

## SABIC Innovative Plastics Ultem 1010RF PEI

Category : Polymer , Thermoplastic , Polyetherimide (PEI)

### Material Notes:

Enhanced flow Polyetherimide (Tg 217C) with internal mold release. ECO Conforming. US FDA and EU Food Contact Compliant in recognized colors. This data was supplied by SABIC-IP for the Americas region.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_SABIC-Innovative-Plastics-Ultem-1010RF-PEI.php](http://www.lookpolymers.com/polymer_SABIC-Innovative-Plastics-Ultem-1010RF-PEI.php)

Physical Properties	Metric	English	Comments
Specific Gravity	1.27 g/cc	1.27 g/cc	ASTM D 792
Density	1.27 g/cc	0.0459 lb/in <sup>3</sup>	ISO 1183
Water Absorption	0.25 % @Time 86400 sec	0.25 % @Time 24.0 hour	ASTM D 570
Moisture Absorption at Equilibrium	0.70 %	0.70 %	23 <sup>o</sup> C / 50% RH; ISO 62
	1.25 % @Temperature 23.0 <sup>o</sup> C	1.25 % @Temperature 73.4 <sup>o</sup> F	ASTM D 570
Water Absorption at Saturation	1.25 % @Temperature 23.0 <sup>o</sup> C	1.25 % @Temperature 73.4 <sup>o</sup> F	ISO 62
Linear Mold Shrinkage, Flow	0.0050 - 0.0070 cm/cm	0.0050 - 0.0070 in/in	on tensile bar; SABIC Method
	0.0050 - 0.0070 cm/cm @Thickness 3.20 mm	0.0050 - 0.0070 in/in @Thickness 0.126 in	SABIC Method
Linear Mold Shrinkage, Transverse	0.0050 - 0.0070 cm/cm @Thickness 3.20 mm	0.0050 - 0.0070 in/in @Thickness 0.126 in	SABIC Method
Melt Flow	13 g/10 min @Load 5.00 kg, Temperature 340 <sup>o</sup> C	13 g/10 min @Load 11.0 lb, Temperature 644 <sup>o</sup> F	[cm <sup>3</sup> /10 min] Melt Volume Rate; ISO 1133
	17.8 g/10 min @Load 6.60 kg, Temperature 337 <sup>o</sup> C	17.8 g/10 min @Load 14.6 lb, Temperature 639 <sup>o</sup> F	ASTM D 1238

Mechanical Properties	Metric	English	Comments
Tensile Strength at Break	85.0 MPa	12300 psi	Type I, 5 mm/min; ASTM D 638

Mechanical Properties	85.0 MPa Metric	12300 psi English	5 mm/min; ISO 527 Comments
Tensile Strength, Yield	105 MPa	15200 psi	5 mm/min; ISO 527
	110 MPa	16000 psi	Type I, 5 mm/min; ASTM D 638
Elongation at Break	60 %	60 %	Type I, 5 mm/min; ASTM D 638
	60 %	60 %	5 mm/min; ISO 527
Elongation at Yield	6.0 %	6.0 %	5 mm/min; ISO 527
	7.0 %	7.0 %	Type I, 5 mm/min; ASTM D 638
Tensile Modulus	3.30 GPa	479 ksi	1 mm/min; ISO 527
	3.59 GPa	521 ksi	5 mm/min; ASTM D 638
Flexural Yield Strength	160 MPa	23200 psi	2 mm/min; ISO 178
	165 MPa	23900 psi	1.3 mm/min, 50 mm span; ASTM D 790
Flexural Modulus	3.30 GPa	479 ksi	2 mm/min; ISO 178
	3.52 GPa	511 ksi	1.3 mm/min, 50 mm span; ASTM D 790
Izod Impact, Notched	0.320 J/cm @Temperature 23.0 °C	0.599 ft-lb/in @Temperature 73.4 °F	ASTM D 256
	14.95 J/cm @Thickness 3.20 mm	28.01 ft-lb/in @Thickness 0.126 in	reverse notched; ASTM D 256
Izod Impact, Unnotched	13.35 J/cm @Temperature 23.0 °C	25.01 ft-lb/in @Temperature 73.4 °F	ASTM D 4812
Izod Impact, Notched (ISO)	5.00 kJ/m <sup>2</sup> @Temperature 23.0 °C	2.38 ft-lb/in <sup>2</sup> @Temperature 73.4 °F	80*10*4; ISO 180/1A
	5.00 kJ/m <sup>2</sup> @Temperature -30.0 °C	2.38 ft-lb/in <sup>2</sup> @Temperature -22.0 °F	80*10*4; ISO 180/1A
Izod Impact, Unnotched (ISO)	NB @Temperature 23.0 °C	NB @Temperature 73.4 °F	80*10*4; ISO 180/1U
	NB @Temperature -30.0	NB @Temperature -22.0	80*10*4; ISO 180/1U

Mechanical Properties	°C Metric	°F English	Comments
Charpy Impact Unnotched	NB	NB	Edgew 80*10*4 sp=62mm; ISO 179/1eU
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	NB	NB	Edgew 80*10*4 sp=62mm; ISO 179/1eU
	@Temperature -30.0 °C	@Temperature -22.0 °F	
Charpy Impact, Notched	0.400 J/cm <sup>2</sup>	1.90 ft-lb/in <sup>2</sup>	V-notch Edgew 80*10*4 sp=62mm; ISO 179/1eA
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	0.400 J/cm <sup>2</sup>	1.90 ft-lb/in <sup>2</sup>	V-notch Edgew 80*10*4 sp=62mm; ISO 179/1eA
	@Temperature -30.0 °C	@Temperature -22.0 °F	
Gardner Impact	34.0 J	25.1 ft-lb	SABIC Method
	@Temperature 23.0 °C	@Temperature 73.4 °F	
Impact Test	35.0 J	25.8 ft-lb	Instrumented Impact Total Energy; ASTM D 3763
	@Temperature 23.0 °C	@Temperature 73.4 °F	

Thermal Properties	Metric	English	Comments
CTE, linear, Parallel to Flow	50.0 µm/m-°C	27.8 µin/in-°F	ISO 11359-2
	@Temperature 23.0 - 150 °C	@Temperature 73.4 - 302 °F	
	55.0 µm/m-°C	30.6 µin/in-°F	ASTM E 831
	@Temperature -40.0 - 150 °C	@Temperature -40.0 - 302 °F	
CTE, linear, Transverse to Flow	50.0 µm/m-°C	27.8 µin/in-°F	ISO 11359-2
	@Temperature 23.0 - 150 °C	@Temperature 73.4 - 302 °F	
	55.0 µm/m-°C	30.6 µin/in-°F	ASTM E 831
	@Temperature -40.0 - 150 °C	@Temperature -40.0 - 302 °F	
Thermal Conductivity	0.220 W/m-K	1.53 BTU-in/hr-ft <sup>2</sup> - °F	ASTM C 177
	0.240 W/m-K	1.67 BTU-in/hr-ft <sup>2</sup> - °F	
Deflection Temperature at 0.46 MPa	198 °C	388 °F	Flatw 80*10*4 sp=64mm; ISO 75/Bf

Thermal Properties	Metric	English	Comments
	200 °C	392 °F	Edgew 120*10*4 sp=100mm; ISO 75/Be
	207 °C	405 °F	unannealed; ASTM D 648
	@Thickness 6.40 mm	@Thickness 0.252 in	
	211 °C	412 °F	unannealed; ASTM D 648
	@Thickness 3.20 mm	@Thickness 0.126 in	
Deflection Temperature at 1.8 MPa (264 psi)	188 °C	370 °F	Flatw 80*10*4 sp=64mm; ISO 75/Af
	190 °C	374 °F	Edgew 120*10*4 sp=100mm; ISO 75/Ae
	199 °C	390 °F	unannealed; ASTM D 648
	@Thickness 6.40 mm	@Thickness 0.252 in	
	203 °C	397 °F	unannealed; ASTM D 648
	@Thickness 3.20 mm	@Thickness 0.126 in	
Vicat Softening Point	211 °C	412 °F	Rate B/50; ISO 306
	212 °C	414 °F	Rate B/120; ISO 306

Electrical Properties	Metric	English	Comments
Volume Resistivity	1.00e+15 ohm-cm	1.00e+15 ohm-cm	IEC 60093
	1.00e+17 ohm-cm	1.00e+17 ohm-cm	ASTM D 257
Surface Resistance	>= 1.00e+15 ohm	>= 1.00e+15 ohm	ROA; IEC 60093
Dielectric Constant	2.9	2.9	IEC 60250
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
	2.9	2.9	IEC 60250
	@Frequency 50.0 - 60.0 Hz	@Frequency 50.0 - 60.0 Hz	
	3.15	3.15	ASTM D 150
	@Frequency 1000 Hz	@Frequency 1000 Hz	
Dielectric Strength	28.0 kV/mm	711 kV/in	in oil; ASTM D 149
	@Thickness 1.60 mm	@Thickness 0.0630 in	
	28.0 kV/mm	711 kV/in	in oil; IEC 60243-1
	@Thickness 1.60 mm	@Thickness 0.0630 in	

Electrical Properties	Metric <sub>mm</sub>	English <sub>in</sub>	Comments
	@Thickness 1.60 mm	@Thickness 0.0630 in	In air, ASTM D 149
Dissipation Factor	0.00050	0.00050	IEC 60250
	@Frequency 50.0 - 60.0 Hz	@Frequency 50.0 - 60.0 Hz	
	0.0013	0.0013	ASTM D 150
	@Frequency 1000 Hz	@Frequency 1000 Hz	
	0.0025	0.0025	ASTM D 150
	@Frequency 2.45e+9 Hz	@Frequency 2.45e+9 Hz	
	0.0025	0.0025	IEC 60250
	@Frequency 2.45e+9 Hz	@Frequency 2.45e+9 Hz	
Comparative Tracking Index	0.0060	0.0060	IEC 60250
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
	>= 100 V	>= 100 V	IEC 60112
	150 V	150 V	

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