

STYRON™ 686E

General Purpose Polystyrene Resin

Overview

STYRON™ 686E is a general purpose polystyrene resin designed for both moulding and extrusion applications. The balance between heat resistance, toughness and flow is exceptional. It also has good dimensional stability and excellent clarity.

Applications:

- Foamed PS sheets used for packaging, e.g. egg trays
- Thin-wall food packages
- Medium and heavy section applications in the injection moulding field

Complies with:

- Europe REGULATION (EC) 10/2011
- U.S. FDA 21 CFR 177.1640
- Consult regulations for details.

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density	1.05 g/cm ³	1.05 g/cm ³	ASTM D792 ISO 1183
Apparent (Bulk) Density	0.60 g/cm ³	0.60 g/cm ³	ASTM D1895 ISO 60
Melt Mass-Flow Rate (MFR) (200°C/5.0 kg)	2.5 g/10 min	2.5 g/10 min	ASTM D1238 ISO 1133
Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Strength ¹ (Yield)	7980 psi	55.0 MPa	ASTM D638 ISO 527-2/5
Tensile Elongation			
Break ^{2, 1}	1.0 to 3.0 %	1.0 to 3.0 %	ASTM D638
Break	1.0 to 3.0 %	1.0 to 3.0 %	ISO 527-2/5
Flexural Modulus			
-- ^{3, 1}	522000 psi	3600 MPa	ASTM D790
--	522000 psi	3600 MPa	ISO 178
Flexural Stress	13100 psi	90.0 MPa	ISO 178
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Rockwell Hardness (R-Scale)	105	105	ISO 2039-2
Ball Indentation Hardness	21800 psi	150 MPa	ISO 2039-1
Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load			
66 psi (0.45 MPa), Annealed	212 °F	100 °C	ASTM D648 ISO 75-2/B
264 psi (1.8 MPa), Annealed	208 °F	98.0 °C	ASTM D648 ISO 75-2/A
Vicat Softening Temperature			
--	212 °F	100 °C	ASTM D1525 ⁴ ISO 306/B50 ⁴
--	225 °F	107 °C	ASTM D1525 ⁵ ISO 306/A120 ⁵
CLTE - Flow	4.4E-5 in/in/°F	8.0E-5 cm/cm/°C	DIN 53752
Thermal Conductivity	1.2 Btu-in/hr/ft ² /°F	0.17 W/m/K	DIN 52612

Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Dielectric Strength	3400 V/mil	140 kV/mm	DIN 53481
Dielectric Constant (1 MHz)	2.50	2.50	ASTM D150
Dissipation Factor (1 MHz)	6.0E-5	6.0E-5	ASTM D150
Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Flame Rating ⁶ (0.06 in (1.6 mm))	HB	HB	UL 94

Additional Information

Compression moulded specimens.