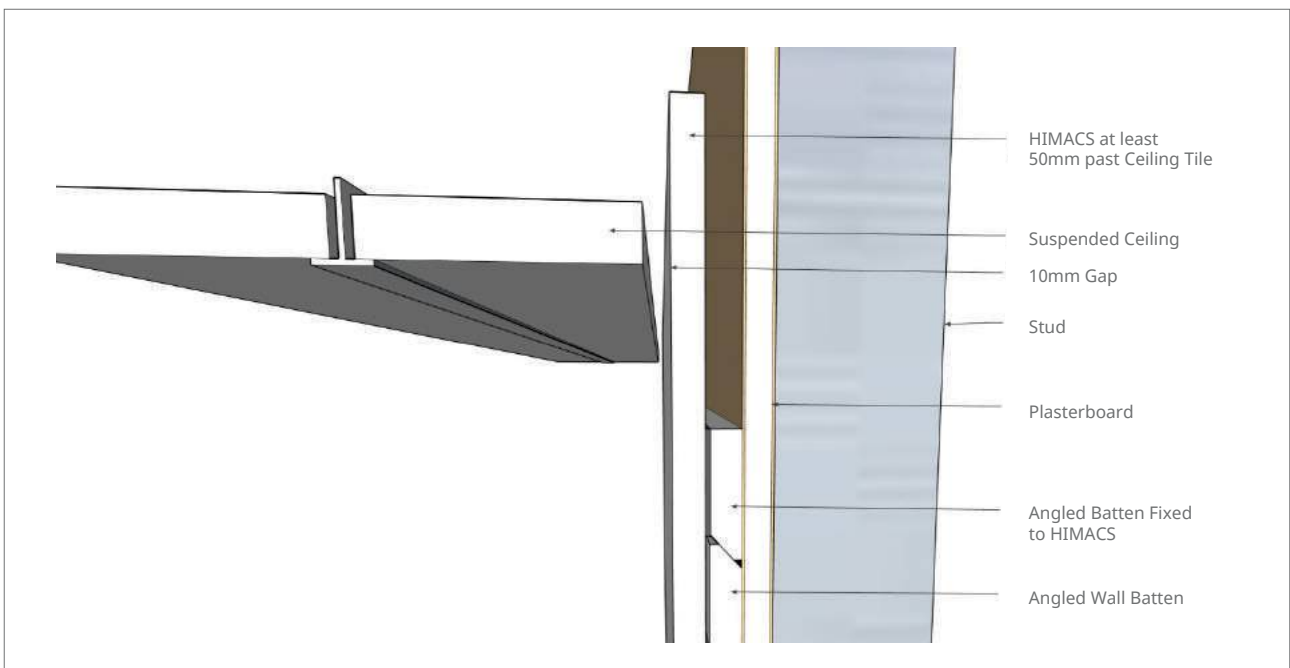


Bottom connection with curved flooring

5. Ceiling connection

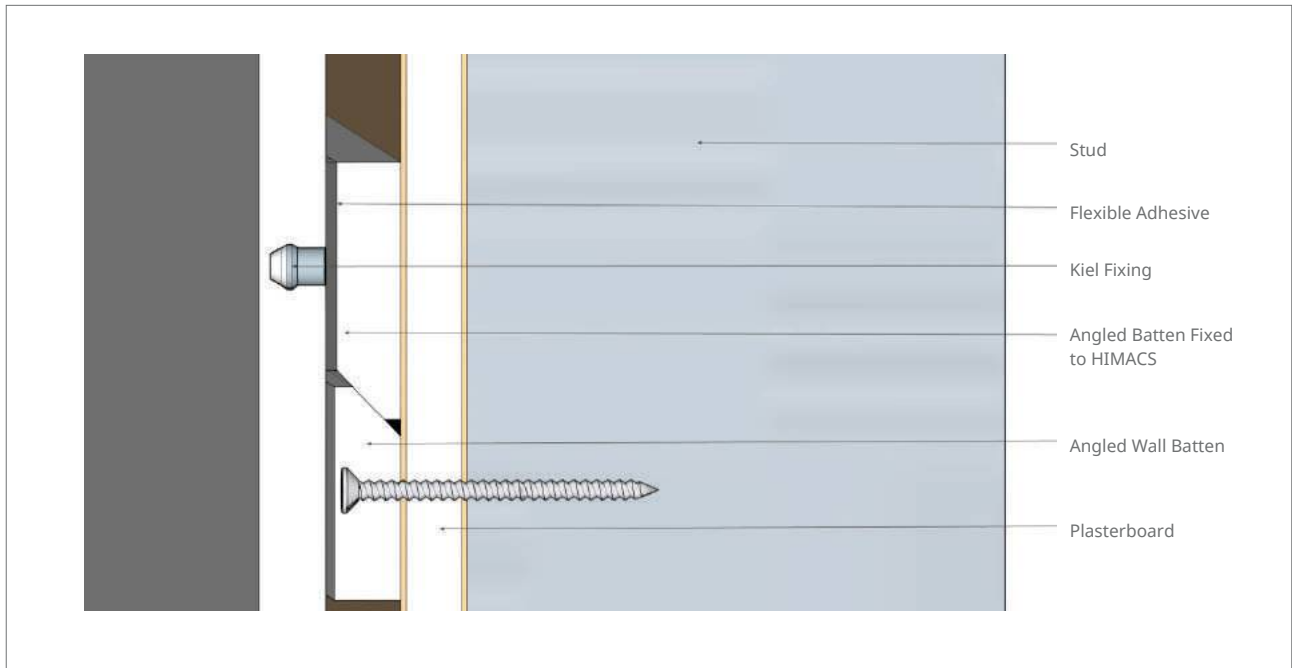


Ceiling connection with space for air circulation up to ceiling and panel hanging system with angled wooden strips

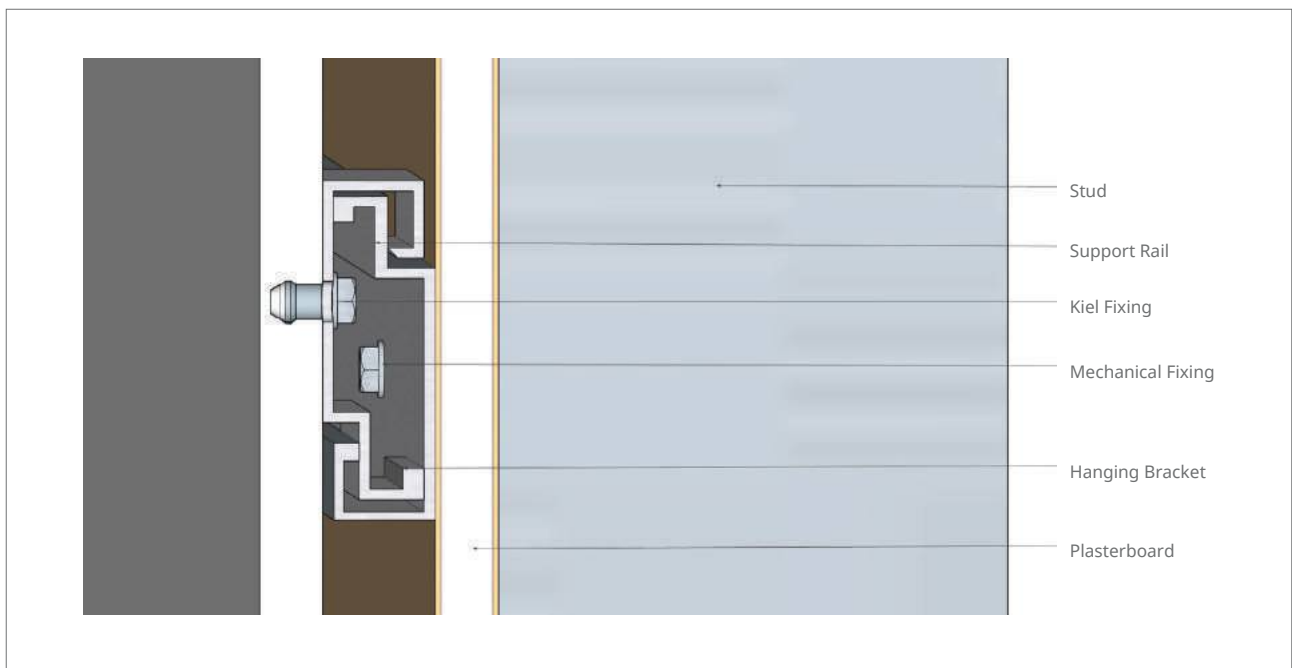


Ceiling connection by suspended ceiling with space for air circulation and panel hanging system with angled wooden strips

6. Panel fixing possibilities

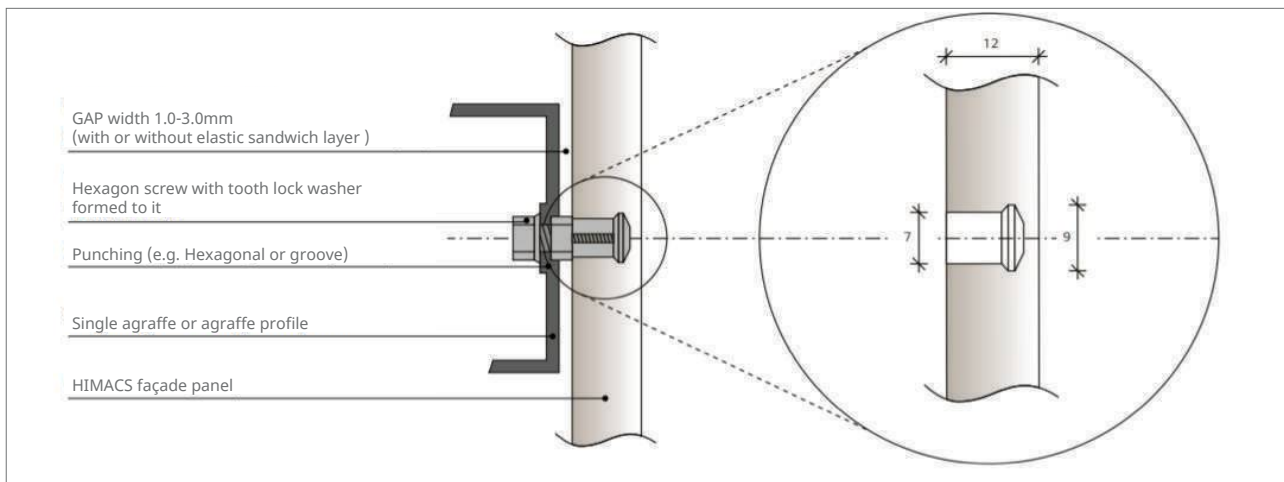


With angled wooden strips: needs pre-size working



With Aluminum profiles: leveling adjustable

7. HIMACS Panel with mechanical fixing



Sample showing an undercut anchor of h=8,5mm for HIMACS panel of 12mm thickness.

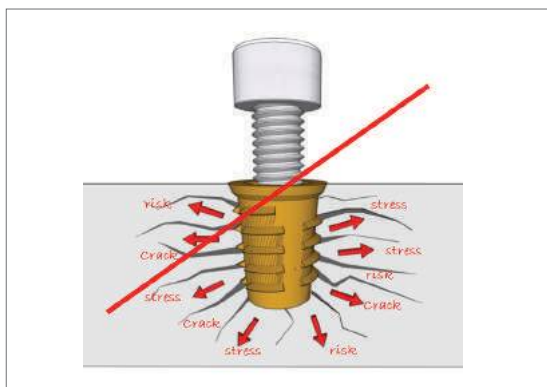


KEIL undercut anchor

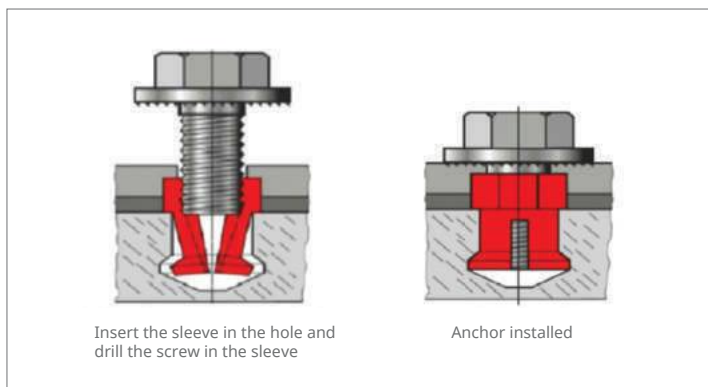
Photos taken by Lothar Moritz

Important Hint:

When installing any mechanical fixing into a HIMACS panel make sure to install without any stress and pressure.



High risk insert installation



Stress free installation

Undercut anchor KH AA

355

Undercut anchor KH AA

6,0	4,0	1,0	M6x1,0	14	900 020 920
6,0	4,0	2,0	M6x1,0	14	900 020 740
6,0	5,0	2,0	M6x1,0	14	900 020 880
6,0	5,0	1,0	M6x1,0	14	900 020 724
6,0	5,5	2,0	M6x1,5	14	900 020 712
6,0	5,5	1,0	M6x1,5	14	900 020 840
6,0	7,0	2,0	M6x1,0	14	900 020 804
6,0	7,0	1,0	M6x1,0	14	900 020 780
6,5	7,0	2,0	M6x1,0	14	900 020 490
11,0	8,0	2,0	M6x1,0	14	900 020 820
11,0	8,0	1,0	M6x1,0	14	900 020 760
11,0	8,5	2,0	M6x1,0	14	900 020 770
13,0	10,0	2,0	M6x1,0	14	900 020 860
13,0	10,0	1,0	M6x1,0	14	900 020 794
13,0	11,0	2,0	M6x1,0	14	900 020 710
13,0	11,0	1,0	M6x1,0	14	900 020 780
16,0	13,0	1,0	M6x1,0	14	900 020 860
16,0	13,0	2,0	M6x1,0	14	900 020 810
16,0	15,0	1,0	M6x1,0	14	900 020 780
16,0	15,0	2,0	M6x2,0	14	900 020 820

For use in:

- For use on fixed facade panels
- Natural stone
- Artificial stone
- Manufactured stone
- Concrete
- Brick
- Plaster
- Block floor
- Reinforced concrete
- Carved glass

Accessories:

- Depth control guide for anchor hole: 144
- Target wrench 24 hex: 02
- Wrench socket 20 x 20 19.0 - 19
- Special spanner for spacer 400: 100

Packaging:

- 20 pieces
- 50 pieces
- 100 pieces
- 200 pieces
- 500 pieces
- 1000 pieces

Recharge:

- 20 quantities more than the packing unit are ordered, the following surcharges apply:
- 2400 - 100 pieces + 10%
- 4800 - 50 pieces + 20%
- 9600 - 25 pieces + 40%

Comments:

- * 7 Days appropriate approval valid.
- * KEIL undercut anchors are monitored by approved bodies.
- * Other dimensions on request.

Usage:

- * Application only as per approval and KEIL installation instructions.

KEIL undercut anchor specification data

General installation instructions

Drilling and Undercutting

The undercut holes on the back of the facade panels must be made using KEIL System tools under workshop conditions.

The KEIL System tools comprise the KEIL facade drill bit, the KEIL drill head and the undercutting and drilling machine (e.g. KEIL portable drill, KEIL bench drill or automatic drilling machine with KEIL drill head).

The undercut hole is produced in one step (cylindrical drilling [1] and undercutting [2]).

Correct installation of the undercut anchor is possible only if a precisely undercut hole exists [3]. The hole geometry is regularly monitored with the KEIL gauge matching the insertion depth of the anchor. The hole depth is set by means of the gauge, and all major hole dimensions can be checked efficiently with it.

- Drilling the hole.
- Undercutting the hole.
- Checking the hole geometry with the KEIL gauge.

Assembly

The undercut anchor consists of an anchor sleeve and its hex screw. Hole, anchor sleeve and screw length have to be matched to the hole depth required and to the panel bracket chosen. Only the use of matching components results in a quick, simple and safe installation.

The anchor sleeve, which is compressed in the lower end, is placed in the hole with the specified panel bracket [4].

The screw is screwed in while exerting slight pressure on the panel bracket (to fix the anchor) [5]. The locking ratchet of the screw cuts into the panel bracket to secure it.

The panel bracket forms a rigid unit with the KEIL facade anchor for this type of installation.

The anchor sleeve is expanded to its original dimension by inserting the screw in a controlled depth, so that the sleeve sits snugly against the undercut section of the hole in the facade panel. After installation, the anchor sits stress-free in the undercut hole (i.e. the bracket can still be rotated with a certain amount of effort).

- Placing the sleeve and bracket in the hole.
- Tightening the screw.
- Final assembly check.

KEIL undercut anchor installation steps

KEIL driller bit for undercut anchor

KEIL drilling machine for undercut anchor

8. HIMACS Panel with Aluminum profiles

ATK 103 P-20 clip for Keil Hexagonal

With cellular rubber

View from above, adjustable clip

- B = 36 mm: Art. 28536
- B = 60 mm: Art. 28560
- B = 80 mm: Art. 28580

View from above, standard clip

- B = 36 mm: Art. 28535
- B = 60 mm: Art. 28560
- B = 80 mm: Art. 28580

View

04/2007

BWM
KONSTRUKTIONSSYSTEME FÜR DEN FASSADENBAU

Lieferprogramm ATK 103 T für Keil-Dübelssystem

Tragprofile

Horizontal-Tragprofil eingelocht $t=3\text{mm}$
Hakenmaß 20mm
Material: EN AW 6063 T66

L [mm]	Artikel-Nr.
6000	668430

Horizontal-Tragprofil gelocht $t=3\text{mm}$
Hakenmaß 20mm
Material: EN AW 6063 T66

L [mm]	Artikel-Nr.
6000	668430

Agraffen

Agraffen justierbar $t=3\text{mm}$
Material: EN AW 6063 T66

B [mm]	Artikel-Nr.
36	66031
60	66032
80	66033

Mit Steherschraube und Teilen zur Plattenfixierung

Agraffen starr $t=3\text{mm}$
Material: EN AW 6063 T66

B [mm]	Artikel-Nr.
36	66034
60	66035
80	66036

Technische Änderungen vorbehalten
Seite 01

Sample showing a profile of BWM. Material thickness in 2 or 3mm available. Check size of stroke for project needs.

Häfele hanging profile - Panel-Installation-System Eilox Standard

12

8

17

40

To build a HIMACS wall cladding, LX Hausys suggests using a structure made from a ventilated profile structure system using SFS Façade Fixing Systems made in Aluminum.

FXA / FBN-II / FAZ-II

Rain
screen
Fast
eners

Technical information

Material

Fastener

- FXA/FAZ-II
Zinc-plated steel or Stainless steel
- FBN-II
Stainless steel

SXR-T / SXR-FUS / SXRL-T / SXRL-FUS

Technical information

Material

Fastener

- SXR-T/SXR-FUS/SXRL-T/SXRL-FUS
Anchor sleeve: High value Polyamide
Screw: Zinc-plated steel or
Stainless steel, grade A4-316
(European Standard 14401)

KX03 for a mechanical and non visible fixing system.

SFS: profiles corner / seam / bottom

Einstellbereiche – 50 x 50 mm 'L' oder 100 x 50 mm 'T'				
Größe (mm)	Min (mm)	Max (mm)	Aluminium	Edelstahl
40	75	100	•	•
60	101	116	•	•
90	118	148	•	•
120	148	178	•	•
150	178	208	•	•
180	208	238	•	•
210	238	268	•	•
240	268	298	•	•
270	298	328	•	•
300	328	358	•	•
330	358	388	•	•
360	388	418	•	•
390	418	448	•	•

Einstellbereiche – 60 x 40 mm 'L' oder 100 x 40 mm 'T' (40 mm Schenkel in Wandkonsole)				
Größe (mm)	Min (mm)	Max (mm)	Aluminium	Edelstahl
50	85	105	•	•
60	95	105	•	•

Einstellbereiche – 60 x 40 mm 'L' oder 100 x 60 mm 'T' (60 mm Schenkel in Wandkonsole)				
Größe (mm)	Min (mm)	Max (mm)	Aluminium	Edelstahl
50	112	126	•	•
60	119	158	•	•
120	148	168	•	•
150	178	218	•	•
180	208	248	•	•
210	238	278	•	•
240	268	308	•	•
270	298	338	•	•
300	328	368	•	•
330	358	398	•	•
360	388	428	•	•
390	418	458	•	•

KX03 Querschnitt

**KX03 = KX01 + KX03 Komponenten
(mechanisch verdeckte Befestigung)**

Wählen Sie die KX01 Komponenten (Sitz- und Schiene), dann die KX03 Komponenten. Weitere Varianten von Agraffen auf Anfrage.

Referenzbezeichnung	Detaillangaben	Artikelnr.
NV-CP-NV3-3000	Tragprofil NV3 System x 3000	1821321
NV-CP-NV3-6000	Tragprofil NV3 System x 6000	1821324
NV3-TUF-S-ADJ-F3.5mm	NV3 justierbare Agraffe für TUF-S	1849012
NV3-TUF-S-STAT-3.5mm	NV3 statische Agraffe für TUF-S	1849015
NV-NV3-KELESTAT	NV3 statische Agraffe für 1x Keil	1821456
NV-NV3-KEILADJF	NV3 justierbare Agraffe für Keil	1821454

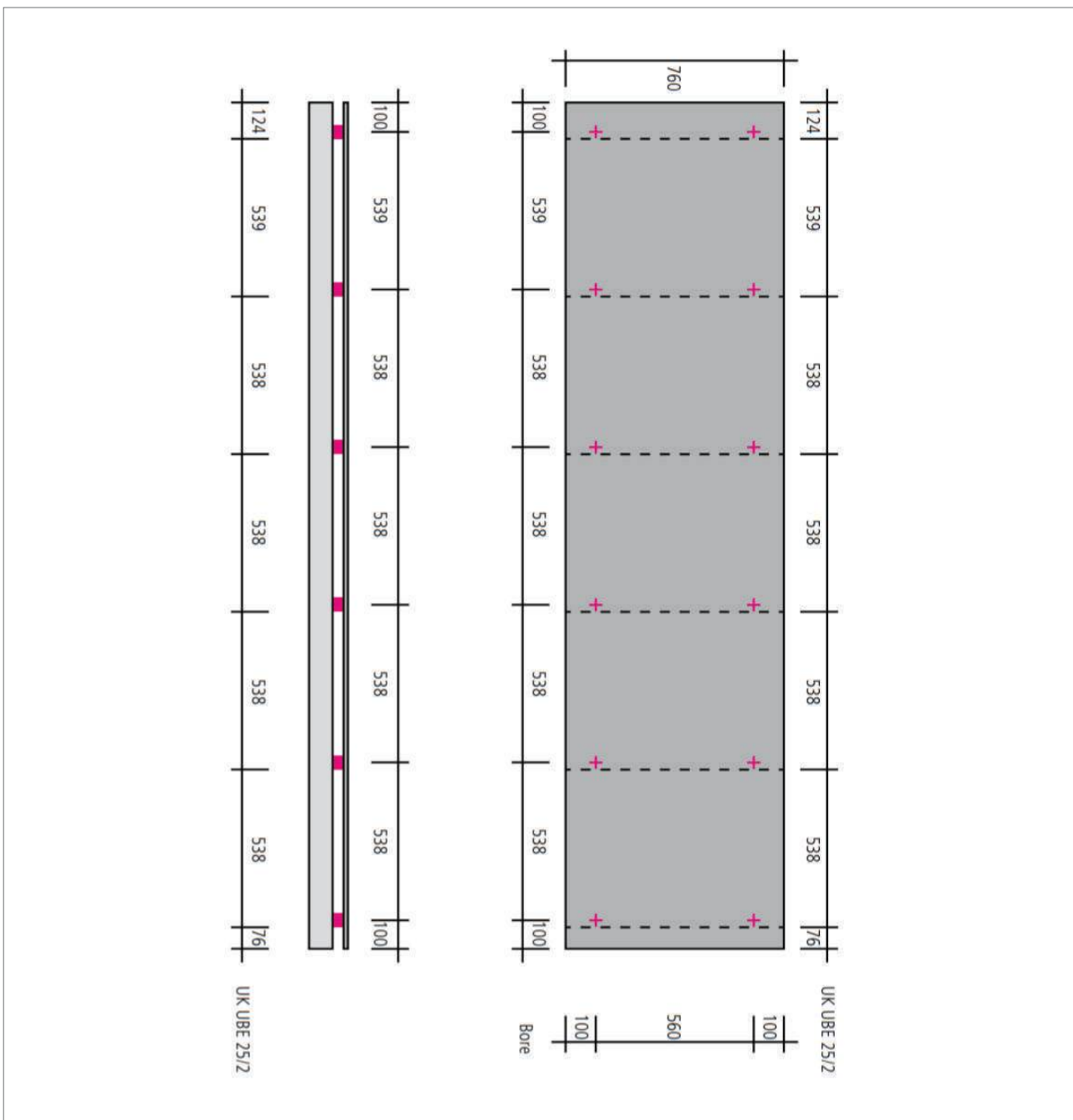
Befestigungen			
Befestigungen	Referenzbezeichnung	Detaillangaben	Artikelnr.
SD48	SD48/5.6/H3.54.4.5/2	Profil an Wandkonsole, Tragprofil an vertikales Profil, Sicherung Agraffe (Fisnpunkt)	1807972
ASO-D14	ASO-D14-82H4GL	Profil an Wandkonsole, Tragprofil an vertikales Profil	1816425

9. Recommended fixing positions for hanging brackets

When installing a wall with panels and with shadow gaps, each HIMACS panel requires a fix point with the others having sliding points.

To avoid any panel warping on interior applications LX Hausys recommend maximum fixing centers of between 540mm up to 600mm and a HIMACS material thickness of 12 or 19mm.

Ensure the wall condition is able to carry the pieces for wall covering and contact your architect or structural engineer.



12. HIMACS Panel with mechanical fixing

- For interior fixing you may use other well known fixing.
- Ensure the fixing allows proper material movement and avoid any sheet warping
- Avoid constructions to the limits. Consult engineering support.



Hint:

Ensure your sub-construction is strong enough to take the weight of the wall paneling. LX recommends to consult an engineer for static calculations of your project.

13. HIMACS Panel fixing with bonding

The installation can be done with permanent elastic adhesive systems.

- There are several systems in the market available
- For facade system LX is recommending the product from INNOTEK (www.INNOTEK.de)
- Always check for proper engineering calculations to your construction wall

For any public applications all bonding systems have still to apply for an official local or European authorising authority approval.

Hint:

Ensure your sub-construction is strong enough to take the weight of the wall paneling. LX recommends to consult an engineer for static calculations of your project.

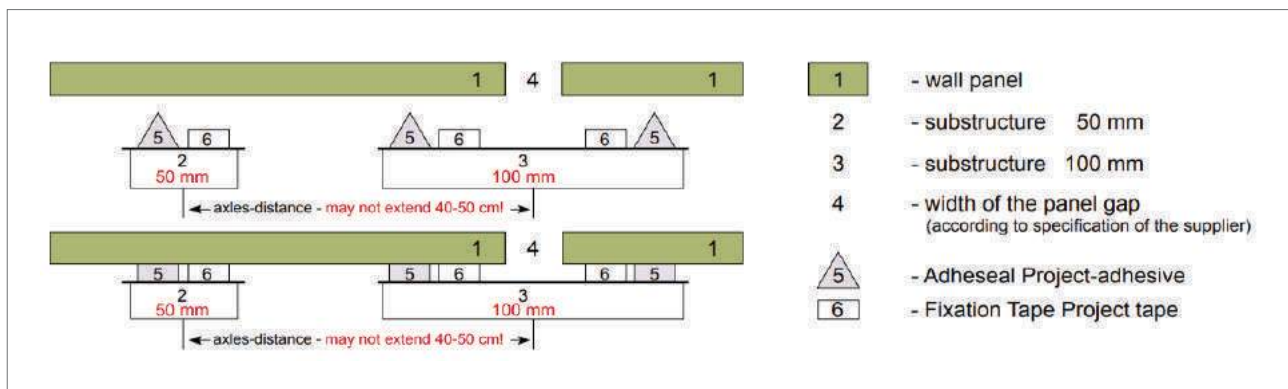
14. Cladding System

14.1 HIMACS bonding with Innotec

Innotec Project System is a high-quality, easy to apply bonding system for a highly economical assembly of wall panels on aluminium or wooden substructures in the field of: Industrial and private homes Metal panelling Insulation with polystyrene cellular plastics in garages New buildings and renovation projects Façades and roof elements Metal and façade construction Finishings HPL panels in lifts

Schematic description:

vertical substructure – bonding – façade panels The distance between the axes of the vertical substructure may not extend 40-50 cm OR conform the instructions of the constructor.



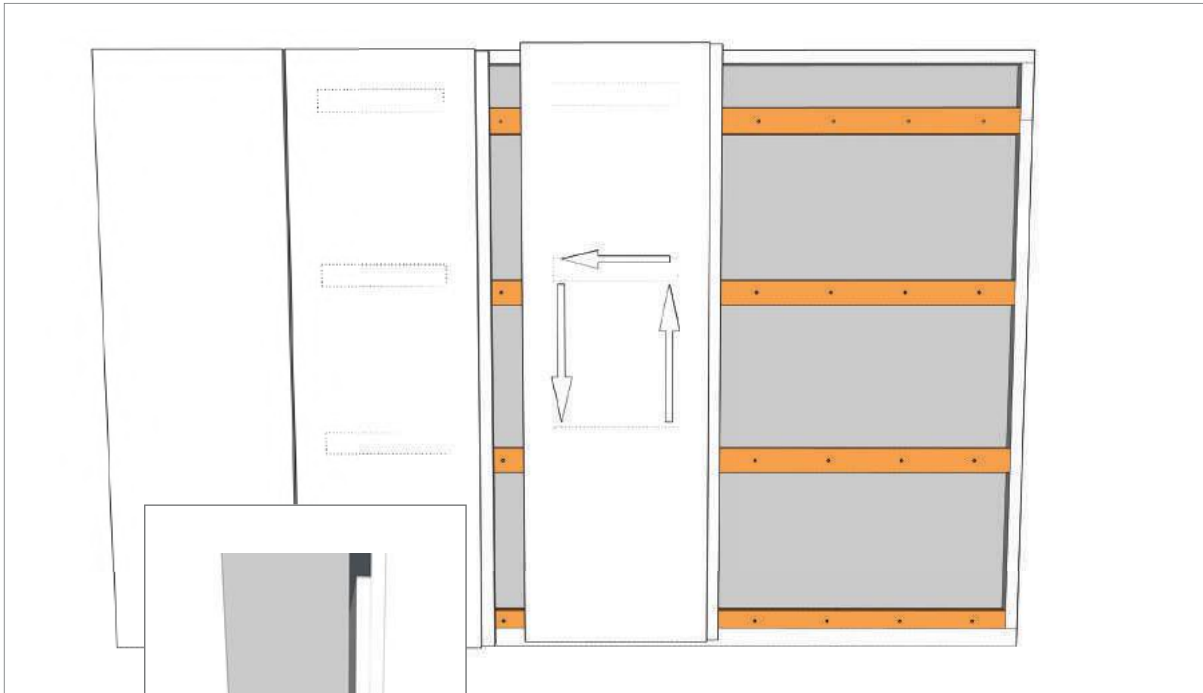
When applying Adheseal Project adhesive, a distance of at least 3 mm to the tape and to the edge of the substructure has to be respected!

On the substructure [3] under the panel gap [4] the tape [6] is to be applied on the inside, leaving from the middle, and the adhesive joint [5] is to be applied on the outside. When applying the tape [6], there has to be enough space on the outside for the distance (2 x 5 mm) plus adhesive joint (8mm)!

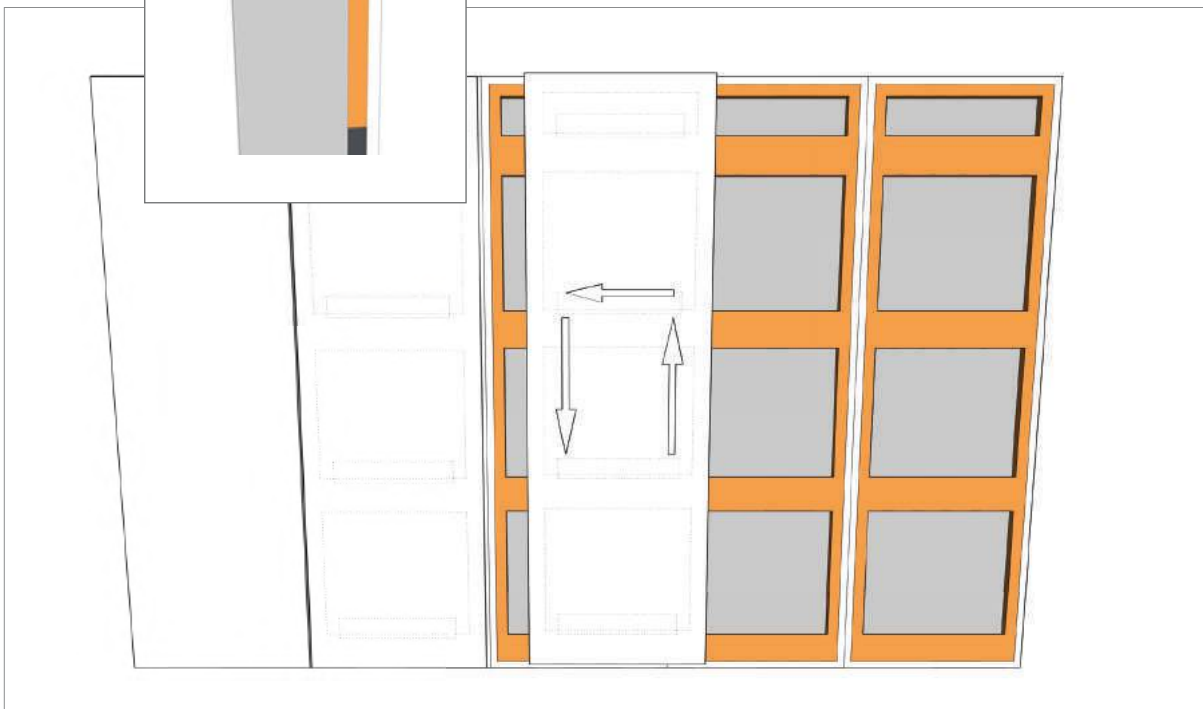
14.1 HIMACS bonding with Innotec

<p>Allgemeine bauaufsichtliche Zulassung/ Allgemeine Bauartgenehmigung</p>	<p>Deutsches Institut für Bautechnik</p> 
<p>Nummer: Z-10.8-483</p>	<p>Zulassungsstelle für Bauprodukte und Bauarten Bautechnisches Prüfamt Eine vom Bund und den Ländern gemeinsam getragene Anstalt des öffentlichen Rechts Mitglied der EOTA, der UEAtc und der WFTAO</p>
<p>Antragsteller: PCS Innotec International N.V. Schans 4 2480 DESSEL BELGIEN</p>	<p>Datum: 01.02.2019 Geschäftszeichen: I 73-1.10.8-483/4</p>
<p>Gegenstand dieses Bescheides: Fassadensystem unter Verwendung des Klebesystems "Innotec Project System" zur Befestigung von hinterlüfteten Fassadenplatten auf einer Aluminium-Unterkonstruktion</p>	<p>Geltungsdauer vom: 1. Februar 2019 bis: 1. Februar 2024</p>
<p>Der oben genannte Regelungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen/ genehmigt. Dieser Bescheid umfasst neun Seiten und zwölf Anlagen. Diese allgemeine bauaufsichtliche Zulassung/allgemeine Bauartgenehmigung ersetzt die allgemeine bauaufsichtliche Zulassung/allgemeine Bauartgenehmigung Nr. Z-10.8-483 vom 20. Juni 2018. Der Gegenstand ist erstmals am 12. Februar 2014 allgemein bauaufsichtlich zugelassen worden.</p>	
	
<p>DIBt Kolonnenstraße 30 B D-10829 Berlin Tel.: +49 30 78730-0 Fax: +49 30 78730-320 E-Mail: dibt@dib.de www.dibt.de</p>	

14.2 Sample of Installation



Sample 2



Sample 3

14.3 HIMACS sheet product fire classification

HIMACS Standard Products

SPECIFICATION / SUBJECT	MATERIAL THICKNESS	RESULT	PRODUCT TESTED	TEST METHOD
Fire classification	20mm	B1	S028 19mm	DIN 4102-1 (Mai 1998)
		B - s1 - d0	S028 19mm	EN 13501-1
	9mm	B1	S028	DIN 4102-1 (Mai 1998)
		C - s1 - d0	S028	EN 13501-1
	6mm	C1	S028	DIN 4102-1 (Mai 1998)
		C - s1 - d0	S028	EN 13501-1
	3mm	C1	S028	DIN 4102-1 (Mai 1998)
		D - s1 - d0	S028	EN 13501-1

14.4 Technical Specification Data



S006 ARCTIC WHITE	
Thermal Conductivity	$\lambda_{10dry} = 0,55$ W/mK
Thermal Expansion Coefficient	$\alpha = 0,055$ mm/mK
Diffusion Resistance Coefficient	μ 16150

S007 PLATINUM GRANITE	
Thermal Conductivity	$\lambda_{10dry} = 0,55$ W/mK
Thermal Expansion Coefficient	$\alpha = 0,055$ mm/mK
Diffusion Resistance Coefficient	μ 16150

14.5 HIMACS Technical Specification Data Sheet (TSDS)

HIMACS is extremely resistant to dirt and wear and tear, so that you can enjoy many years', peace of mind with the outstanding quality of your new product.

SPECIFICATION	UNIT	RESULT SOLIDS	RESULT GRANITE	TEST METHODS
Flexural-E-modulus	MPa	8900	7730	DIN EN ISO 178
Flexural strength	MPa	70.1	64.3	ASTM D638
Breaking elongation	%	1	1.1	DIN EN ISO 178
Tensile strength	MPa	69.5	56.3	DIN EN ISO 527
Density	g/cm3 kg/m3	1.75 1750	1.65 1650	ISO 1183 ISO 1183
Ball indentation hardness	N/mm2	257	239	DIN EN ISO 2039-1
Mohs hardness		2 to 3	2 to 3	EN 101
Pencil hardness		>9H	>9H	ISO 15184
Water absorption weight strength/thickness		<0,1% <0,1%	<0,1% <0,1%	DIN EN 438 Part 12
Impact resistance impactor drop ball test (fall height)	N mm	≥25 ≥1500	≥25 ≥1500	E DIN EN 438, 02/02 Part 2/20 E DIN EN 438, 02/02 Part 2/21
Slip resistance		>0,32 – 0,9		GMG100 (replaces R9)
Slip resistance		angle of acceptance of more than 10° to 19° = R10		DIN 51130
Climate change resistance	°C	≥0,05	≥0,05	AMK
Dry heat (pan base)	°C	≥100 (7C)		DIN 68 861, Part 7, 04-'85
Damp heat (pan base)	°C	≥100 (7C)		DIN 68 861, Part 8, 04-'85
Temperature change resistance	°C	no change		UNI 9429
Resistance to cigarette burns		6C	6B	DIN 68 861, Part 6, 11-'82
Scratch resistance		4D	4B	DIN 68 861, Part 4, 11-'81
Electrostatics Conductivity	>1x1012Ω	insulating non-conductive		DIN IEC 1340-4-1, 04-'92 EN 61340-5-1
Thermal conductivity	W/mK	0.636	0.55	DIN EN 12664
Thermal resistance	m2K/W	0.038	0.045	DIN EN 12664
Thermal Expansion Coefficient for Standard HIMACS Products	mm/mK m/m/°C	0.048 48 x 10-6	0.055	DIN EN 14581
Water vapor transmission properties – diffusion resistance factor	μ	18607	16150	DIN EN ISO 12572
Dimensional change by change in relative humidity length thickness mass	% % %	-0.03 0.06 0.05	-0.02 0.03 0.05	DIN EN 318, edit. 5, 1998
Resistance to boiling water increase in weight increase in thickness	% %	<0,1 <0,1	>0,1 <0,1	E DIN EN 438, 02/02 Part 2/12
Light fastness (Xenon)	scale 0 – 10	better than 6	better than 6	DIN 53 387, 04-'89
Food tolerance		suitable for all colours		LMBG § 31
Hygiene		suitable	suitable	LGA Hygiene Certificate

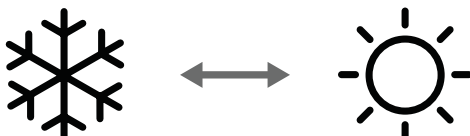
SPECIFICATION / SUBJECT	MATERIAL THICKNESS	RESULT	PRODUCT TESTED	TEST METHOD
Fire Classification	12 mm	B1	HIMACS colour range** S928, M551, G554	DIN 4102
		B1	S028 (standard)	DIN 4102 / ABP
		M1	S728, S828, S028, T017, VW01, W001	NF P92-501
		B - s1 - d0	HIMACS colour range** (2007)	EN 13501-1
	12mm plus fibre cement board	B - s1 - d0	HIMACS colour range** (2014)	EN 13501-1
		B - s1 - d0	S728 CE MED	EN 13501-1 / SBI
	12 mm	C - s1 - d0	S928	EN 13501-1
		passed	S028 (standard)	DIN 5510
		passed R1/HZ3	S728 CE MED	EN 45545
		IMO certified	S728 CE MED	Module B & Module D
HI-MACS Exteria®	12 mm	ETA	S728	DIBT
		Avis Technique	S828	CSTB

* Not currently applicable to Strato, Ultra Thermoforming and Intense Ultra.
** Products tested in the year 2007 and 2014: Alpine White, Fiery Red & Black.

HIMACS – The Natural Acrylic Stone™ by LX Hausys – himacs.eu

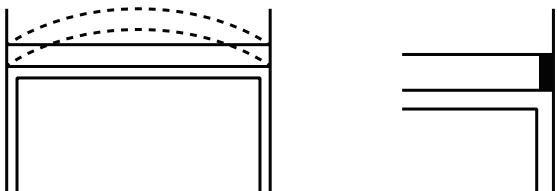
Technical data sheet

15. Thermal Expansion



Sufficient space should be given to compensate for expansion or contraction at the time of installation since this product may expand or contract depending on the temperature.

Allow 1.5 mm per linear meter for expansion and contraction.



Expansion coefficient **HIMACS** according to norm DIN EN 14851:
 $\Delta t = \text{ca. } 48 \times 10^{-6} /K$

16. Quality Check

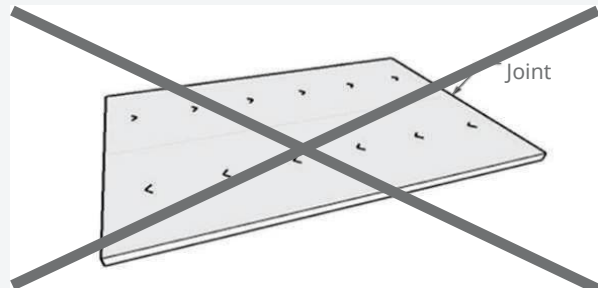
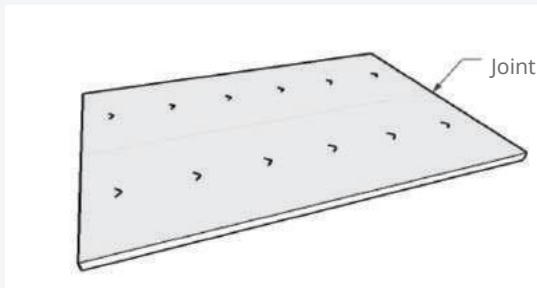
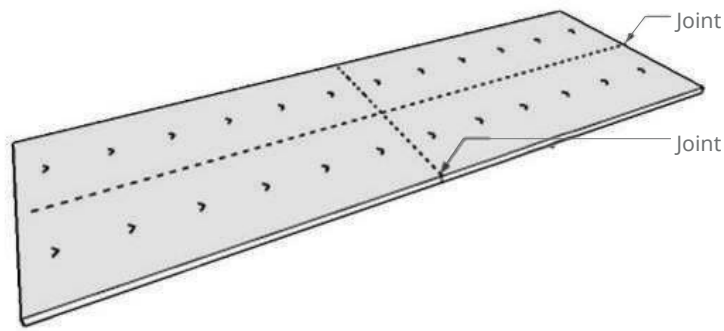
- Check any fabricated item on quality aspects before leaving the workshop.
- In case of any mistakes it easily can be repaired in the workshop and keeps the time of re-work very low.
- Any damage or any mistakes which will be recognized at a later time will make the fixing much more expensive.

Important Hint:

Remember that the 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes.

17. Summary of Hints

When using several sheets for doing one job ensure a continuous flow of sequential numbers as well as the same production flow.
Do not turn one sheet into a different direction from the next or opposite side (no turn of any sheet by 90°, 180° or 270°).



When preparing for a big project and you have to use different batches ensure the surface is sand equal to any other using surface sanding level. If not it is fabricators responsibility to adjust the right sanding level in his workshop. Therefore a proper project planning with following batch and sequential numbers is mandatory.

The adhesive is not developed as filler for repairs. In the case of damage to the surface it is strongly recommended to make a plug repair if possible (tools are available on the market – please contact your local technical support).

Hint:

Check all incoming goods for Quality specs and adjust sequential batch numbers. Check colour match. Contact your local Distributor for any questions you may have. Keep record on any material you are using for the project.

Remember that the 15 Year Limited Installed Warranty does not cover any failures due to fabrication or installation mistakes.

Disclaimer

The information provided in this specific technical bulletin corresponds to our best knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relates only to specific material designated. These data may not be valid for such material in combination with other materials or in any process, unless expressly indicated otherwise. It is offered exclusively to provide possible suggestions for your own experiments and needs approval from LX Hausys Europe GmbH, for Warranty.

This Technical Document is not intended to replace for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purpose. Since LX Hausys Europe GmbH cannot anticipate all variations in actual end-use conditions, LX Hausys Europe GmbH makes no warranties and assumes no liability in connections with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

18. Appendix

Tip:

Before choosing a cladding-system it should be clarified the material needs of colour and possible thickness as well as its Design of its look-a-like...

After clarifying the issue above - choose the best system or possibility to avoid any mould creation and find the best and efficient installation possibility for your convenient best techniques and brings the best value to your customer clientele – if budget allows.

Here a short summary overview of important input to start with:

For any shower wall installation

Avoid any kind of mould formation in the back of HI-MACS(R) shower panel

To clarify in advance:

HI-MACS(R) material:

- Color
- Thickness

Design:

- Bonded – as one
- With shadow line

Through:

- Air circulation
- All-over adhesion

Floor connection:

- Air circulation flow possibilities
- If no, only all-over bonding

Ceiling connection:

- Air circulation flow possibilities
- If no, only all-over bonding

Fixing possibilities:

- Hanging system
- Pu adhesive systems
 - Sika Tuck Panel
 - Innotec
 - SFS Adhesive System
- Air circulation
- All-over adhesion

Further: check on correct and possible dimensions to allow this or another system.

■ TECHNICAL DATA SHEET DISPOSAL - PRODUCTS AND PACKAGING



■ EU – Disposal

HIMACS behaves in an environmentally neutral manner. Waste key number in accordance with the European Waste Key Directory Regulation (AVV) (*) **):

Commission Decision 2000/532/EC of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to

Article 1(a) of Council Directive 75/442/EEC on waste, and
Council Decision 94/904/EC

establishing a list of hazardous waste pursuant to

Article 1(4) of Council Directive 91/689/EEC

on hazardous waste (5) should be amended in the light of the notifications from Member States pursuant to

Article 1(4), second indent, of Directive 91/689/EEC.

The measures provided for in this Decision are in accordance with the opinion of the Committee established by Article 18 of Directive 75/442/EEC,

Decision 2000/532/EC

Footnote / source:

*)

https://www.umweltbundesamt.de/sites/default/files/medien/2503/dokumente/abfallverzeichnis-verordnung_2016.pdf

**)

<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1434551761079&uri=CELEX:32001D0118>

■ EU – Disposal

HIMACS behaves in an environmentally neutral manner. Waste key number in accordance with the European Waste Key Directory Regulation (AVV) *) **):

HIMACS sheet material

12 01 05 Plastic shavings and rotary shavings
17 02 03 Plastics (= HIMACS and cured HIMACS adhesive)

When processed with other building materials:

17 09 04 mixed construction and demolition waste, with the exception of those covered by 17 09 01, 17 09 02 and 17 09 03

HIMACS adhesive (unmixed)

07 02 14 Waste of additives containing hazardous substances
14 06 05 Sludge or solid waste containing other solvents
If adhesive is mixed, this is to be treated like sheet material:
17 02 03 Plastics

Packaging:

15 01 01 Paper and cardboard packaging
15 01 02 Plastic packaging
15 01 03 Wooden packaging

Packaging adhesive cartridges:

15 01 10* Packaging containing residues of dangerous substances or contaminated by hazardous substances

ENG

Footnote / source:

*)

https://www.umweltbundesamt.de/sites/default/files/medien/2503/dokumente/abfallverzeichnis-is-verordnung_2016.pdf

**)

<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1434551761079&uri=CELEX:32001D0118>

HIMACS WARRANTY

HIMACS 15 YEARS LIMITED INSTALLED WARRANTY TERMS



This limited warranty covers all HIMACS products manufactured and or marketed by LX Hausys Europe. The warranty covers also finished products when fabricated and installed by a member of the HIMACS Quality Club. LX Hausys Europe expressly warrants to the owner of a HIMACS installation made following the application, fabrication and installation guidelines published by LX Hausys Europe for HIMACS that it will, repair or replace HIMACS, if the product fails due to any product manufacturing defect during the first 15 years after installation. LX Hausys Europe will cover in that case the costs related to installation, transportation and fabrication on top of the material.

The warranty of the original purchaser can be transferred to the next owner. A purchase receipt or other proof of date of original purchase from one of our HIMACS Quality Club members will be required before warranty service is rendered. In case the above mentioned document is unavailable, the warranty will not be applicable.

This warranty will not apply to damage caused in the following cases:

1. Improper fabrication and installation of your HIMACS :

- fabrication and installation not done by a HIMACS Quality Club member;
- failure to follow procedures recommended in the application, fabrication and installation guidelines (sheets 6 mm for vertical application, 9 mm for horizontal application without heat source and 12 mm sheet for horizontal application with heat source or more structural support);
- faulty or improper installation, including seams (need to use HIMACS adhesive only);
- a non-authorized modification of the installation.

2. Failure to apply the HIMACS Use & Care guidelines including:

- improper or inadequate general maintenance;
- hard chemicals or physical aggression of the installation;
- exposure to excessive heat due to direct heat (e.g. hot pots and pans put without protection on the surface without trivet with rubber legs or protective pad) or due to a bad thermal isolation (e.g. for cooking plates, bains-marie, etc.);
- pouring boiling liquids into HIMACS shapes without running the cold tap as well;
- force majeure.

3. HIMACS Colours and gloss finish of HIMACS

- the basic HIMACS material is identical for every colour but it is important to note that darker and more heavily pigmented colours will show dust, scratches, haziness, marks left by hard water and other ordinary wear and tear more noticeably than lighter textured colours.
- therefore colours marked with a * are less suitable for applications that are exposed to extensive surface contact such as worktops located in heavy traffic area as an example. Disclaimer colours (mentioned with a * on the brochure and on www.himacs.eu) are not covered by the present warranty.
- due to specific characteristics and properties of the Marmo colours, which have a veined effect, special consideration has to be taken into account with jointing and the use of coved up-stands. Veining may vary from sheet to sheet.
- applications using inappropriate gloss finish for the intended end use (as mentioned in the colours brochure or in any other HIMACS documentation) will not be covered under this warranty.

4. DecoBowl™ and DecoTray™ are no longer covered under the 15 years limited installed warranty, as off 01.01.2008 and DecoSink as off 01.06.2006. All cast shapes sold by LX Hausys Europe are covered by the present warranty.

5. HIMACS repairs or replacements under this warranty must be executed by a member of the HIMACS Quality Club.

6. This warranty is applicable until superseded, only on installations:

- executed after 01.09.2003 in Europe; For any other location, please consult LX Hausys Europe.
- executed by a member of the HIMACS Quality Club;
- installations which have not been moved from their original location;
- installations that are properly maintained and used applying the Use & Care guidelines.

7. LX Hausys Europe's obligation together with the HIMACS Quality Club members is limited solely to the repair or replacement of the products purchased, including reasonable and necessary labour charges when the claim is acceptable within the warranty terms. In case HIMACS is not in a position to repair or replace, depending on the case, a defective product, LX Hausys Europe commits to reimburse, within a reasonable time frame after the filing of the claim, the purchase price of the HIMACS material, as long as the customer returns to LX Hausys Europe or the assigned HIMACS Quality Club member the defective material.

8. No other expressed or implied warranties of merchantability or fitness for a particular purpose are made by this warranty except for those expressly provided herein. Under no circumstances shall LX Hausys Europe be liable for any loss or damage arising from the purchase, use or inability to use this product, or for any special, indirect, incidental or consequential damages.
9. This warranty entitles the purchaser to specific legal rights. Other rights may also be available, which may vary from country to country.
10. To obtain service under this warranty, please contact directly the source from which you purchased your [™]. Our HIMACS Quality Club member will evaluate your claim and when accepted will develop a practical and satisfactory solution. For any additional question with regard to the present warranty, you can contact LX Hausys Europe by writing to the following address:
LX Hausys Europe GmbH
HIMACS – Warranty Department
Lyoner Str. 15
60528 Frankfurt am Main
Germany
Please include your name, address, phone/fax number and e-mail in all correspondence as well as your purchase receipt. We will respond to all inquiries within 30 working days.
11. The present 15-year limited installed warranty for HIMACS from LX Hausys Europe is ruled under the German law. Any argumentation in relation to this 15-year limited installed warranty, its interpretation or its execution will fall under the exclusive competence of the courts of the city of Frankfurt am Main, Germany.
12. HIMACS colours are particularly suitable for outdoor applications because of their good UV-resistance. Their colour-fastnesses are guaranteed 5 years for a tolerance of ΔE_2 to ΔE_5 according to the colour:
 - For ΔE_2 : S828 Alpine White UV+
 - For ΔE_5 : S028 Alpine White, S728 Alpine White FR, S034 Diamond White, S029 Ivory White, S009 Cream, S002 Almond, G034 Arctic Granite, G004 White Quartz, G038 Sea Oat Quartz, G048 Beach Sand, G002 Grey Sand, S302 Opal

European head office:

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60528 Frankfurt am Main
Germany

Tel: +49 (0)69 583 029 463

Quality and environmental responsibility

All HIMACS products are manufactured to ISO 9001 quality procedures for systems and processes, as well as ISO 14001 environmental protection standards



■ LX Hausys Europe GmbH

European Headquarters:
LX Hausys Europe GmbH
Lyoner Str. 15 60528
Frankfurt am Main, Germany

