ULTEM™ RESIN 2400

DESCRIPTION

ULTEM 2400 resin is a standard flow 40% glass fiber reinforced polyetherimide resin. The material is RoHS compliant and is intrinsically flame retardant without the use of FR modifiers offering UL94 V0 ratings and FAR25.853 performance. The material may offer excellent dimension stability, strength, stiffness and creep resistance up to high temperature due to its high glass transition temperature of 217°C. The material is opaque and can be custom colored.

ISCC+ certified renewable bio-based solutions are available for this grade via differentiated color nomenclature.

GENERAL INFORMATION	
Features	Flame Retardant, Chemical Resistance, Hydrolytic Stability, Low Warpage, Low Smoke and Toxicity, Dielectrics, Amorphous, Low Shrinkage, Sustainable (bio-based offerings), Non halogenated flame retardant, Electroplatable, Low ionics/Outgassing/Liquid particle count, Creep resistant, Dimensional stability, High stiffness/Strength, High temperature resistance, No PFAS intentionally added
Fillers	Glass Fiber
Polymer Types	Polyetherimide (PEI)
Processing Techniques	Injection Molding

INDUSTRY	SUB INDUSTRY
Automotive	Heavy Truck, Automotive Under the Hood, Aerospace, Motorcycle, Recreational/Specialty Vehicles
Building and Construction	Building Component, Water Management
Consumer	Consumer Goods, Sport/Leisure, Personal Accessory, Home Appliances, Commercial Appliance, Furniture
Electrical and Electronics	Energy Management, Drone Solutions, Mobile Phone - Computer - Tablets, Circuit Boards/Additives, Lighting, Printer Copier, Speaker - Earphone, Wireless Communication
Hygiene and Healthcare	Personal and Professional Hygiene, Pharmaceutical Packaging and Drug Delivery, Surgical devices, General Healthcare, Patient Testing
Industrial	Electrical, Material Handling, Textile, Eyewear
Mass Transportation	Rail
Packaging	Industrial Packaging

TYPICAL PROPERTY VALUES

Revision 20241122

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Stress, brk, Type I, 5 mm/min	179	MPa	ASTM D638
Tensile Strain, brk, Type I, 5 mm/min	2.5	%	ASTM D638
Tensile Modulus, 5 mm/min	11720	MPa	ASTM D638
Flexural Stress, brk, 2.6 mm/min, 100 mm span	241	MPa	ASTM D790
Flexural Modulus, 2.6 mm/min, 100 mm span	11720	MPa	ASTM D790
Hardness, Rockwell M	114	-	ASTM D785
Tensile Stress, break, 5 mm/min	180	MPa	ISO 527
Tensile Strain, break, 5 mm/min	2	%	ISO 527
Tensile Modulus, 1 mm/min	11500	MPa	ISO 527
Flexural Stress, break, 2 mm/min	240	MPa	ISO 178
Flexural Modulus, 2 mm/min	10000	MPa	ISO 178
Ball Indentation Hardness, H358/30	170	MPa	ISO 2039-1

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Taber Abrasion, CS-17, 1 kg	20	mg/1000cy	SABIC method
IMPACT [1]			
Izod Impact, notched, 23°C	112	J/m	ASTM D256
Izod Impact, Reverse Notched, 3.2 mm	480	J/m	ASTM D256
Izod Impact, unnotched, 23°C	427	J/m	ASTM D4812
Izod Impact, unnotched 80*10*4 +23°C	35	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	35	kJ/m²	ISO 180/1U
Charpy			
23°C, Unnotch Edgew 80*10*4 sp=62mm	40	kJ/m²	ISO 179/1eU
-30°C, Unnotch Edgew 80*10*4 sp=62mm	40	kJ/m²	ISO 179/1eU
THERMAL [1]			
Vicat Softening Temp, Rate B/50	234	°C	ASTM D1525
HDT, 0.45 MPa, 6.4 mm, unannealed	215	°C	ASTM D648
HDT, 1.82 MPa, 6.4 mm, unannealed	212	°C	ASTM D648
CTE, -20°C to 150°C, flow	1.4E-05	1/°C	ASTM E831
Thermal Conductivity	0.33	W/m-°C	ISO 8302
CTE, 23°C to 150°C, flow	1.4E-05	1/°C	ISO 11359-2
CTE, 23°C to 150°C, xflow	4.5E-05	1/°C	ISO 11359-2
Ball Pressure Test, 125°C +/- 2°C	PASSES	-	IEC 60695-10-2
Vicat Softening Temp, Rate A/50	230	°C	ISO 306
Vicat Softening Temp, Rate B/50	217	°C	ISO 306
Vicat Softening Temp, Rate B/120	225	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	215	°C	ISO 75/Be
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	210	°C	ISO 75/Ae
Relative Temp Index, Elec [2]	170	°C	UL 746B
Relative Temp Index, Mech w/impact [2]	170	°C	UL 746B
Relative Temp Index, Mech w/o impact [2]	170	°C	UL 746B
PHYSICAL [1]			
Specific Gravity	1.61	-	ASTM D792
Water Absorption, (23°C/24hrs)	0.13	%	ASTM D570
Water Absorption, (23°C/Saturated)	0.9	%	ASTM D570
Melt Flow Rate, 337°C/6.6 kgf	4.2	g/10 min	ASTM D1238
Mold Shrinkage, flow, 3.2 mm [3]	0.1 – 0.3	%	SABIC method
Mold Shrinkage on Tensile Bar, flow [3]	0.1 – 0.3	%	SABIC method
Density	1.61	g/cm³	ISO 1183
Water Absorption, (23°C/saturated)	0.8	%	ISO 62-1
Moisture Absorption (23°C / 50% RH)	0.4	%	ISO 62
Melt Volume Rate, MVR at 360°C/5.0 kg	5	cm³/10 min	ISO 1133
ELECTRICAL [1]			
Volume Resistivity	1.5E+16	Ω.cm	ASTM D257
Dielectric Strength, in oil, 1.6 mm	24	kV/mm	ASTM D149
Relative Permittivity, 1 kHz	3.7	-	ASTM D150
Dissipation Factor, 1 kHz	0.002	-	ASTM D150
Comparative Tracking Index (UL) {PLC} [2]	5	PLC Code	UL 746A
Hot-Wire Ignition (HWI), PLC 0 [2]	≥1.5	mm	UL 746A

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
High Amp Arc Ignition (HAI), PLC 4 [2]	≥1.5	mm	UL 746A
High Voltage Arc Track Rate {PLC} [2]	4	PLC Code	UL 746A
Arc Resistance, Tungsten {PLC}	5	PLC Code	ASTM D495
Volume Resistivity	1.E+15	Ω.cm	IEC 60093
Surface Resistivity, ROA	>1.E+15	Ω	IEC 60093
Dielectric Strength, in oil, 0.8 mm	35	kV/mm	IEC 60243-1
Dielectric Strength, in oil, 1.6 mm	26	kV/mm	IEC 60243-1
Dielectric Strength, in oil, 3.2 mm	16	kV/mm	IEC 60243-1
Relative Permittivity, 1 MHz	3.1	-	IEC 60250
Dissipation Factor, 50/60 Hz	0.0025	-	IEC 60250
Dissipation Factor, 1 MHz	0.0019	-	IEC 60250
Comparative Tracking Index	150	V	IEC 60112
Comparative Tracking Index, M	100	V	IEC 60112
Relative Permittivity, 50/60 Hz	3.5	-	IEC 60250
FLAME CHARACTERISTICS [2]			
UL Yellow Card Link	E121562-221103	-	-
UL Yellow Card Link 2	E45587-236985	-	-
UL Recognized, 94V-0 Flame Class Rating	≥0.25	mm	UL 94
Glow Wire Ignitability Temperature, 1.5 mm	875	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 1.0 mm	850	°C	IEC 60695-2-13
Glow Wire Flammability Index, 1.5 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.0 mm	960	°C	IEC 60695-2-12
Oxygen Index (LOI) [1]	54	%	ASTM D2863
NBS Smoke Density, Flaming, Ds 4 min [1]	1	-	ASTM E662
Oxygen Index (LOI) [1]	48	%	ISO 4589
INJECTION MOLDING [4]			
Drying Temperature	150	°C	
Drying Time	4 – 6	Hrs	
Drying Time (Cumulative)	24	Hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	350 – 400	°C	
Nozzle Temperature	345 – 400	°C	
Front - Zone 3 Temperature	345 – 400	°C	
Middle - Zone 2 Temperature	340 – 400	°C	
Rear - Zone 1 Temperature	330 – 400	°C	
Mold Temperature	135 – 165	°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) 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.

(3) 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.

(4) 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.

DISCLAIMER