

ULTEM™ RESIN DH1004A

DESCRIPTION

ULTEM DH1004A resin is a unreinforced blend of polyetherimide (PEI) and Polyphenylsulfone (PPSU), Features are an excellent combination of improved ductility, enhanced hydro stability for Autoclave/Steam sterilizability and good dimensional stability up to high temperatures. This material is one good alternative solution to replace metal for surgical device with strong autoclave/steam sterilizability request.

GENERAL INFORMATION	
Features	Chemical Resistance, Hydrolytic Stability, Amorphous, Autoclave/Steam sterilizable, Dimensional stability, High temperature resistance, Impact resistant
Fillers	Unreinforced
Polymer Types	Polyetherimide (PEI)
Processing Techniques	Injection Molding
INDUSTRY	SUB INDUSTRY
Electrical and Electronics	Wireless Communication
Hygiene and Healthcare	Surgical devices

TYPICAL PROPERTY VALUES

Revision 20260723

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL ⁽¹⁾			
Tensile Stress, yld, Type I, 5 mm/min	94	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	80	%	ASTM D638
Tensile Modulus, 5 mm/min	2900	MPa	ASTM D638
Flexural Strength, 1.3 mm/min, 50 mm span	145	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	2950	MPa	ASTM D790
Tensile Stress, yield, 50 mm/min	95	MPa	ISO 527
Tensile Stress, break, 50 mm/min	80	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	6	%	ISO 527
Tensile Strain, break, 50 mm/min	82	%	ISO 527
Flexural Strength, 2 mm/min	135	MPa	ISO 178
Flexural Modulus, 2 mm/min	2800	MPa	ISO 178
IMPACT ⁽¹⁾			
Izod Impact, notched, 23°C	65	J/m	ASTM D256
Izod Impact, Reverse Notched, 3.2 mm	3300	J/m	ASTM D256
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
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
Instrumented Dart Impact			
Total Energy, 23°C	85	J	ASTM D3763

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Total Energy, -20°C	82	J	ASTM D3763
Ductility, 23°C	100	%	ASTM D3763
Ductility, -20°C	90	%	ASTM D3763
THERMAL ⁽¹⁾			
HDT, 0.45 MPa, 3.2 mm, unannealed	212	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	203	°C	ASTM D648
HDT/Bf, 0.45 MPa Flatw 80°10'4 sp=64mm	203	°C	ISO 75/Bf
HDT/Af, 1.8 MPa Flatw 80°10'4 sp=64mm	190	°C	ISO 75/Af
CTE, -20°C to 150°C, flow	5.0E-05	1/°C	ASTM E831
CTE, -20°C to 150°C, xflow	5.0E-05	1/°C	ASTM E831
CTE, 23°C to 150°C, flow	5.0E-05	1/°C	ISO 11359-2
CTE, 23°C to 150°C, xflow	5.0E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	212	°C	ASTM D1525
Vicat Softening Temp, Rate B/50	136	°C	ISO 306
PHYSICAL ⁽¹⁾			
Specific Gravity	1.28	-	ASTM D792
Density	1.28	g/cm ³	ISO 1183
Melt Flow Rate, 337°C/6.6 kgf	14	g/10 min	ASTM D1238
Melt Volume Rate, MVR at 360°C/5.0 kg	18	cm ³ /10 min	ISO 1133
Water Absorption, (23°C/24hrs)	1.25	%	ASTM D570
Water Absorption, (23°C/Saturated)	0.25	%	ASTM D570
Water Absorption, (23°C/24hrs)	1.25	%	ISO 62-1
Water Absorption, (23°C/saturated)	0.25	%	ISO 62-1
Moisture Absorption, (23°C/50% RH/24hrs)	0.2	%	ISO 62-4
Moisture Absorption, (23°C/50% RH/Equilibrium)	0.7	%	ISO 62-4
Mold Shrinkage, flow, 3.2 mm ⁽²⁾	0.5 – 0.7	%	SABIC method
INJECTION MOLDING ⁽³⁾			
Drying Temperature	150	°C	
Drying Time	6 – 8	Hrs	
Drying Time (Cumulative)	24	Hrs	
Maximum Moisture Content	0.02	%	
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) The information stated on Technical Datasheets should be used as indicative only for material selection purposes and not be utilized as specification or used for part or tool design.
- (2) Measurements made from laboratory test coupon. Actual shrinkage may vary outside of range due to differences in processing conditions, equipment, part geometry and tool design. It is recommended that mold shrinkage studies be performed with surrogate or legacy tooling prior to cutting tools for new molded article.
- (3) Injection Molding parameters are only mentioned as general guidelines. These may not apply or may need adjustment in specific situations such as low shot sizes, large part molding, thin wall molding and gas-assist molding.

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