

Solid Surface Material

HI-MACS®
Natural Acrylic Stone™

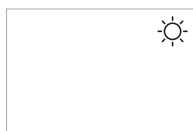
TECHNICAL DATA SHEET

HI-MACS® ULTRA-THERMOFORMING S928 ALPINE WHITE |
Solid Colour Family

Photo: Ronald Smits

SECTION 1: Product

1.1 HI-MACS® Ultra-Thermoforming



Alpine White
 S928 (12mm)
 ΔE 5

Some HI-MACS® colours are particularly suitable for outdoor applications because of their good UV-resistance. HI-MACS® offers a 10 Year Warranty on colours' UV resistance for a tolerance of ΔE5 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.

1.2 LRV

SHEET COLOUR CODE	SHEET COLOUR NAME	COLOUR FAMILY	SHEET LRV VALUE
S928	Alpine White	Solid	85.12

1.3 Colour Codes

SHEET COLOUR CODE	SHEET COLOUR NAME	THICKNESS	SHEET SIZE (MM)	ADHESIVE COLOUR CODE	ADHESIVE COLOUR NAME
S928	Alpine White	12	760 x 3680	H16	Alpine White

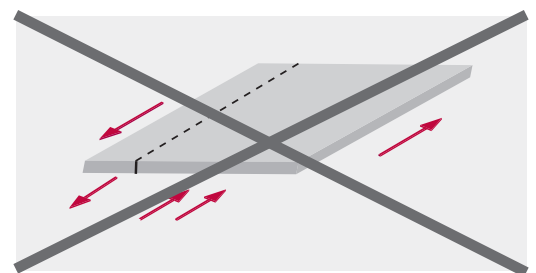
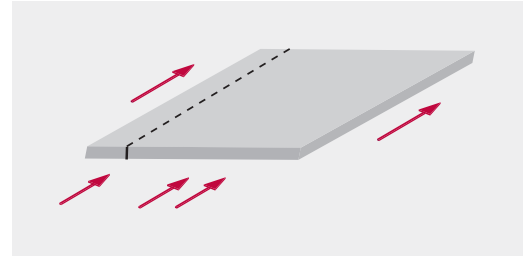
1.4 Colour Codes

CODE	NAME	RAL DESIGN	RAL CLASSIC	NCS	PANTONE
S928	Alpine White	-	9003	-	11-4201 TPX

SECTION 2: Fabrication

2.1 Quality check cutting

- When fabricating the new HI-MACS® 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 HI-MACS® 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:



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

2.2 Bonding

- The bonding/jointing process of the standard fabrication of the new HI-MACS® Ultra-Thermoforming, can be done as recommended for all other available sheet colours.



Edges:

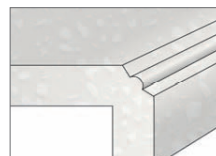
- As recommended for our standard products: for further details:
See TB-no.6 Edge.



Standard with radius



Standard with bevel



Standard with profile



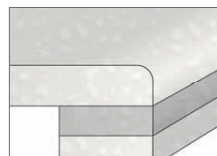
Standard with wave



profil Standard with back bevel



Bull-nose



Sandwich



Waterfall edge



Standard v-grooved

2.3 Sanding (finishing)

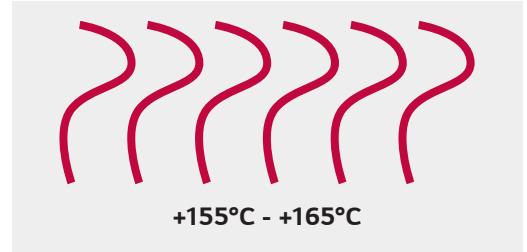
- The reference is as recommended with our standard products:
- For further details: **See TB-no.4 Sanding.**



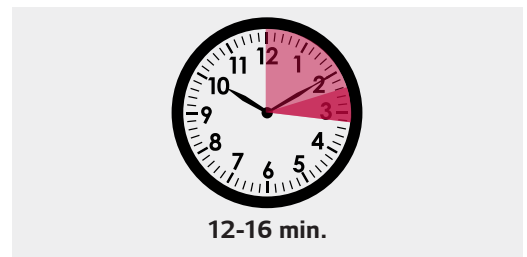
FINISH-LEVEL	MATT-FINISH		SEMI-GLOSS-FINISH		HIGH-GLOSS-FINISH	
HI-MACS® colour family	for all Solid colours		for all colours of: Sands, Pearls, Quartz, Granite, Volcanics		for all Solid colours	
Sanding steps	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper	micron-sandpaper	grid-sandpaper
Step 1	100/80µ	150/180	100/80µ	150/180	100/80	150/180
Step 2	60	220	60	220	60	220
Step 3	"useit"® Superpad S/G 240 or Maroon Scotch Brite™ 7447	280	40/30	280/320	30	280/320
Step 4	industrial paper towel	"useit"® Superpad S/G 240 or Maroon Scotch Brite™ 7447	"useit"® Superpad S/G 240 or Maroon Scotch Brite™ 7447	380	15	380/400
Step 5		industrial paper towel	industrial paper towel	"useit"® Superpad S/G 240 or Maroon Scotch Brite™ 7447	9	600/800
Step 6				industrial paper towel	Finesse-it™ Finisch-component	1200
Step 7						1500
						1800
						2500

2.4 Thermoforming

- For thermoforming process we recommend using a pre-heating oven.
- For pre-heating 12mm product heat from top & bottom.
- **Follow our general guidelines TB-no.8 "Thermoforming".**



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



- Thermoforming comparison test:
 Standard HI-MACS® S028 Alpine White vs
 HI-MACS® 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 Mold Development History

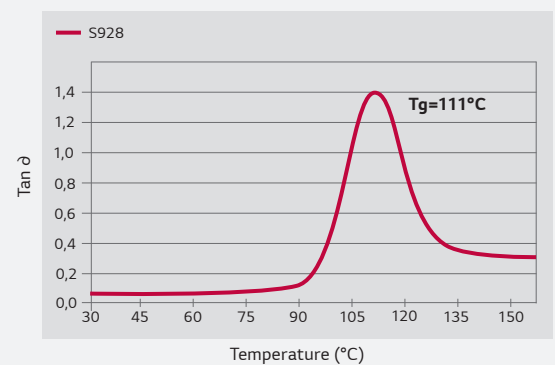
New mold production for evaluation of sink ball formability

	BEFORE	AFTER
Mold Shape		
Mold Depth	Depth: 110 mm	Depth: 142 mm
Remark		30% enhanced conditions

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

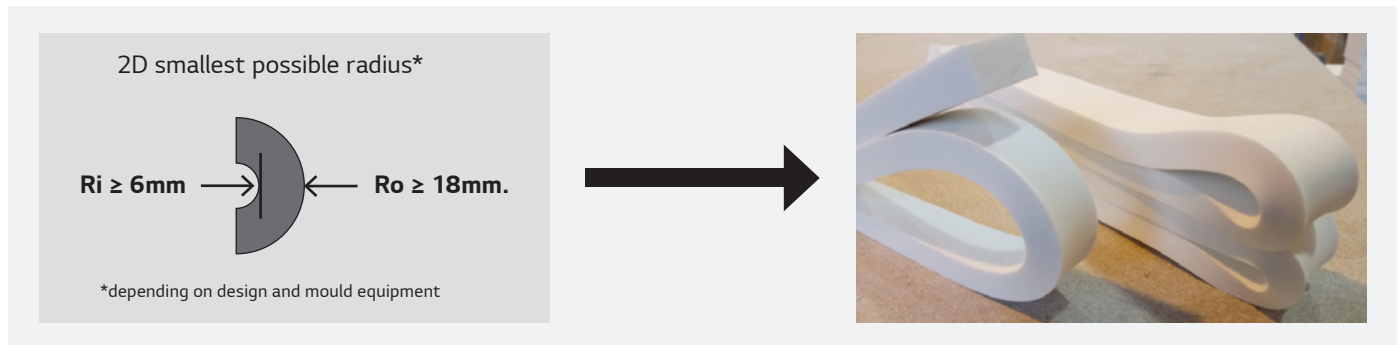


S928 Tan δ



- 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:



SECTION 3: Technical Data

3.1 Technical Specification Data

Sample name: Artificial Marble (Solid_Thermoforming)

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 (24h Immersion)	%	-	0.02	ASTM D570-98 (2010) e1
Appearance (Discoloration) 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: 190mm, Number of Specimen: 4ea

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

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

- Other testings under process.

■ SECTION 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 LG 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 LG Hausys Europe GmbH cannot anticipate all variations in actual end-use conditions, LG 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.

■ SECTION 5: Warranty

The 15-year limited Warranty for HI-MACS® where offered, does not cover damage caused by failure to follow proper fabrication and installation procedures and maintenance care, for which LG 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 HI-MACS® Fabrication Guidelines and/or additional Technical Bulletins of latest relevant updates

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