ULTEM™ RESIN 9085

DESCRIPTION

ULTEM 9085 resin is a polyetherimide blend. The material is designed for use in Aerospace cabin interiors but can also be used for FDM printing and in e.g. Rail applications. The material meets Aerospace FAR25.853 and OSU55/55 heat release requirements. It is approved by main Aerospace OEMs. Material has Rail EN45545 R6-HL3 rating. The material may offer excellent flow, stiffness and ductility balance, enabling thin wall lightweight designs. 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, Good Processability, High Flow, Hydrolytic Stability, Low Smoke and Toxicity, Thin Wall, Amorphous, Low Shrinkage, Sustainable (bio-based offerings), Non halogenated flame retardant, Electroplatable, Creep resistant, Dimensional stability, High stiffness/Strength, High temperature resistance, No PFAS intentionally added
Fillers	Unreinforced
Polymer Types	Polyetherimide (PEI)
Processing Techniques	Large Format Additive Manufacturing (LFAM), 3D printing, Fused Deposition Modeling (FDM) printing, Sheet extrusion, Injection Molding, Profile Extrusion, Thermoforming
Regional Availability	Europe, Asia, Americas

INDUSTRY	SUB INDUSTRY
Automotive	Aerospace
Mass Transportation	Rail

TYPICAL PROPERTY VALUES

Revision 20230607

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Stress, yld, Type I, 50 mm/min	94	MPa	ASTM D638
Tensile Strain, yld, Type I, 50 mm/min	7	%	ASTM D638
Tensile Strain, brk, Type I, 50 mm/min	70	%	ASTM D638
Tensile Stress, yld, Type I, 5 mm/min	86	MPa	ASTM D638
Tensile Strain, yld, Type I, 5 mm/min	7	%	ASTM D638
Tensile Strain, brk, Type I, 5 mm/min	70	%	ASTM D638
Tensile Modulus, 5 mm/min	3000	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	138	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	2800	MPa	ASTM D790
Tensile Stress, yield, 50 mm/min	94	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	6.7	%	ISO 527
Tensile Strain, break, 50 mm/min	70	%	ISO 527
Tensile Stress, yield, 5 mm/min	88	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	6.5	%	ISO 527
Tensile Strain, break, 5 mm/min	70	%	ISO 527
Tensile Modulus, 1 mm/min	2850	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	129	MPa	ISO 178

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Flexural Modulus, 2 mm/min	2700	MPa	ISO 178
Hardness, Rockwell M	115	-	ISO 2039-2
IMPACT [1]			
Izod Impact, unnotched, 23°C	NB	J/m	ASTM D4812
Izod Impact, unnotched, -30°C	NB	J/m	ASTM D4812
Izod Impact, notched, 23°C	115	J/m	ASTM D256
Izod Impact, notched, -30°C	65	J/m	ASTM D256
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	10	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	8	kJ/m²	ISO 180/1A
Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm	NB	kJ/m²	ISO 179/1eU
Charpy -30°C, Unnotch Edgew 80*10*4 sp=62mm	NB	kJ/m²	ISO 179/1eU
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	10	kJ/m²	ISO 179/1eA
Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm	8	kJ/m²	ISO 179/1eA
THERMAL			
HDT, 0.45 MPa, 3.2 mm, unannealed	169	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	153	°C	ASTM D648
CTE, -30°C to 80°C, flow	6.5E-05	1/°C	ASTM E831
CTE, -30°C to 80°C, xflow	7.E-05	1/°C	ASTM E831
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	169	°C	ISO 75/Bf
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	152	°C	ISO 75/Af
Vicat Softening Temp, Rate B/50	173	°C	ISO 306
Vicat Softening Temp, Rate B/120	175	°C	ISO 306
CTE, -30°C to 80°C, flow	6.5E-05	1/°C	ISO 11359-2
CTE, -30°C to 80°C, xflow	7.0E-05	1/°C	ISO 11359-2
PHYSICAL [1]			
Specific Gravity	1.34	-	ASTM D792
Melt Flow Rate, 295°C/6.6 kgf	8.9	g/10 min	ASTM D1238
Density	1.34	g/cm³	ISO 1183
Moisture Absorption, (23°C/50% RH/24hrs)	0.1	%	ISO 62-4
Moisture Absorption, (23°C/50% RH/Equilibrium)	0.4	%	ISO 62-4
Water Absorption, (23°C/24hrs)	0.15	%	ISO 62-1
Water Absorption, (23°C/saturated)	0.7	%	ISO 62-1
Melt Volume Rate, MVR at 340°C/5.0 kg	40	cm³/10 min	ISO 1133
Mold Shrinkage, flow, 3.2 mm [2]	0.5 – 0.7	%	SABIC method
FLAME CHARACTERISTICS [1]			
FAA Flammability, FAR 25.853 A/B	<5	-	FAR 25.853
OSU total heat release (2 minute test)	≤55	kW-min/m²	FAR 25.853
OSU peak heat release rate (5 minute test)	≤55	kW/m²	FAR 25.853
Vertical Burn at 60 Seconds [3]	PASS	-	FAR 25.853
Oxygen Index (LOI)	49	%	ASTM D2863
INJECTION MOLDING [4]			
Drying Temperature	120 – 130	°C	
Drying Time	4 – 6	Hrs	

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Maximum Moisture Content	0.02	%	
Melt Temperature	330 – 350	°C	
Nozzle Temperature	330 – 350	°C	
Front - Zone 3 Temperature	330 – 350	°C	
Middle - Zone 2 Temperature	325 – 345	°C	
Rear - Zone 1 Temperature	315 – 340	°C	
Mold Temperature	120 – 150	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw speed (Circumferential speed)	0.2 – 0.3	m/s	
Shot to Cylinder Size	40 – 60	%	
Vent Depth	0.025 – 0.076	mm	
PROFILE EXTRUSION			
Drying Temperature	120 – 130	°C	
Drying Time	4 – 6	Hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	280 – 310	°C	
Barrel - Zone 1 Temperature	265 – 275	°C	
Barrel - Zone 2 Temperature	280 – 295	°C	
Barrel - Zone 3 Temperature	290 – 305	°C	
Barrel - Zone 4 Temperature	295 – 310	°C	
Hopper Temperature	80 – 100	°C	
Adapter Temperature	270 – 310	°C	
Die Temperature	260 – 310	°C	
Calibrator Temperature	130 – 160	°C	
Calibrator 2 Temperature	80 – 120	°C	

(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) Type A, at 2mm

(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.

ADDITIONAL PRODUCT NOTES

No PFAS intentionally added: The grade listed in this document does not contain PFAS intentionally added during Seller's manufacturing process and is not expected to contain unintentional PFAS impurities. Each user is responsible for evaluating the presence of unintentional PFAS impurities.

MORE INFORMATION

For curve data and CAE cards, please visit and register at https://materialfinder.sabic-specialties.com

DISCLAIMER