ULTEM™ Resin HU1000

PEI — Saudi Basic Industries Corporation (SABIC)

Product Texts

ULTEM HU1000 resin is an unreinforced amorphous polyetherimide (PEI) resin that may a high glass transition temperature (Tg) of 217°C. The intended use for this material is in medical devices and pharmaceutical applications. The material is biocompatible (ISO 10993 or USP Class VI) and Healthcare management of change applies. The material may offer Steam-, Hydrogen Peroxide-, Gamma-, EtO-, UV-C- and E-beam resistance for repeated sterilization cycles. It may offer global food compliance (FDA, CN, EC). Features are excellent mechanical, electrical and dimensional properties up to high temperatures. The material may offer very good chemical resistance for an amorphous material and is inherently flame retardant offering UL94 V0 and 5V ratings. The material is RoHS compliant. The base material is transparent amber colored but is also available in custom colors - transparent and opaque.

UL Yellow Card Link E121562-100044765

Processing/Physical Characteristics	Value	Unit	Test Standard
ISO Data			
Melt volume-flow rate, MVR	**13**	cm³/10min	ISO 1133
Temperature	**360**	°C	-
Load	**5**	kg	-
ASTM Data			
Melt Flow Index, MFI	**9**	g/10min	ASTM D 1238
Temperature	**337**	°C	-
Load	**6.6**	kg	-

Mechanical properties	Value	Unit	Test Standard
ISO Data			
Tensile Modulus	**3200**	MPa	ISO 527
Yield stress	**110**	MPa	ISO 527
Yield strain	**6**	%	ISO 527
Strain at break	**50**	%	ISO 527
Flexural modulus	**3300**	MPa	ISO 178
Charpy notched impact strength, +23°C	**4**	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	**4**	kJ/m²	ISO 179/1eA
Izod impact strength, +23°C, 4mm	**N**	kJ/m²	ISO 180/1U
Izod impact strength, -30°C, 4mm	**N**	kJ/m²	ISO 180/1U
Izod notched impact strength, +23°C, 4mm	**6**	kJ/m²	ISO 180/1A
Izod notched impact strength, -30°C, 4mm	**6**	kJ/m²	ISO 180/1A
Rockwell hardness	**M 106**	-	ISO 2039-2
Ball indentation hardness	**140**	MPa	ISO 2039-1
ASTM Data			
Tensile Modulus	**3350**	MPa	ASTM D 638
Tensile Strength at Yield	**115**	MPa	ASTM D 638
Elongation at Yield	**7**	%	ASTM D 638
Elongation at Break	**60**	%	ASTM D 638
Flexural Modulus	**3200**	MPa	ASTM D 790
Rockwell Hardness	**M 109**	-	ASTM D 785
Taber Abrasion Resistance	**10**	mg/1000 cycles	ASTM D 1044
Izod Impact notched, 1/8 in	**53**	J/m	ASTM D 256
Izod Impact notched, Low-Temperature	**50**	J/m	ASTM D 256
Temperature	**-30**	°C	-
Izod Impact unnotched, 1/8 in	**1800**	J/m	ASTM D 256

Thermal properties	Value	Unit	Test Standard
ISO Data			
Temp. of deflection under load, 1.80 MPa	**192**	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	**209**	°C	ISO 75-1/-2
Vicat softening temperature, A	**215**	°C	ISO 306
Vicat softening temperature, B	**211**	°C	ISO 306
Vicat softening temperature, 120°C/h 50N	**212**	°C	ISO 306
Burning behav. at thickness h	**V-2**	class	IEC 60695-11-10
Thickness tested	**0.4**	mm	-
Burning behav. 5V at thickness h	**5VA**	class	IEC 60695-11-20
Thickness tested	**3.0**	mm	-

Thermal Conductivity	**0.22**	W/(m K)	DIN 52616
ASTM Data			
DTUL @ 66 psi	**207**	°C	ASTM D 648
DTUL @ 264 psi	**190**	°C	ASTM D 648
Vicat Temperature	**211**	°C	ASTM D 1525
Thermal Conductivity, solid state	**0.0317**	W/(m K)	ASTM C 177

Electrical properties	**Value**	**Unit**	**Test Standard**
ISO Data			
Relative permittivity, 1MHz	**2.9**	-	IEC 62631-2-1
Dissipation factor, 1MHz	**60**	E-4	IEC 62631-2-1
Volume resistivity	**1E13**	Ohm*m	IEC 62631-3-1
Surface resistivity	**>1E15**	Ohm	IEC 62631-3-2
Electric strength	**33**	kV/mm	IEC 60243-1
Comparative tracking index	**150**	-	IEC 60112
ASTM Data			
Dielectric Strength, Short Time	**19.7**	kV/mm	ASTM D 149
Volume Resistivity	**>1E15**	Ohm*cm	ASTM D 257

Other properties	**Value**	**Unit**	**Test Standard**
Water absorption	**1.25**	%	Sim. to ISO 62
Density	**1270**	kg/m³	ISO 1183
Density	**1270**	kg/m³	ASTM D 792

Processing Recommendation Injection Molding	**Value**	**Unit**	**Test Standard**
Pre-drying - Temperature	**150**	°C	-
Pre-drying - Time	**4 - 6**	h	-
Processing humidity	**≤0.02**	%	-
Melt temperature	**350 - 410**	°C	-
Mold temperature	**135 - 180**	°C	-
Zone 1	**330 - 400**	°C	-
Zone 2	**340 - 405**	°C	-
Zone 3	**345 - 415**	°C	-
Back pressure	**0.3 - 0.7**	MPa	-

Processing Recommendation Extrusion	**Value**	**Unit**	**Test Standard**
Pre-drying - Temperature	**140 - 150**	°C	-
Pre-drying - Time	**4 - 6**	h	-
Processing humidity	**≤0.02**	%	-
Melt temperature	**320 - 355**	°C	-
Mold temperature	**65 - 175**	°C	-
Zone 1	**350 - 325**	°C	-
Zone 2	**330 - 355**	°C	-
Zone 3	**330 - 355**	°C	-
Zone 4	**330 - 355**	°C	-
Zone 5	**330 - 355**	°C	-

Characteristics

Processing
Injection Molding, Film Extrusion, Profile Extrusion, Blow Molding, Additive Manufacturing

Certifications
Food contact, Food approval FDA 21 CFR, US Pharmacopeia Class VI Approved, RoHS compliant

Special Characteristics
Transparent, Ethylene Oxide (EtO) Sterilization, Steam sterilization, Gamma irradiation sterilization, Electron beam (e-beam) sterilization

Applications
Medical

Chemical Resistance
General Chemical Resistance

Regional Availability
North America, Europe, Asia Pacific