



## ULTEM™ Resin 1000RV

### Americas: COMMERCIAL

Standard flow Polyetherimide (Tg 217C) with internal mold release. ECO Conforming, UL94 V0 and 5VA listing; color dependant, see UL Yellow Card.

TYPICAL PROPERTIES <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>MECHANICAL</b>			
Tensile Stress, yld, Type I, 5 mm/min	1120	kgf/cm <sup>2</sup>	ASTM D 638
Tensile Stress, brk, Type I, 5 mm/min	910	kgf/cm <sup>2</sup>	ASTM D 638
Tensile Strain, yld, Type I, 5 mm/min	7	%	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	60	%	ASTM D 638
Tensile Modulus, 5 mm/min	36500	kgf/cm <sup>2</sup>	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	1760	kgf/cm <sup>2</sup>	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	35000	kgf/cm <sup>2</sup>	ASTM D 790
Tensile Stress, yield, 5 mm/min	105	MPa	ISO 527
Tensile Stress, break, 5 mm/min	85	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	6	%	ISO 527
Tensile Strain, break, 5 mm/min	60	%	ISO 527
Tensile Modulus, 1 mm/min	3200	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	160	MPa	ISO 178
Flexural Modulus, 2 mm/min	3300	MPa	ISO 178
<b>IMPACT</b>			
Izod Impact, unnotched, 23°C	136	cm-kgf/cm	ASTM D 4812
Izod Impact, notched, 23°C	5	cm-kgf/cm	ASTM D 256
Izod Impact, notched, -30°C	5	cm-kgf/cm	ASTM D 256
Instrumented Impact Total Energy, 23°C	0	cm-kgf	ASTM D 3763
Izod Impact, notched 80*10*4 +23°C	6	kJ/m <sup>2</sup>	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	6	kJ/m <sup>2</sup>	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	4	kJ/m <sup>2</sup>	ISO 179/1eA

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(3) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

(4) Internal measurements according to UL standards.

(5) 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.

(6) Needs hard coat to consistently pass 60 sec Vertical Burn.

Source GMD, last updated:

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TYPICAL PROPERTIES <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>THERMAL</b>			
Vicat Softening Temp, Rate B/50	218	°C	ASTM D 1525
HDT, 1.82 MPa, 6.4 mm, unannealed	201	°C	ASTM D 648
CTE, -20°C to 150°C, flow	5.58E-05	1/°C	ASTM E 831
CTE, -20°C to 150°C, xflow	5.4E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, flow	5.E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	5.E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	215	°C	ISO 306
Vicat Softening Temp, Rate B/120	211	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	215	°C	ISO 75/Af
Relative Temp Index, Elec	170	°C	UL 746B
Relative Temp Index, Mech w/impact	170	°C	UL 746B
Relative Temp Index, Mech w/o impact	170	°C	UL 746B
<b>PHYSICAL</b>			
Specific Gravity	1.27	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm (5)	0.5 - 0.7	%	SABIC Method
Melt Flow Rate, 337°C/6.6 kgf	9.7	g/10 min	ASTM D 1238
Density	1.25	g/cm <sup>3</sup>	ISO 1183
Water Absorption, (23°C/sat)	1.25	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.7	%	ISO 62
Melt Volume Rate, MVR at 220°C/5.0 kg	13	cm <sup>3</sup> /10 min	ISO 1133
<b>ELECTRICAL</b>			
Volume Resistivity	1.E+17	Ohm-cm	ASTM D 257
Dielectric Strength, in air, 1.6 mm	32.7	kV/mm	ASTM D 149
Dielectric Strength, in oil, 1.6 mm	27.9	kV/mm	ASTM D 149
Relative Permittivity, 1 kHz	3.15	-	ASTM D 150

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(6) Needs hard coat to consistently pass 60 sec Vertical Burn.

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TYPICAL PROPERTIES <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>ELECTRICAL</b>			
Dissipation Factor, 1 kHz	0.0013	-	ASTM D 150
Dissipation Factor, 2450 MHz	0.0025	-	ASTM D 150
Arc Resistance, Tungsten {PLC}	5	PLC Code	ASTM D 495
Hot Wire Ignition {PLC}	1	PLC Code	UL 746A
High Voltage Arc Track Rate {PLC}	2	PLC Code	UL 746A
High Ampere Arc Ign, surface {PLC}	3	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	4	PLC Code	UL 746A
<b>FLAME CHARACTERISTICS</b>			
UL Recognized, 94V-2 Flame Class Rating (3)	0.4	mm	UL 94
UL Recognized, 94V-1 Flame Class Rating (3)	0.75	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating (3)	0.75	mm	UL 94
UL Recognized, 94-5VA Rating (3)	3	mm	UL 94
Oxygen Index (LOI)	47	%	ASTM D 2863
NBS Smoke Density, Flaming, Ds 4 min	0.7	-	ASTM E 662

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
<b>Injection Molding</b>		
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

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