ULTEM™ Resin AUT210
Americas: COMMERCIAL

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. Resin is a Dual-use item and is subject to export control restrictions under both U.S. 15 CFR , 774 and Annex I of Reg. (EC) 428/2009 as ECN 1C008. Diversion contrary to law is prohibited.

TYPICAL PROPERTIES[1]	TYPICAL VALUE	Unit	Standard
MECHANICAL			
Tensile Stress, yld, Type I, 5 mm/min	1070	kgf/cm²	ASTM D 638
Tensile Stress, brk, Type I, 5 mm/min	890	kgf/cm²	ASTM D 638
Tensile Strain, yld, Type I, 5 mm/min	8	%	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	75	%	ASTM D 638
Tensile Modulus, 5 mm/min	36600	kgf/cm²	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	1730	kgf/cm²	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	33900	kgf/cm²	ASTM D 790
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
IMPACT			
Izod Impact, unnotched, 23°C	248	cm-kgf/cm	ASTM D 4812
Izod Impact, notched, 23°C	3	cm-kgf/cm	ASTM D 256
Izod Impact, notched, -30°C	3	cm-kgf/cm	ASTM D 256
Instrumented Impact Total Energy, 23°C	336	cm-kgf	ASTM D 3763
Izod Impact, unnotched 80*10*4 +23°C	NB	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	NB	kJ/m²	ISO 180/1U
Izod Impact, notched 80*10*4 +23°C	5	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	4	kJ/m²	ISO 180/1A

(1) Typical values only. Variations within normal tolerances are possible for various colors. All values are measured after at least 48 hours storage at 23°C/50% relative humidity. All properties, except the melt volume and melt flow rates, are measured on injection molded samples. All samples tested under ISO test standards are prepared according to ISO 294.

(2) Only typical data for selection purposes. Not to be used for part or tool design.
(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[1]	TYPICAL VALUE	Unit	Standard
IMPACT			
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	16	kJ/m²	ISO 179/1eA
THERMAL			
Vicat Softening Temp, Rate B/50	222	°C	ASTM D 1525
HDT, 0.45 MPa, 3.2 mm, unannealed	215	°C	ASTM D 648
HDT, 1.82 MPa, 3.2mm, unannealed	201	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	211	°C	ASTM D 648
CTE, -40°C to 150°C, flow	5.E-05	1/°C	ASTM E 831
CTE, -40°C to 150°C, xflow	5.E-05	1/°C	ASTM E 831
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 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
PHYSICAL			
Specific Gravity	1.29	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm (5)	0.5 - 0.7	%	SABIC Method
Melt Flow Rate, 337°C/6.6 kgf	11	g/10 min	ASTM D 1238
Density	1.29	g/cm³	ISO 1183
Water Absorption, (23°C/sat)	1.03	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.2	%	ISO 62
Melt Volume Rate, MVR at 360°C/5.0 kg	16	cm³/10 min	ISO 1133

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
Injection Molding		
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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