ULTEM™ Resin 1010GCR3

DESCRIPTION

1010GCR3 grade is 30% PCR (Post Consumer Recycle) combined with bio-based polyetherimide solutions. This material may offer a high glass transition temperature (Tg) of 217°C and improved flow. Features are excellent mechanical, electrical and dimensional properties up to high temperatures. The material may offer very good chemical resistance for an amorphous material. For colored variants compliance needs to be checked case by case. ISCC+ certified renewable bio-based solutions are available for this grade.

GENERAL INFORMATION	
Features	Chemical Resistance, Good Processability, High Flow, Hydrolytic Stability, Low Warpage, Low Smoke and Toxicity, Thin Wall, Dielectrics, Amorphous, Low Shrinkage, Low Corrosivity, IR Transparent, UV-C resistant, Mechanical Recycling, Bio-Renewable, Transparent/Translucent, 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 (PCR contains <50ppm total organic fluorine content)
Fillers	Unreinforced
Polymer Types	Polyetherimide (PEI)
Processing Techniques	Additive manufacturing, Hot rolling, Extrusion Blow Molding, Film Extrusion, Injection Molding, Profile Extrusion, Extrusion, Extrusion compounding, Compression molding, Injection compression molding, Foam Extrusion

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 20250819

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Stress, yld, Type I, 50 mm/min	112	MPa	ASTM D638
Tensile Strain, yld, Type I, 50 mm/min	6.5	%	ASTM D638
Tensile Strain, brk, Type I, 50 mm/min	18	%	ASTM D638
Tensile Modulus, 5 mm/min	3282	MPa	ASTM D638
Flexural Strength, 1.3 mm/min, 50 mm span	165	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	3330	MPa	ASTM D790
Tensile Stress, yield, 50 mm/min	113	MPa	ISO 527
Tensile Stress, break, 50 mm/min	82	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	6.5	%	ISO 527
Tensile Strain, break, 50 mm/min	18	%	ISO 527
Tensile Modulus, 1 mm/min	3147	MPa	ISO 527

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Flexural Strength, 2 mm/min	165	MPa	ISO 178
Flexural Modulus, 2 mm/min	3274	MPa	ISO 178
IMPACT [1]			
Izod Impact, notched, 23°C	32	J/m	ASTM D256
Izod Impact, unnotched, 23°C	1603	J/m	ASTM D4812
Izod Impact, notched, -30°C	40	J/m	ASTM D256
Izod Impact, unnotched, -30°C	1493	J/m	ASTM D4812
Izod Impact, notched 80*10*4 +23°C	5	kJ/m²	ISO 180/1A
Izod Impact, unnotched 80*10*4 +23°C	87	kJ/m²	ISO 180/1U
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	3.6	kJ/m²	ISO 179/1eA
Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm	90	kJ/m²	ISO 179/1eU
Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm	3.5	kJ/m²	ISO 179/1eA
Charpy -30°C, Unnotch Edgew 80*10*4 sp=62mm	91	kJ/m²	ISO 179/1eU
THERMAL [1]			
HDT, 0.45 MPa, 3.2 mm, unannealed	204	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	189	°C	ASTM D648
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	206	°C	ISO 75/Bf
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	191	°C	ISO 75/Af
CTE, -40°C to 150°C, flow	5.3E-05	1/°C	ASTM E831
CTE, -40°C to 150°C, xflow	5.6E-05	1/°C	ASTM E831
CTE, 23°C to 150°C, flow	5.4E-05	1/°C	ISO 11359-2
CTE, 23°C to 150°C, xflow	5.6E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	208	°C	ASTM D1525
Vicat Softening Temp, Rate B/120	208	°C	ASTM D1525
Vicat Softening Temp, Rate B/50	210	°C	ISO 306
Vicat Softening Temp, Rate B/120	210	°C	ISO 306
PHYSICAL [1]			
Specific Gravity	1.27	-	ASTM D792
Density	1.27	g/cm³	ISO 1183
Melt Flow Rate			
337°C/6.7 kgf	25	g/10 min	ASTM D1238
Melt Volume Rate			
360°C/5 kgf	42	cm³/10 min	ISO 1133
340°C/5 kgf	17	cm³/10 min	ISO 1133
Water Absorption, (23°C/24hrs)	0.22	%	ASTM D570
Moisture Absorption, (23°C/50% RH/24hrs)	0.07	%	ISO 62-4
Mold Shrinkage, flow [2]	0.6	%	SABIC method
Mold Shrinkage, xflow [2]	0.67	%	SABIC method
INJECTION MOLDING [3]			
Drying Temperature	140 – 150	°C	
Drying Time	4 – 6	Hrs	
Drying Time (Cumulative)	24	Hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	350 – 410	°C	
Nozzle Temperature	345 – 405	°C	

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Front - Zone 3 Temperature	345 – 415	°C	
Middle - Zone 2 Temperature	340 – 405	°C	
Rear - Zone 1 Temperature	330 – 400	°C	
Mold Temperature	135 – 180	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	10 – 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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