

# ULTEM™ RESIN 9090

REGION AMERICAS

## DESCRIPTION

Polyetherimide Blend with improved Ductility and Detergent resistance. Meets FAR 25.853 and OSU 55/55 heat release and provides low toxicity, smoke and flame evolution.

## TYPICAL PROPERTY VALUES

Revision 20170913

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
<b>MECHANICAL</b>			
Tensile Stress, yld, Type I, 5 mm/min	95	MPa	ASTM D 638
Tensile Stress, brk, Type I, 5 mm/min	90	MPa	ASTM D 638
Tensile Strain, yld, Type I, 5 mm/min	7	%	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	85	%	ASTM D 638
Tensile Modulus, 5 mm/min	2900	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	140	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	3000	MPa	ASTM D 790
Tensile Stress, yield, 50 mm/min	97	MPa	ISO 527
Tensile Stress, break, 50 mm/min	80	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	7	%	ISO 527
Tensile Strain, break, 50 mm/min	80	%	ISO 527
Flexural Stress, yield, 2 mm/min	136	MPa	ISO 178
Flexural Modulus, 2 mm/min	2800	MPa	ISO 178
<b>IMPACT</b>			
Izod Impact, notched, 23°C	70	J/m	ASTM D 256
Izod Impact, Reverse Notched, 3.2 mm	3300	J/m	ASTM D 256
Instrumented Impact Total Energy, 23°C	88	J	ASTM D 3763
Instrumented Impact Total Energy, 0°C	99	J	ASTM D 3763
Instrumented Impact Total Energy, -20°C	88	J	ASTM D 3763
Instrumented Impact Ductility, 23°C	100	%	ASTM D 3763
Instrumented Impact Ductility, 0°C	100	%	ASTM D 3763
Instrumented Impact Ductility, -20°C	90	%	ASTM D 3763
Izod Impact, unnotched 80*10*4 +23°C	NB	kJ/m <sup>2</sup>	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	NB	kJ/m <sup>2</sup>	ISO 180/1U
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 Impact, notched, 23°C	11	kJ/m <sup>2</sup>	ISO 179/2C

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
<b>THERMAL</b>			
HDT, 0.45 MPa, 6.4 mm, unannealed	214	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	204	°C	ASTM D 648
CTE, -20°C to 150°C, flow	5.6E-05	1/°C	ASTM E 831
CTE, -20°C to 150°C, xflow	5.5E-05	1/°C	ASTM E 831
Thermal Conductivity	0.19	W/m-°C	ASTM C177
CTE, 23°C to 150°C, flow	5.E-05	1/°C	ISO 11359-2
CTE, 23°C to 150°C, xflow	5.E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate A/50	219	°C	ISO 306
Vicat Softening Temp, Rate B/50	212	°C	ISO 306
Vicat Softening Temp, Rate B/120	212	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	205	°C	ISO 75/Be
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	190	°C	ISO 75/Ae
<b>PHYSICAL</b>			
Specific Gravity	1.28	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm (5)	0.5 – 0.7	%	SABIC method
Melt Flow Rate, 337°C/6.6 kgf	10	g/10 min	ASTM D 1238
Density	1.28	g/cm <sup>3</sup>	ISO 1183
Melt Volume Rate, MVR at 360°C/5.0 kg	14	cm <sup>3</sup> /10 min	ISO 1133
<b>FLAME CHARACTERISTICS</b>			
OSU total heat release (2 minute test)	15	kW-min/m <sup>2</sup>	FAR 25.853
OSU peak heat release rate (5 minute test)	45	kW/m <sup>2</sup>	FAR 25.853
Vertical Burn a (60s) passes at	1	sec	FAR 25.853
Oxygen Index (LOI)	46	%	ASTM D 2863
NBS Smoke Density, Flaming, Ds 4 min	0.7	-	ASTM E 662
<b>INJECTION MOLDING</b>			
Drying Temperature	150	°C	
Drying Time	6 – 8	hrs	
Drying Time (Cumulative)	24	hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	355 – 390	°C	
Nozzle Temperature	345 – 390	°C	
Front - Zone 3 Temperature	345 – 390	°C	
Middle - Zone 2 Temperature	335 – 390	°C	
Rear - Zone 1 Temperature	330 – 390	°C	
Mold Temperature	130 – 160	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	40 – 70	rpm	

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Shot to Cylinder Size	40 – 60	%	
Vent Depth	0.025 – 0.076	mm	

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