

STYRON A-TECH 1180

High-Impact Polystyrene Resins

STYRON* A-TECH* 1180 advanced technology polystyrene resin is a high-impact resin with a unique combination of high gloss, high heat, excellent stiffness and good practical toughness. It is designed for injection molding applications.

Main Characteristics

- High gloss
- High heat
- High stiffness
- Good practical toughness
- UL94HB
- FDA compliant⁽¹⁾

Applications

- Air-conditioner
- Refrigerator accessories

Properties ⁽²⁾	Test Method	English		S.I.		Metric	
		Value	Units	Value	Units	Value	Units
Physical							
Melt Flow Rate (200°C/5 kg)	ASTM D 1238	3	g/10 min	3	g/10 min	3	g/10 min
Specific Gravity	ASTM D 792	1.04		1.04		1.04	
Linear Thermal Expansion (10 ⁻⁵)		4.2	in/in/°F	7.6	cm/cm/°C	7.6	cm/cm/°C
Mold Shrinkage	ASTM D 955	0.004 - 0.007	in/in	0.004 - 0.007	cm/cm	0.004 - 0.007	cm/cm
UL94 Classification ⁽³⁾ @ 1.5 mm		HB		HB		HB	
Optical							
60° Gardner Gloss (Mold Temperature 38°C)	ASTM D 523	92	%	92	%	92	%
Injection Molded Properties							
Mechanical							
Yield Tensile Strength	ASTM D 638	4,900	psi	34	MPa	345	kg/cm ²
Ultimate Tensile Strength	ASTM D 638	4,500	psi	31	MPa	317	kg/cm ²
Ultimate Elongation	ASTM D 638	55	%	55	%	55	%
Flexural Strength	ASTM D 790	8,700	psi	60	MPa	613	kg/cm ²
Flexural Modulus	ASTM D 790	300,000	psi	2,069	MPa	21,127	kg/cm ²
Notched Izod @ 23°C	ASTM D 256	2	ft-lb/in	107	J/m	10.9	kg-cm/cm
Compression Molded Properties							
Mechanical							
Yield Tensile Strength	ASTM D 638	4,100	psi	28	MPa	289	kg/cm ²
Ultimate Tensile Strength	ASTM D 638	3,100	psi	21	MPa	218	kg/cm ²
Ultimate Elongation	ASTM D 638	30	%	30	%	30	%
Flexural Strength	ASTM D 790	7,300	psi	50	MPa	514	kg/cm ²
Flexural Modulus	ASTM D 790	261,000	psi	1,800	MPa	18,380	kg/cm ²
Notched Izod @ 23°C	ASTM D 256	1.5	ft-lb/in	80	J/m	8.2	kg-cm/cm
Thermal							
Vicat Softening Point	ASTM D 1525	223	°F	106	°C	106	°C
Deflection Temperature Under Load @ 1.82 MPa, unannealed	ASTM D 648	167	°F	75	°C	75	°C
Deflection Temperature Under Load @ 1.82 MPa, annealed	ASTM D 648	210	°F	99	°C	99	°C

(1) When used unmodified for food contact applications, this resin will comply with Food Additive Regulation 21 CFR 177.1640 under the US Food, Drug, and Cosmetic Act as amended. The uses cited above are subject to Good Manufacturing Practices and any limitations that are part of the regulations. The regulations should be consulted for complete details.

(2) Typical properties; not to be construed as specifications.

(3) This numerical flammability rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

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Safety and Handling Considerations

Material Safety Data (MSD) sheets for STYRON® polystyrene resins are available from Dow Plastics, a business group of The Dow Chemical Company and its subsidiaries. MSD sheets are provided to help customers satisfy their own handling, safety, and disposal needs, and those that may be required by locally applicable health and safety regulations. MSD sheets are updated regularly, therefore, please request and review the most current MSD sheet before handling or using any product.

The following comments are general and apply only to STYRON polystyrene resins as supplied.

Various additives and processing aids used in fabrication and other materials used in finishing steps have their own safe use profile and must be investigated separately.

Hazards and Handling Precautions

STYRON polystyrene resins have a very low degree of toxicity and under normal conditions of use should pose no unusual problems from ingestion, eye, or skin contact. However, caution is advised when handling, storing, using, or disposing of these resins and good housekeeping and controlling of dusts are necessary for safe handling of product. Workers should be protected from the possibility of contact with molten resin during fabrication.

Handling and fabrication of plastic resins can result in the generation of vapors and dusts. Dusts resulting from sawing, filing, and sanding of plastic parts in post-molding operations may cause irritation to eyes and the upper respiratory tract. In dusty atmospheres, use an approved dust respirator.

Pellets or beads may present a slipping hazard. Good general ventilation of the polymer processing area is recommended. Processing may release fumes which may include polymer fragments and other decomposition products. Fumes can be

irritating. At temperatures exceeding melt temperature, polymer fragments can occur. Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

Use safety glasses. If there is a potential for exposure to particles which could cause mechanical injury to the eye, wear chemical goggles. If vapor exposure causes eye discomfort, use a full-face respirator. No other precautions other than clean body-covering clothing should be needed for handling STYRON polystyrene resins. Use gloves with insulation for thermal protection, when needed.

Combustibility

STYRON polystyrene resins will burn and once ignited, may burn rapidly under the right conditions of heat and oxygen supply. Do not permit dust to accumulate. Dust layers can be ignited by spontaneous combustion or other ignition sources. When suspended in air, dust can pose an explosion hazard. Dense black smoke is produced when product burns. Toxic fumes are released in fire situations.

Firefighters should wear positive-pressure, self-contained breathing apparatus and full protective equipment. Water or water fog are the preferred extinguishing media. Foam, alcohol resistant foam, carbon dioxide, or dry chemicals may also be used. Soak thoroughly with water to cool and prevent re-ignition.

Disposal

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. For unused or uncontaminated material, the preferred options include sending to a licensed recycler, reclaimer, incinerator, or other thermal destruction device. For used or contaminated material, the disposal options remain the same, although additional evaluation is required. All disposal methods must be in compliance with national, state and local laws and regulations.

Environment

Generally speaking, in the environment lost pellets are not a problem except under unusual circumstances — when they enter the marine environment. They are inert and benign in terms of their physical environmental impact, but if ingested by waterfowl or aquatic life, they may mechanically cause adverse effects. Spills should be minimized and they should be cleaned up when they happen. Plastics should not be discarded into the ocean or any other body of water.

Product Stewardship

The Dow Chemical Company 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 of our Product Stewardship philosophy, by which we assess the health and environmental information on our products and then take appropriate steps to protect employee and public health and the environment. Our Product Stewardship program rests with every individual involved with Dow products from initial concept and research to the manufacture, sale, distribution, and disposal of each product.

Customer Notice

Dow encourages its customers and potential users of Dow products to review their applications for such products from the standpoint of human health and environmental quality. To help ensure that Dow products are not used in ways for which they were not intended or tested, Dow personnel will assist customers in dealing with ecological and product safety considerations. Your Dow sales representative can arrange the proper contacts. Dow literature, including Material Safety Data sheets, should be consulted prior to the use of Dow products. These are available from your Dow sales representative.

NOTICE REGARDING MEDICAL APPLICATION RESTRICTIONS: The Dow Chemical Company does not recommend any of its polystyrene resins, including samples, for use: (A) in any application which is intended for any internal contact with human body fluids or body tissues; (B) as a critical component in any medical device that supports or sustains human life; and (C) specifically by pregnant women or in any applications designed specifically to promote or interfere with human reproduction.

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