

H T**L T****HIGH TEMPERATURE LIGHT TRANSMISSIBLE THERMOPLASTICS & ADDITIVES****HTLT 1070 Thermoplastic**

HTLT 1070 resin is a transparent, organic/inorganic, amorphous thermoplastic. It is a tough, impact resistant, high-temperature thermoplastic that can be injection molded with precision detail. The **HTLT 1070** has an index of refraction of 1.56, visible light transmission in excess of ordinary glass, and a sustained operating temperature up to 150⁰ C. Given its high glass transition temperature and excellent thermal insulation properties, HTLT parts are suitable for use in solder reflow processes including lead-free solder reflow applications. When molded, HTLT parts are optically transparent.

PROPERTY*:

Specific Gravity, g/cc	<u>HTLT 1070</u> 1.12
Melt Temperature, °C **	> 300 (572 F)
Melt Flow @ 330°C (626 F), 2.16 kg, (ASTM D 1238)	4.0-6.0 (g/10 min.)
Glass Transition Temperature:	
(°C) (DMTA)(2 ⁰ /min. ramp)	262 ⁰
(°C) (DMTA)(4 ⁰ /min. ramp/est.)	265 ⁰
Mold Shrinkage (%)	0.9 – 1.0
Coefficient of Linear Thermal Expansion	
flow/cross flow, ASTM D 696 in/in/°F	3.9 E-05
Ball Indentation Hardness (ISO 2039-1)	115 Mpa
Unnotched Izod Impact (23 ⁰ C, 3.18 mm, ASTM D256)	No Break (J/m)
Tensile Elongation @ break, %	50.0
Tensile Elongation @ yield, %	7.0
Tensile Modulus (1 mm/min; ASTM 638 lb/in ²)	330,000
UL94 Flame Class (UL 94, Class, 1.5 mm thickness)	HB
Water Absorption, 24 hour immersion	< 0.10 %
85/85 (85 % r.h & 85 ⁰ C, 750 hrs.)	Pass

Electrical Properties (23⁰ C/50 % r.h.):

Dissipation Factor, 60 Hz (ASTM D 150)	0.001
Tinfoil Electrodes,	
Volume Resistivity ((ASTM D 257, Ohm*m)	1.0 E+16
Tinfoil Electrodes,	
Surface Resistivity (ASTM D 257, Ohm)	1.0 E+16
Tinfoil Electrodes,	
Dielectric Constant (ASTM D 150, 60 Hz)	2.9
Dielectric Constant (ASTM D 150, 1 MHz)	2.9

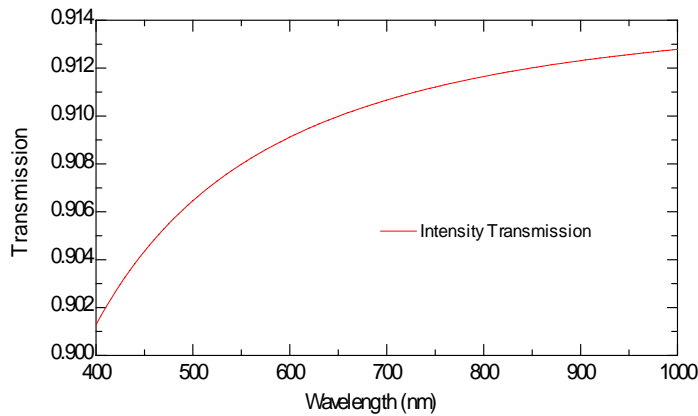
* HTLT 1070 thermoplastics are experimental, developmental products and property values are approximate/extrapolated in some cases.

** HTLT 1070 is fully amorphous. TGA studies demonstrate that HTLT resins are thermally stable, exhibiting no oxidation, below 407⁰ C.

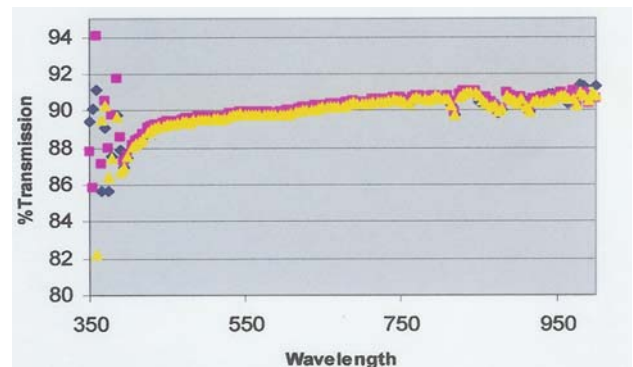
Estimated Optical Properties:

Index of Refraction	1.56
Transmittance (1.0 mm), 585 nm, %	91.3
Luminous Transmittance, Max.Theoretical Value, %	
400 nm	90.1
700 nm	91.0
1000 nm	91.2
Abbe Number	33.5
UV Transmission Cut-Off	360 nm
Haze, 1000 microns thickness	0.6
Yellowness Index/1000 microns (Clear Transparent Material)	0.6

HTLT THEORETICAL TRANSMISSION
(Thin Film/Parrell Sides/Perfect Optical Finish)



PROJECTED TRANSMISSION (1.0 mm Thick)*
(Transmission vs. Wavelength)



PROJECTED REFRACTIVE INDEX vs. WAVELENGTH

Wavelength (nm)	410.47	435.8	480.39	589.93	643.85
Refractive Index	1.591228	1.584382	1.575259	1.561739	1.557672

PROJECTED REFRACTIVE INDEX @ 589.3 nm vs. TEMPERATURE

Temperature (°C)	-25	0	20	40	60	85
Refractive Index	1.5647	1.5633	1.5618*	1.5598	1.5578	1.5538

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