STYRON™ 685D

General Purpose Polystyrene Resin

Trinseo

Message:

STYRON™ 685D is a high heat resistance, high tensile strength and high stiffness, general purpose polystyrene. It is recommended for applications where tensile and melt strength as well as heat resistance properties are important.
Characteristics
High heat
Applications
Media enclosures
Refrigerator accessories
Oriented polystyrene sheets
Complies with
U.S. FDA 21 CFR 177.1640
Europe REGULATION (EC) 10/2011
CAN. HPB NO OBJECTION (WITH LIMITATIONS)
CSA (Canada Standards Association)
Consult Regulations for details.

General Information	
UL YellowCard	E73656-249603
Features	Good Melt Strength High Heat Resistance High Stiffness High Strength
Uses	Appliance Components General Purpose Housings Sheet
Agency Ratings	CSA Unspecified Rating 3 EU No 10/2011 FDA 21 CFR 177.1640 3 HPFB (Canada) No Objection 3
Appearance	Clear/Transparent
Forms	Pellets
Processing Method	Blow Molding Extrusion Blow Molding Film Extrusion Foam Extrusion Injection Blow Molding Injection Molding

Sheet Extrusion

Thermoforming

Physical	Nominal Value	Unit	Test Method
Specific Gravity			
--	1.04	g/cm³	ASTM D792
--	1040	kg/m³	ISO 1183 [1]
Melt Mass-Flow Rate (MFR) (200°C/5.0 kg)	1.5	g/10 min	ASTM D1238
Melt volume-flow rate (200°C/5.0 kg)	1.00	cm³/10min	ISO 1133 [2]
Molding Shrinkage - Flow	0.40 to 0.70	%	ASTM D955
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile modulus	2800	MPa	ISO 527-2 [3]
Tensile Strength			
Yield, Injection Molded	55.2	MPa	ASTM D638
Yield	56.0	MPa	ISO 527-2 [4]
Tensile Strain			
Yield	2.2	%	ISO 527-2 [5]
Break, Injection Molded	4.0	%	ASTM D638
Nominal strain at break	2.2	%	ISO 527-2 [6]
Flexural Modulus (Injection Molded)	3240	MPa	ASTM D790
Flexural Strength			ASTM D790
Compression Molded	80.0	MPa	
Injection Molded	110	MPa	
Impact	**Nominal Value**	**Unit**	**Test Method**
Charpy notched impact strength			ISO 179/1eA [7]
-30°C	2.00	kJ/m²	
23°C	3.00	kJ/m²	
Charpy impact strength			ISO 179/1eU [8]
-30°C	10.0	kJ/m²	
23°C	8.00	kJ/m²	
Notched Izod Impact (23°C)	32	J/m	ASTM D256
Thermal	**Nominal Value**	**Unit**	**Test Method**
Deflection Temperature Under Load			
0.45 MPa	97.0	°C	ISO 75-2 [9]
1.8 MPa, Unannealed	82.8	°C	ASTM D648
1.8 MPa	87.0	°C	ISO 75-2 [10]
Vicat Softening Temperature			
--	108	°C	ASTM D1525
50°C/h, B (50N)	105	°C	ISO 306 [11]
CLTE - Flow	6.7E-5	cm/cm/°C	ISO 11359-2 [12]
Flammability	**Nominal Value**		**Test Method**
Flame Rating [13] (1.47 mm, ALL)	HB		UL 94

Burning Behav. at 1.6mm nom. thickn. (1.47 mm, UL)	HB	ISO 1210 [14]

NOTE	
1.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.
2.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.
3.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.
4.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.
5.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.
6.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.
7.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.
8.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.
9.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.
10.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.
11.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.
12.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.
13.	This rating not intended to reflect hazards presented by this or any other material under actual fire conditions.
14.	Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.

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