



# HI TEMP 300-AMB

## High Temperature

Industry-leading, ultra-high temperature resistant rigid plastic suitable for the harshest thermal environments

### HIGH THERMAL-RESISTANCE, TRANSLUCENT AMBER PLASTIC FOR FLOW VISUALIZATION (HDT >300 °C)

HI TEMP 300-AMB is an ultra-high temperature plastic for use in applications requiring high heat resistance. It is the industry's highest heat resistant material with heat deflection temperature of over 300 °C at both low and high stress (at 0.455 and 1.82 MPa). This material is well suited for the testing of high temperature components in applications including HVAC, consumer appliances, motor enclosures, stators, molds, and the like. It does not require a secondary thermal post-cure

#### MATERIAL PROPERTIES

The full suite of mechanical properties are given per ASTM and ISO standards where applicable. In addition, properties such as flammability, dielectric properties, and 24 hour water absorption. This allows for better understanding of the material capability to aid in design decisions for the material. All parts are conditioned per ASTM recommended standards for a minimum of 40 hours at 23 °C, 50% RH.

Solid material properties reported were printed along the vertical axis (ZY-orientation). material properties are relatively uniform across print orientations, as detailed in the following section on Isotropic Properties. Because of this, parts do not need to be oriented in a particular direction to exhibit these properties.

### APPLICATIONS

- High temperature components testing and general use parts including: HVAC, consumer appliances, motor enclosures, stators, etc.
- Low pressure molding/tooling: expanding foams, rubbers, etc.
- Overmolding

### BENEFITS

- Production-grade material
- High heat resistance for testing and use in high heat environments
- No secondary thermal post-cure required
- Excellent visualization for parts requiring evaluation of internal features and fluid flow performance

### FEATURES

- HDT over 300 °C at both low and high stress (HDT at 0.455 and 1.82 MPa)
- Rigid and translucent
- High tensile modulus for use in molds (4000 MPa)

SOLID MATERIAL						
Metric	ASTM Method	Metric	English	ISO Method	Metric	English
Physical				Physical		
Solid Density	ASTM D792	1.3 g/cm³	0.047 lb/in³	ISO 1183	1.3 g/cm³	0.047 lb/in³
24 Hour Water Absorption	ASTM D570	0.36 %	0.36 %	ISO 62	0.36 %	0.36 %
Mechanical				Mechanical		
Tensile Strength Ultimate	ASTM D638 Type IV	77 MPa	11200 psi	ISO 527 -1/2	75 MPa	10900 psi
Tensile Strength at Yield	ASTM D638 Type IV	N/A	N/A	ISO 527 -1/2	N/A	N/A
Tensile Modulus	ASTM D638 Type IV	4100 MPa	5.9 ksi	ISO 527 -1/2	4200 MPa	6.1 ksi
Elongation at Break	ASTM D638 Type IV	2.3 %	2.3 %	ISO 527 -1/2	2.3 %	2.3 %
Elongation at Yield	ASTM D638 Type IV	N/A	N/A	ISO 527 -1/2	N/A	N/A
Flex Strength	ASTM D790	85 MPa	12300 psi	ISO 178	130 MPa	1900 psi
Flex Modulus	ASTM D790	4300 MPa	6.2 ksi	ISO 178	4500 MPa	6.5 ksi
Izod Notched Impact	ASTM D256	10 J/m	0.2 ft-lb/in	ISO 180-A	1.6 J/m²	N/A
Izod Unnotched impact	ASTM D4812	102 J/m	1.9 ft-lb/in	ISO 180-U		
Shore Hardness	ASTM D2240	89 D	89 D	ISO 7619	89 D	89 D
Thermal				Thermal		
Glass Transition (Tg)	ASTM E1640 (E"Peak)	N/A	N/A	ISO 6721-1/11 (E" Peak)	N/A	N/A
HDT 1.82MPa/264 PSI	ASTM D648	>300 °C	>572 °F	ISO 75-1/2 A	>300 °C	>570 °F
HDT 0.455MPa/66PSI	ASTM D648	>300 °C	>572 °F	ISO 75- 1/2 B	280 °C	540 °F
HDT 8.0MPa/ 1160PSI	N/A			ISO 75-1/2 C	100 °C	210 °F
CTE 0-110C	ASTM E831	69 ppm/°C	38 ppm/°F	ISO 11359-2	69 ppm/K	38 ppm/°F
CTE 165-250C	ASTM E831	58 ppm/°C	32 ppm/°F	ISO 11359-2	58 ppm/K	32 ppm/°F
UL Flammability	UL94	HB				
Electrical				Electrical		
Dielectric Strength (kV/mm) @ 3.0 mm thickness	ASTM D149	18.1				
Dielectric Constant @ 1 MHz	ASTM D150	3.29				
Dissipation Factor @ 1 MHz	ASTM D150	0.013				
Volume Resistivity (ohm-cm)	ASTM D257	6.0x10 <sup>15</sup>				