

Product Texts

ULTEM HU1000E resin is an unreinforced amorphous polyetherimide (PEI) resin that may a high glass transition temperature (Tg) of 217°C. The material contains an internal mold release. 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.

Processing/Physical Characteristics	Value	Unit	Test Standard
ISO Data			
Melt volume-flow rate, MVR	13	cm ³ /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/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	4	kJ/m ²	ISO 179/1eA
Izod impact strength, +23°C, 4mm	N	kJ/m ²	ISO 180/1U
Izod impact strength, -30°C, 4mm	N	kJ/m ²	ISO 180/1U
Izod notched impact strength, +23°C, 4mm	6	kJ/m ²	ISO 180/1A
Izod notched impact strength, -30°C, 4mm	6	kJ/m ²	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
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

ULTEM™ Resin HU1000E

PEI

Saudi Basic Industries Corporation (SABIC)

Thermal Conductivity, solid state	0.0317	W/(m K)	ASTM C 177
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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/m ³	ISO 1183
Density	1270	kg/m ³	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

Special Characteristics

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

Chemical Resistance

General Chemical Resistance

Certifications

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

Applications

Medical

Regional Availability

North America, Europe, Asia Pacific