

# ULTEM™ RESIN AUT210

REGION ASIA

## DESCRIPTION

Transparent, Thermoplastic Polyimide (TPI). Glass transition Temperature (Tg) of 227degC. Haze onset temperature of 212degC (SABIC IP method). Very low outgassing and plateout, for automotive lighting applications where highly metallized, reflective surfaces are required.

INDUSTRY	SUB INDUSTRY
Automotive	Automotive Under the Hood

## TYPICAL PROPERTY VALUES

Revision 20231109

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
<b>MECHANICAL</b>			
Tensile Stress, yld, Type I, 5 mm/min	105	MPa	ASTM D638
Tensile Stress, brk, Type I, 5 mm/min	88	MPa	ASTM D638
Tensile Strain, yld, Type I, 5 mm/min	8	%	ASTM D638
Tensile Strain, brk, Type I, 5 mm/min	75	%	ASTM D638
Tensile Modulus, 5 mm/min	3590	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	170	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	3330	MPa	ASTM D790
Tensile Stress, yield, 5 mm/min	103	MPa	ISO 527
Tensile Stress, break, 5 mm/min	88	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	7	%	ISO 527
Tensile Strain, break, 5 mm/min	54	%	ISO 527
Tensile Modulus, 1 mm/min	3320	MPa	ISO 527
Flexural Modulus, 2 mm/min	3140	MPa	ISO 178
<b>IMPACT</b>			
Izod Impact, unnotched, 23°C	2440	J/m	ASTM D4812
Izod Impact, notched, 23°C	37	J/m	ASTM D256
Izod Impact, notched, -30°C	38	J/m	ASTM D256
Instrumented Dart Impact Total Energy, 23°C	33	J	ASTM D3763
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	5	kJ/m <sup>2</sup>	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	4	kJ/m <sup>2</sup>	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	16	kJ/m <sup>2</sup>	ISO 179/1eA
<b>THERMAL</b>			
Vicat Softening Temp, Rate B/50	222	°C	ASTM D1525
HDT, 0.45 MPa, 3.2 mm, unannealed	215	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	201	°C	ASTM D648
HDT, 1.82 MPa, 6.4 mm, unannealed	211	°C	ASTM D648
CTE, -40°C to 150°C, flow	5.E-05	1/°C	ASTM E831
CTE, -40°C to 150°C, xflow	5.E-05	1/°C	ASTM E831
CTE, 23°C to 150°C, flow	5.E-05	1/°C	ISO 11359-2

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
CTE, 23°C to 150°C, xflow	5.E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	221	°C	ISO 306
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	196	°C	ISO 75/Ae
Metallized Haze Onset	212	°C	SABIC method
<b>PHYSICAL</b>			
Specific Gravity	1.29	-	ASTM D792
Mold Shrinkage, flow, 3.2 mm	0.5 – 0.7	%	SABIC method
Melt Flow Rate, 337°C/6.6 kgf	11	g/10 min	ASTM D1238
Density	1.29	g/cm <sup>3</sup>	ISO 1183
Water Absorption, (23°C/saturated)	1.03	%	ISO 62-1
Moisture Absorption (23°C / 50% RH)	0.2	%	ISO 62
Melt Volume Rate, MVR at 360°C/5.0 kg	16	cm <sup>3</sup> /10 min	ISO 1133
<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	380 – 405	°C	
Nozzle Temperature	375 – 400	°C	
Front - Zone 3 Temperature	380 – 405	°C	
Middle - Zone 2 Temperature	370 – 395	°C	
Rear - Zone 1 Temperature	360 – 380	°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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