



Transparent Composite Thermoplastic

Leveraging Light & Innovation for a Sustainable Future

DESCRIPTION

HTLT™ TPI is an amorphous, transparent composite thermoplastic comprising neat polyimide (TPI) resin modified with Suncolor’s High Temperature Light Transmissible (HTLT™) Additive. HTLT™ TPI transparent composite thermoplastic offers inherent flame retardancy, operating temperatures $\geq 150^{\circ}\text{C}$, high strength, broad chemical resistance, and high near infrared (NIR) light transparency with $\geq 82\%$ transmission @ 850 nm.

The HTLT™ TPI transparent composite thermoplastic offers the lowest CTE and the highest glass transition temperature in its class, with a broad Tg ranging from 280°C – 299°C . The HTLT™ TPI is the ideal choice for mass producing lightweight, geometrically stable, complex components for high temperature applications such as 265°C SMT reflow. Micro-lenses post reflow exhibit sub-micron detail, near zero stress and low birefringence. HTLT™ Additives are engineered to provide the HTLT™ TPI with balanced, totally integrated performance properties. Glass and fiber reinforced thermoplastic polyimide composites modified with the HTLT™ TPI Additive can benefit from lower viscosity, improved rheology, and strong coupling of the TPI resin and filler. The dynamic result is a highly reinforced, homogeneous thermoplastic with low, stable, compatible CTEs for the TPI resin and reinforcing filler.

Total Integrated Performance Properties, Features & Benefits:

- High Transparency, Near Infrared (NIR) Light ($\geq 82\%$)
- High Glass Transition Temperature (Tg) ($\geq 280^{\circ}\text{C}$)
- Coefficient of Thermal Expansion (CTE) (≤ 40 ppm)
- Low Birefringence, High Index of Refraction (1.657)
- Low Mold-In Stress; Uniform Heating & Cooling
- Increased Thermal Conductivity
- High Heat Processes such as SMT Reflow (265°C)
- Geometric Stability during & after Processing
- True Replication of Sub-Micron Detail
- Injection Moldable
- Reduced Cycle Times (Up to 40%)
- Homogeneity/ Compatibilization
- Impact Resistance & Chemical Resistance
- High Operating Temperatures ($150\text{-}200^{\circ}\text{C}$)
- Surface Treatable / AR and High Temperature Coatings
- High Thermal Stability (450°C / TGA)
- Thermal, Photolytic & Hydrolytic Oxidative Resistance
- Inherent, Non-Halogenated Fire Retardancy

INDUSTRY	SUB INDUSTRY
Automotive	Automotive Under the Hood, Lightweight Electric Vehicle Components, Valves & Sensors, Complex & Miniaturized Housings, Washers, Bushings
Electrical and Electronics	Electrical Devices and Displays, Lighting, Electrical Components and Infrastructure, Consumer Electronics, Smart Phones, Connectors
Photonics	Advanced Driver Assistance Systems (ADAS), Autonomous Driving, Infrared Lenses for LIDAR, VCSELs, 5G, Smart Factories, Robotics, Drones, Robots, Manufacturing & Construction Equipment, Internet of Things, Augmented Reality, Night Vision & Thermographic Sensors, Co-Packaged Optics, High Heat Processes (265°C SMT Reflow)
Industrial	Semiconductors, Servo-Motor, Electronic Material Handling, Robotic Material Handling, Thermoplastic/Thermoset Composite Instruments & Tools, Electro-Optical Construction Instruments, Tools, & Equipment
Aerospace	Aviation, Infrared Transparent Sensors, NIR Advanced Radar Systems

TECHNICAL DATA SHEET:

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