ULTEM™ RESIN HU1004

REGION AMERICAS

DESCRIPTION

High Temperature, Transparent, Polyetherimide Blend with Improved Ductility and Enhanced Hydrostability. For medical devices and pharmaceutical applications. Healthcare management of change, biocompatible (ISO 10993 or USP Class VI); Steam, Gamma, EtO, and E-beam sterilizable.

This material is food contact compliant in most jurisdictions – exceptions may exist, request a declaration for details.

GENERAL INFORMATION	
Features	Flame Retardant, Chemical Resistance, Hydrolytic Stability, Low Warpage, Amorphous, Low Shrinkage, IR Transparent, Low Moisture Absorption, UV-C resistant, Sustainable (bio-based offerings), Transparent/Translucent, Biocompatability-ISO10993, Food contact, Healthcare/Formula lock, Non Cl/Br flame retardant, Non halogenated flame retardant, Autoclave/Steam sterilizable, Creep resistant, Dimensional stability, High stiffness/Strength, High temperature resistance, Impact resistant, Low temperature impact, Sterilizable, No PFAS intentionally added, Additive Manufacturing
Fillers	Unreinforced
Polymer Types	Polyetherimide (PEI)
Processing Techniques	Injection Molding

INDUSTRY	SUB INDUSTRY
Hygiene and Healthcare	Pharmaceutical Packaging and Drug Delivery, Surgical devices, General Healthcare, Patient Testing

TYPICAL PROPERTY VALUES

Revision 20250404

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 5 mm/min	95	MPa	ASTM D638
Tensile Stress, brk, Type I, 5 mm/min	90	MPa	ASTM D638
Tensile Strain, yld, Type I, 5 mm/min	7	%	ASTM D638
Tensile Strain, brk, Type I, 5 mm/min	85	%	ASTM D638
Tensile Modulus, 5 mm/min	2900	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	140	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	3000	MPa	ASTM D790
Tensile Stress, yield, 50 mm/min	97	MPa	ISO 527
Tensile Stress, break, 50 mm/min	80	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	7	%	ISO 527
Tensile Strain, break, 50 mm/min	80	%	ISO 527
Flexural Stress, yield, 2 mm/min	136	MPa	ISO 178
Flexural Modulus, 2 mm/min	2800	MPa	ISO 178
IMPACT			
Izod Impact, notched, 23°C	70	J/m	ASTM D256
Izod Impact, Reverse Notched, 3.2 mm	3300	J/m	ASTM D256
Instrumented Dart Impact Total Energy, 23°C	93	J	ASTM D3763
Instrumented Impact Total Energy, 0°C	99	J	ASTM D3763
Instrumented Impact Total Energy, -20°C	93	J	ASTM D3763

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Instrumented Dart Impact Ductility, 23°C	100	%	ASTM D3763
Instrumented Dart Impact Ductility, 0°C	100	%	ASTM D3763
Instrumented Dart Impact Ductility, -20°C	90	%	ASTM D3763
Izod Impact, unnotched 80*10*4 +23°C	NB	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	NB	kJ/m²	ISO 180/1U
Izod Impact, notched 80*10*4 +23°C	6	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	6	kJ/m²	ISO 180/1A
Charpy Impact, notched, 23°C	11	kJ/m²	ISO 179/2C
THERMAL			
HDT, 0.45 MPa, 6.4 mm, unannealed	214	°C	ASTM D648
HDT, 1.82 MPa, 6.4 mm, unannealed	204	°C	ASTM D648
CTE, -20°C to 150°C, flow	5.6E-05	1/°C	ASTM E831
CTE, -20°C to 150°C, xflow	5.5E-05	1/°C	ASTM E831
Thermal Conductivity	0.19	W/m-°C	ASTM C177
CTE, 23°C to 150°C, flow	5.E-05	1/°C	ISO 11359-2
CTE, 23°C to 150°C, xflow	5.E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate A/50	219	°C	ISO 306
Vicat Softening Temp, Rate B/50	212	°C	ISO 306
Vicat Softening Temp, Rate B/120	212	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	205	°C	ISO 75/Be
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	190	°C	ISO 75/Ae
Relative Temp Index, Elec [1]	105	°C	UL 746B
Relative Temp Index, Mech w/impact [1]	105	°C	UL 746B
Relative Temp Index, Mech w/o impact [1]	105	°C	UL 746B
PHYSICAL			
Specific Gravity	1.28	-	ASTM D792
Mold Shrinkage, flow, 3.2 mm	0.5 – 0.7	%	SABIC method
Melt Flow Rate, 337°C/6.6 kgf	10	g/10 min	ASTM D1238
Density	1.28	g/cm³	ISO 1183
Melt Volume Rate, MVR at 360°C/5.0 kg	14	cm³/10 min	ISO 1133
ELECTRICAL			
Comparative Tracking Index (UL) {PLC}	4	PLC Code	UL 746A
Hot-Wire Ignition (HWI), PLC 1	≥1.5	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 2	≥0.75	mm	UL 746A
High Amp Arc Ignition (HAI), PLC 1	≥0.75	mm	UL 746A
FLAME CHARACTERISTICS [1]			
UL Yellow Card Link	E121562-100737020	-	-
UL Recognized, 94V-0 Flame Class Rating	≥0.75	mm	UL 94
Oxygen Index (LOI)	46	%	ASTM D2863
NBS Smoke Density, Flaming, Ds 4 min	0.7	-	ASTM E662
INJECTION MOLDING			
Drying Temperature	150	°C	
Drying Time	6 – 8	Hrs	
Drying Time (Cumulative)	24	Hrs	
Maximum Moisture Content	0.02	%	

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Melt Temperature	355 – 390	°C	
Nozzle Temperature	345 – 390	°C	
Front - Zone 3 Temperature	345 – 390	°C	
Middle - Zone 2 Temperature	335 – 390	°C	
Rear - Zone 1 Temperature	330 – 390	°C	
Mold Temperature	130 – 160	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	40 – 70	rpm	
Shot to Cylinder Size	40 – 60	%	
Vent Depth	0.025 – 0.076	mm	

(1) UL Ratings shown on the technical datasheet might not cover the full range of thicknesses and colors. For details, please see the UL Yellow Card.

DISCLAIMER