



STYRON 478 High Impact Polystyrene Resin

STYRON™ 478 is a high impact polystyrene with high flow, good gloss, excellent stiffness, high heat and impact resistance compared with other Dow high impact polystyrene resins.

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|----------------------|--|--|
| Main Characteristics | <ul style="list-style-type: none"> • High flow • Good gloss • Excellent stiffness | <ul style="list-style-type: none"> • High heat and high impact resistance • FDA Compliant ⁽¹⁾ |
| Applications | <ul style="list-style-type: none"> • Appliances • Housewares • Toys | <ul style="list-style-type: none"> • Medical • Consumer electronics • Injection molding |

Properties ⁽²⁾	Test Method		S.I.		English		Metric		
	ISO	ASTM	Value	Unit	Value	Unit	Value	Unit	
Physical									
Melt flow rate (200°C / 5 kg)	1133 /8	D 1238	6.0	g/10 min	6.0	g/10 min	6.0	g/10 min	
Specific Gravity	1183	D 792	1.04		1.04		1.04		
Linear Thermal Expansion (10 ⁻⁵)	1135 9	D 696	9.0	cm/cm /°C	5.0	in/in/ °F	9.0	cm/cm/ °C	
Mold Shrinkage		D 955	0.003 – 0.007	cm/cm	0.003 – 0.007	in/in	0.003 – 0.007	cm/cm	
Thermal									
Vicat Softening Temperature (120°C/hr, 1 kg)	306A	D 1525- B	104	°C	220	°F	104	°C	
Deflection Temperature Under Load (Injection molded)	75A	D 648							
@ 0.45 MPa (66 psi), Unannealed			87	°C	188	°F	87	°C	
@ 1.8 MPa (264 psi), Unannealed			78	°C	172	°F	78	°C	
Injection Molded Mechanical Properties									
Impact Strength:									
Notched Izod 12.7x3.2 mm (0.5x.125 in) specimen	180/ 4A	D 256							
@ 23°C (73°F)			123	J/m	2.3	ft-lb/in	12.5	kg- cm/cm	
@ -18°C (0°F)			53.4	J/m	1.0	ft-lb/in	5.4	kg- cm/cm	
Gardner Impact @ 23°C (73°F)		D 3029	11.3	J	100	in-lb	120	cm-kg	
Tensile Properties 12.7x3.2 mm (0.5x0.125 in) specimen:									
Yield Tensile Strength (0.2 in/min) rate	5 mm/min	527	D 638	22.6	MPa	3300	psi	226	kg/cm ²
Ultimate Tensile Strength (0.2 in/min) rate	5 mm/min	527	D 638	22.6	MPa	3300	psi	226	kg/cm ²
Ultimate Elongation (0.2 in/min) rate	5 mm/min	527	D 638	45	%	45	%	45	%
Tensile Modulus (0.2 in/min) rate	5 mm/min	527	D 638	2110	MPa	306,000	psi	21100	kg/cm ²

Technical Information



Flexural Properties		1.3 mm/min (0.05 in/min) rate							
Flexural Strength (3-point)	178	D 790	48.5	MPa	7000	psi	485	kg/cm ²	
Flexural Modulus (3-point)	178	D 790	2255	MPa	327,000	psi	22550	kg/cm ²	
Generic Properties									
Rockwell Hardness, R-scale	2309	D 785	105		105		105		
	/2								
Flammability Properties ⁽³⁾									
UL 94 Classification:									
@1.47 mm (0.058 in) thickness			HB		HB		HB		

- (1) When used unmodified for the manufacture of food contact articles, STYRON 478 will comply with Food Additive Regulations 21 CFR 177.1640 under the U.S. Food, Drug and Cosmetic Act. Such uses are subject to good manufacturing practices and any other limitations which are part of the statute or regulations. These should be consulted for complete details.
- (2) Typical properties, not to be considered as specification limits.
- (3) This numerical flame-spread rating is not intended to reflect hazards presented by material under actual fire conditions.

Product Stewardship

Americas Styrenics has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our Product Stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our Product Stewardship program rests with each and every individual involved with Americas Styrenics products – from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Americas Styrenics strongly encourages its customers to review both their manufacturing processes and their applications of Americas Styrenics products from the standpoint of human health and environmental quality to ensure that Americas Styrenics products are not used in ways for which they are not intended or tested. Americas Styrenics personnel are available to answer your questions and to provide reasonable technical support. Americas Styrenics product literature, including safety data sheets, should be consulted prior to use of Americas Styrenics products. Current safety data sheets are available from Americas Styrenics.

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- a. permanent (long term) contact with internal body fluids or internal body tissues. Long term is a use which exceeds 72 continuous hours
- b. use in cardiac prosthetic devices regardless of the length of time involved (Cardiac prosthetic devices include, but are not limited to, pacemaker leads and devices, artificial hearts, heart valves, intra-aortic balloons and control systems, and ventricular bypass assisted devices);
- c. use as a critical component in medical devices that support or sustain human life; or
- d. use specifically by pregnant women or in applications designed specifically to promote or interfere with human reproduction.

Additionally, all Products intended for use in pharmaceutical applications, other than pharmaceutical packaging, must pass the current Pharmaceutical Liability Guidelines.

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Additional Information

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