



PRODUCT GUIDE

ENHANCED IMPACT RESISTANCE. EASY TO CUT AND FORM.





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POLYCASA® HIPS

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POLYCASA® HIPS

POLYCASA® HIPS is a rubber-modified polystyrene sheet which offers enhanced impact resistance and is easy to process. The product is available with either a matt finish on both sides or with a matt finish on one side and a glossy surface on the other.

The sheets' surface quality is outstanding and they offer an excellent printing substrate. In addition, they are suitable for thermoforming. Hence, POLYCASA® HIPS sheets are used for applications like screen printing, signages or POS/POP displays.

Sustainable involvement and environmental protection have always been amongst the essential corporate objectives at 3A Composites. The minimisation of risks for man and environment as well as the reduction of environmental pollution through careful and efficient utilisation of resources is part of the corporate philosophy.

Our production site in Pribram, Czech Republic, is certified according to DIN EN ISO 9001, the standard defining internationally recognised requirements for quality management. The site is also participating in the programme Operation Clean Sweep® (OCS), which is dedicated to preventing plastic resin loss and to ensuring that this material does not end up in the environment.

Ongoing efforts to significantly reduce CO² emissions are being made at the POLYCASA® HIPS production site by scaling back energy and water consumption, increasing productivity and avoiding waste. A sustainability project has achieved a reduction in energy consumption of least 10% per kilogram of the product. Open cooling cycles are currently being replaced by a closed system to bring about significant savings in water consumption and resulting in a reduction of up to 5000 m³ (or 5 million litres) of water. In addition, investments are being made in new and sustainable production technologies, for instance, by installing a new, energy-efficient production unit to replace two older production lines.

POLYCASA® HIPS sheets are subject to the highest quality standards and stringent monitoring. Our top priority is to ensure that POLYCASA® HIPS sheets do not contain any hazardous substances. None of the raw materials used to produce POLYCASA® HIPS sheets contain any heavy metals.

Read more about our commitment to sustainability starting on page 8.

POLYCASA® HIPS – ENHANCED IMPACT RESISTANCE. EASY TO CUT AND FORM.

POLYCASA® HIPS

ENHANCED IMPACT RESISTANCE. EASY TO CUT AND FORM.

CHARACTERISTICS

- Superior surface quality
- Excellent low temperature impact performance
- Suitable for thermoforming
- Smooth surface with a choice of finish: matt or glossy
- Excellent for printing
- Outstanding electrical insulation properties
- Food contact approved – non UV version

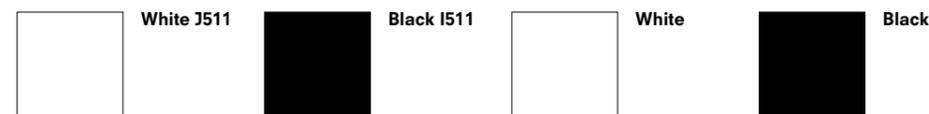
APPLICATION

- Displays (POS/POP)
- Signage | Lettering
- Partitions | Cladding
- Refrigerator liners
- Sanitary ware
- Bath panels
- Shower wall panels
- Vacuum formed parts
- Mobile home and caravan fittings

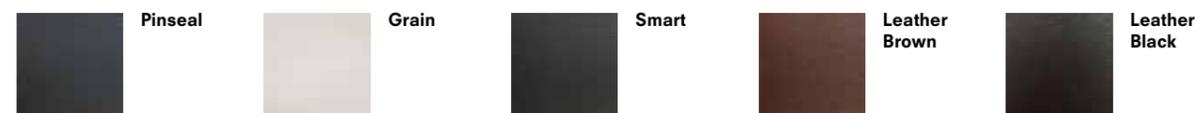
PROCESSING

- Digital printing | Screen printing
- Laminating | Painting | Spray painting | Lacquering
- Cutting | Die cutting | Plotting | Contour milling
- Laser cutting | Water jet cutting | Sawing
- Punching | Gluing | Drilling | Screwing
- Thread cutting
- Folding (V-groove) | Cold bending
- Hot bending
- Thermoforming

COLOURS



PATTERNS



PRODUCTS			POLYCASA® HIPS MATT/GLOSSY	POLYCASA® HIPS MATT/MATT
GENERAL				
Density	ISO 1183	kg/m ³	1050	1050
Food contact	EU 10/2011	–	conform	conform
MECHANICAL				
Tensile modulus	ISO 527-2	MPa	1730	1670
Tensile strength	ISO 527-2	MPa	24	20
Elongation at break	ISO 527-2	%	2.9	42
Stress at break	ISO 527-2	MPa	18	16
Flexural modulus	ISO 178	MPa	1850	1800
Flexural strength	ISO 178	MPa	34	32
Impact strength Charpy, notched (glossy side impacted)	ISO 179-1/1eU	kJ/m ²	9	–
Impact strength Charpy, notched (matt side impacted)	ISO 179-1/1eA	kJ/m ²	6	10
Ball indentation hardness	ISO 2039-1	MPa	80	80
OPTICAL				
Gloss value	DIN 67530	%	>100	<75*
THERMAL				
Heat deflection temperature (method A)	ISO 75-2	°C	82	84
VICAT temperature (method B 50)	ISO 306	°C	92	91
Coefficient of linear thermal expansion	ISO 11359-2	mm/m x °C	8	8
Max. service temperature – continuous use	DIN 52612	°C	70	70
Thermal conductivity	ISO 22007-1	W/mK	0.16	0.16
Dimensional change on heating	ISO 14631	%	5	5.5
Fire resistance	EN 13501-1	Classification	E	
	UL94	Classification	HB	
ELECTRICAL				
Dielectrical strength	IEC 60243-1	kV/mm	155	155
Volume resistivity	IEC 62631-3-1	Ω m	>10 ¹⁶	>10 ¹⁶
Surface resistivity	IEC 62631-3-2	Ω	>10 ¹³	>10 ¹³
Relative permittivity (100 Hz – 1 MHz)	IEC 60250	–	2.5	2.5
Dielectric dissipation factor (100 Hz – 1 MHz)	IEC 60250	–	10.4	10.4

Note: Technical data of our products are typical ones for POLYCASA® HIPS. The actually measured values are subject to production variations. All mentioned data is based on sheets in a thickness of 4 mm.

* Gloss level depends on thickness of sheet.

SUSTAINABILITY

MISSION: TOGETHER. RESPONSIBLE.

Sustainability is at the core of everything we do. Our corporate ecological commitment is summed up by the **MISSION: TOGETHER. RESPONSIBLE.** As we also apply and comply with this mission in regard to our products, we have created a classification system. The five different categories in our **FIVE-DOT-MISSION** system indicate the factors with the greatest impact on sustainability. Our intention is to offer our partners guidance with their purchasing decision-making and to provide a transparent system. A system which focuses on the use of materials, the CO₂ content, the product life cycle and, of course, recycling, a topic of particular relevance for our products. Our FIVE-DOT-MISSION makes an assessment of a product on the basis of five categories and awards points per category, the product is then assigned to one of the five coloured DOTs. By this means we achieve a transparent, quick valuation logic which we can also use to gauge product innovation and improvement at 3A Composites.

THE FIVE-DOT CATEGORIES ARE:

1. BIOBASED CONTENT
Depending on the product, different raw materials are used to manufacture our panels. In this case, we look at the percentage of renewable raw materials used in our products. Our aim is to increase the percentage whenever possible and appropriate.

2. RECYCLED CONTENT
The industry selects recycled raw materials for use in the manufacture of new products which also fulfil requirements such as fire ratings, processing prerequisites and customer expectations in terms of functionality and appearance. This category is where we gauge the proportion of high quality recycled raw material in our products' total material input.

3. FOSSIL CO₂ BOUND IN THE MATERIAL
This category shows the weight of fossil CO₂ embedded in our panels. Differences here are principally due to the raw material type and origin, the density, the composition and the proportion of recycled content.

4. PRODUCT LIFE CYCLE
The plastic sheets and composite panels we produce are used by our customers for a longer period of time. In contrast to products used in the short term, these longer-term alternatives make an active contribution to saving resources. In this category we show our panels' average service life. Material properties result in disparities, so life cycles range from <1 year to even >30 years.

5. RECYCLABILITY
One of the most important aspects of sustainability is contributing to environmental protection by saving valuable raw materials and avoiding waste. Unlike the second category "recycled content", in this assessment category, we show options for recycling the panels after they have been in use. There are already, for instance, established recycling loops for paper and metals. At some production sites, the material can already be returned, so that material for new panels can be created from it. As a company, we came to the conclusion that thermal recycling does not seem sustainable enough, so it is not included in our FIVE-DOT classification. Instead, we are actively working with partner companies to establish a closed-loop, sustainable and future-oriented recycling economy.

As many as 3 points can be achieved in each of the categories presented, totalling a maximum of 15 points. According to the total number of points achieved (1-15), the FIVE-DOT classification is conducted using the following colour gradation.



Transparency is important to us! We will review the product assessment annually to see in which areas the product can be improved. We have set ourselves the goal of achieving the majority of our sales with products which achieve a rating of ≥ 7 points in the FIVE-DOT classification by 2030.

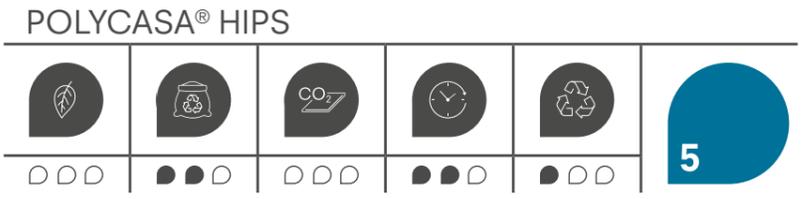
Join us on our sustainable mission!



SUSTAINABILITY

POLYCASA® HIPS FIVE-DOT-MISSION

POLYCASA® HIPS rubber-modified polystyrene sheets have been assessed in line with the criteria described above. The product currently achieves a FIVE-DOT classification of 5 points in total.



RECYCLED CONTENT
 The current production of our POLYCASA® HIPS sheets already contains a proportion of externally recycled material. Additionally, the advanced co-extrusion technology at the production site allows us to use recycled material in the core without significantly altering the sheets' mechanical properties or appearance. We aim to continue increasing the proportion of recycled material in the sheets in the future.

All raw materials used in our POLYCASA® HIPS sheets comply with the requirements in the current version of the European Union's Chemicals Regulation (REACH). In particular, POLYCASA® HIPS sheets are free of any of the substances listed in the current version of the ECHA Candidate List of Substances of Very High Concern (SVHC).

PRODUCT LIFE CYCLE
 Our POLYCASA® HIPS family is made of high impact polystyrene, a durable thermoplastic polymer which is suited to interior applications and, in particular, to applications involving demanding temperature conditions, e.g. for interior refrigerator cladding. The version with UV-protection provides both good impact strength and resistance to weathering, and can be used for outdoor applications for periods of several years. In addition, the sheets offer excellent electrical insulation properties.

RECYCLABILITY
 POLYCASA® HIPS sheets can be recycled and then reused without significant impact on the material properties. Styrene based polymers can even be recycled numerous times.



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