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HIPS - Product Datasheet

Description

High Impact Polystyrene (HIPS) is a general-purpose opaque material that has a good balance of stiffness and toughness. It has very good impact strength and is an excellent all-purpose material. It is very easy to thermoform and fabricate.

Applications

Point of Sale, Sanitary, construction, trays, containers, toys.

Key Features

Surface Aesthetics

HIPS can have very good gloss and matt finishes. It is very easy to pigment, allowing for a broad spectrum of colours and special affects.

Thermoforming

Easy to thermoform. It has a broad visco-elastic range that gives good melt strength over a large temperature range.

Typical Physical Properties

Properties	Unit	Standard	Method	Value
Density#	g/cm^3	ISO1183	-	1.06
Tensile Stress at Break	MPa	ISO 527	50 mm/min	16
Elongation at Break	%	ISO 527	50 mm/min	>35
Tensile Modulus	MPa	ISO 527	1 mm/min	1500
Flexural Strength	MPa	ISO 178	2 mm/min	39
Charpy Notched Impact Strength	kJ/m^2	ISO 179	1eA at 23°C	≥7
Vicat Softening Point	°C	ISO 306	B50/oil	90
Heat Distortion Temperature	°C	ISO 75	HDT/A 1.8MPa	78

#The density quoted should only be used as a guide. This value can change depending upon the type and quantity of pigments or additives used.

Product Availability

Colour

Standard colours, special affects or customer matches.

Finish

Natural matt, embossed or Gloss capped.

Thickness

1,0 mm to 10 mm

Sheet Size Specifications

Gauge	Width	
	Minimum	Maximum
1,0 mm to 10 mm	500 mm	2000 mm

NB: available sizes may vary depending on gauge, colours, embosses and order size, please ask confirmation to sales department.

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Additional Information

Thermoforming

Easy to thermoform. It has a broad visco-elastic range that gives good melt strength over a large temperature range. Typical forming temperatures are between 130 °C to 180 °C depending upon sheet thickness and mould detail required. Normally no pre-drying is required if the material is kept in dry conditions.

Fabrication

ADHESIVES: When gluing, make optimum use of the good solubility of the polystyrene by using either a solvent or a solvent-based adhesive. Examples of solvent-based adhesives are as follows: toluol, methylene chloride, and tetrahydrofurane. The adhesion of polystyrene to other materials occurs by using either a permanent or two-component adhesive. It is recommended, however, to always seek advice from an adhesive specialist first.
WELDING: Ultrasonic welding is preferable, but hot gas, hot plate and heat impulse welding methods are also possible. High frequency welding, due to its small dielectric losses, is not suitable.
CUTTING: Semi-finished material made from polystyrene is easily cut and processed, i.e. punched, sawn, drilled, milled, cut with a rotary saw, etc. Moreover, processing tools normally used for metal and woodwork can be utilised. Because of the poor heat conductivity and the relatively low softening temperature, it is recommended that the parts must be cooled with blown air or water.
PRINTING/PAINTING: Typical printing techniques used are silk-screen, offset litho and flexographic. In silk-screen printing, coordinated, solvent-based colours are used, which negate the need for a special surface treatment prior to application. In contrast, offset printing on polystyrene can sometimes require corona treatment of the semi-finished material to improve ink transfer and adhesion. When using solvent based paints it is always advisable to test for suitability, as significaint levels of solvents may chemically attack the polystyrene.

Certification/Approvals

The following approvals are only available on request, and must be specified during ordering:
Food: European Legislation 2002/72/EC. ROHS: European Legislation 2002/95/EC.

UV Resistance

Natural HIPS when exposed to direct UV may discolour and become brittle in a matter of months. Black pigmented sheet will improve UV resistance. An addition of a UV stabiliser can further improve its longevity.

Cleaning and Maintenance

Typical detergents and soaps dissolved in warm water can be used to effectively clean surface contamination from the surface.

Chemical Resistance

Chemical resistance is influenced by many factors, including concentration, temperature, exposure time and material stress. Therefore the data below should only be used as a guide.

Reagent	Chemical resistance		Reagent	Chemical resistance
Acetone	Poor		Chloroform	Poor
Acid – (Weak)	Very Good		Citric Acid Solution	Good
Acid – (Strong)	Poor		Common Salt	Excellent
Apple Juice	Very Good		Detergents	Good
Beef Fat	Very Good		Diary Products	Good
Butter	Good		Diesel	Poor
Base (Weak)	Excellent		Ethyl Alcohol	Good
Base (Strong)	Poor		Fertilisers	Good
Carrot Juice	Excellent		Petrol	Poor

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