Product Data Sheet

EC6600

Rubber Modified High Impact Polystyrene

Typical Applications	Features
• Lithographic sheet • Printed toys and games • Point of purchase displays • Silk screen printing	• Excellent printability • Matte surface finish • High heat distortion temperature • Good low temperature toughness

Property[1]	Condition	English[2]	Units	SI[2]	Units	Thickness	ASTM
Melt Flow Rate	200 °C 5.0 kg	2.0	g/10 min	2.0	g/10 min		D1238
Tensile Strength	2.0 in./min	3,200	psi	22	MPa	0.050 in	D638
Tensile Modulus	2.0 in./min	250,000	psi	1,720	MPa	0.050 in	D638
Tensile Elongation	2.0 in./min	60	%	60	%	0.050 in	D638
Flexural Strength	0.1 in./min	5,500	psi	38	MPa	0.250 in	D790B
Flexural Modulus	0.1 in./min	235,000	psi	1,620	MPa	0.250 in	D790B
Notched Izod Impact	73 °F	2.2	$ft-lb/_{in}$	117	J/m	0.125 in	D256
Vicat Softening Temp.	Rate B	220	°F	104	°C	0.250 in	D1525
Deflection Temp. Under Load (DTUL)	264 psi (1.8 MPa)	189	°F	87	°C	0.250 in	D648
Linear Mold Shrinkage	24 hours	0.004 – 0.008	in/in	0.004 – 0.008	mm/mm		D955
Specific Gravity		1.03					D792
Bulk Density		38-42	lbs/ft^3				

[1]Physical properties were determined on specimens at 23 °C (73 °F) and 50% relative humidity unless otherwise specified.
[2]Typical values indicate median laboratory results and are listed as general reference information, not material specification limits.

Before using this product, the user is advised and cautioned to make its own determination and assessment of the safety and suitability of the product for the specific use in question and is further advised against relying on the information contained herein as it may relate to any specific use or application. It is the ultimate responsibility of the user to ensure that the product is suited and the information is applicable to the user's specific application. Americas Styrenics LLC does not make, and expressly disclaims, all warranties, including warranties of merchantability or fitness for a particular purpose, regardless of whether oral or written, express or implied, or allegedly arising from any usage of any trade or from any course of dealing in connection with the use of the information contained herein or the product itself. The user expressly assumes all risk and liability, whether based in contract, tort or otherwise, in connection with the use of the information contained herein or the product itself. Further, information contained herein is given without reference to any intellectual property issues, as well as federal, state or local laws which may be encountered in the use thereof. Such questions should be investigated by the user.

FDA
Americas Styrenics, LLC EC6600 natural complies with U.S. Food Additive Regulation 21 CFR 177.1640 for polystyrene and rubber modified polystyrene, which states that such materials may be used in articles that contact foods, subject to any limitations described in the regulations. The regulation and specific Americas Styrenics, LLC certification letters should be consulted for full details.

MEDICAL APPLICATION CAUTION:
Do not use this Americas Styrenics, LLC material in medical applications involving permanent implantation in the human body or permanent contact with internal body fluids or tissues. Do not use this Americas Styrenics, LLC material in medical applications involving brief or temporary implantation in the human body or contact with internal body fluids or tissues unless the material has been provided directly from Americas Styrenics, LLC or by an authorized or approved Americas Styrenics, LLC distributor under a contract which expressly acknowledges the contemplated use. Americas Styrenics, LLC makes no representation, promise, express warranty or implied warranty concerning the suitability of this material for use in implantation in the human body or in contact with internal body fluids or tissues.

Typical Molding Machine Settings		
Zone	**SI Conditions**	**Conditions**
Nozzle	213 - 243 ° C	415 - 470 ° F
Zone #1	218 - 249 ° C	425 - 480 ° F
Zone #2	218 - 249 ° C	425 - 480 ° F
Zone #3	199 - 213 ° C	390 - 415 ° F
Backpressure	2 - 12 bar	25 - 175 psi

Mold Temperatures

High mold temperatures produce higher surface gloss and minimize flow marks and weld lines. Orientation is also reduced, thereby improving the properties of the part. However, high mold temperatures can require longer cycles in order to set up the polymer. Low mold temperatures are used for faster cycles. The parts will lack gloss, have poorer weld lines and a higher level of molded-in stress. Recommended mold surface temperatures for polystyrene range from 60° to 150° F. Use the highest temperature possible where you can maintain the desired cycle time.

Feed

The feed control should be adjusted to equal the desired shot weight. A general rule of molding parts with a minimum amount of internal stress and free of sink marks is to adjust the feed to keep the plunger from bottoming out. The feed should be adjusted to give a cushion of about ¼ inches. A larger cushion should be used only if the material contains moisture, air and/or excessive volatile content that show up as silver or black streaks in the molded part

Fill Rate

Fast fill rates generally provide better uniformity in part size and quality. Rapid fill rates are possible if gate sizes and locations are properly selected. Gates too small for a particular part thickness can cause problems when filled at rapid speeds. Use the fastest fill rate the mold design and part will tolerate understanding that not all applications can tolerate a fast fill rate. Heavy section parts require a slow fill to avoid flow and weld marks on the surface of the part.

Screw Forward

Screw forward time should be controlled to prevent the plastic from flowing into or back from the cavity. Screw forward time is a function of mold and material temperature, part thickness, gate and runner size. Decreasing screw forward time increases part shrinkage. Allowances must be made in the screw forward time and hold pressure to minimize shrinkage and sink marks. Excessive screw forward time can over-pack the runner system or sprue, causing sticking

Extrusion

Zone	SI Conditions	Conditions
Zone #1	177 - 193 ° C	350 - 380 ° F
Zone #2	182 - 204 ° C	360 - 400 ° F
Zone #3	188 - 210 ° C	370 - 410 ° F
Zone #4	199 - 216 ° C	390 - 420 ° F
Zone #5	204 - 221 ° C	400 - 430 ° F
Zone #6	204 - 221 ° C	400 - 430 ° F
Melt Pump, Adapter, Pipes, Screen Changer	193 - 232 ° C	380 - 450 ° F
Die	199 - 232 ° C	390 - 450 ° F
Polish Rolls	66 - 104 ° C	150 - 220 ° F
Melt Temp.	193 - 232 ° C	380 - 450 ° F
Head Pressure	10 - 21 MPa	1500 - 3000 psi

Extrusion Conditions

A lower temperature value within the typical temperature range denotes usage of the material with a styrene butadiene block copolymer in impact-modified blends.
A screw design with a mixing head and a compression ratio of roughly 4:1 or a static mixing device is recommended for proper dispersion when using colorants or other additives.
The extruder die should be set from 110 – 150% of the required sheet thickness. The first polish roll gap should be set roughly 95% of the finished sheet thickness while the second polish roll gap can be set greater than or equal to 100% of the sheet thickness depending on what surface needs to be imparted upon the sheet by the final roll.
For all polystyrene products except OPS, the sheet orientation should not exceed 30%. Brittleness and tear strength of the sheet, especially in the machine direction, is drastically deteriorated at orientation levels >30%.
Recommended temperatures are typical ranges only.