



# HTLT™ TPI/PPSU

## Transparent Composite Thermoplastic

*Leveraging Light & Innovation for a Sustainable Future*

### DESCRIPTION

HTLT™ TPI/PPSU is a versatile, amorphous, transparent composite thermoplastic co-polymer comprising neat polyimide/polyphenylsulfone (TPI/PPSU) resins modified with Suncolor’s High Temperature Light Transmissible (HTLT™) Additive. HTLT™ TPI/PPSU transparent composite thermoplastic offers inherent flame retardancy, operating temperatures  $\geq 150^{\circ}\text{C}$ , high strength, broad chemical resistance, and highest near infrared (NIR) light transparency in its class with greater than 84% transmission @ 850 nm.

The HTLT™ TPI/PPSU transparent composite thermoplastic offers low CTEs and the highest glass transition temperature in its class, with a broad Tg ranging from  $260^{\circ}\text{C} - 280^{\circ}\text{C}$ . The HTLT™ TPI/PPSU is the ideal choice for mass producing lightweight, geometrically stable, complex components for high temperature applications such as  $245^{\circ}\text{C} - 265^{\circ}\text{C}$  SMT reflow. Miniaturized components, with sub-micron detail, near zero stress and low birefringence can be injection molded for mass production. HTLT™ Additives are engineered to provide the HTLT™ TPI/PPSU with balanced, totally integrated performance properties. Glass and fiber reinforced polyimide/polyphenylsulfone composites modified with the HTLT™ TPI/PPSU Additive can benefit from lower viscosity, improved rheology, and strong coupling of the TPI/PPSU resin and filler. The dynamic result is a highly reinforced, homogeneous thermoplastic with low, stable, compatible CTEs for the TPI/PPSU resin and reinforcing filler.

### Total Integrated Performance Properties, Features & Benefits:

- High Transparency, Near Infrared (NIR) Light ( $\geq 84\%$ )
- High Glass Transition Temperature (Tg) ( $\geq 260^{\circ}\text{C}$ )
- Coefficient of Thermal Expansion (CTE) ( $\leq 40$  ppm)
- Low Birefringence, High Index of Refraction (1.66)
- Low Mold-In Stress; Uniform Heating & Cooling
- Increased Thermal Conductivity
- High Heat Processes such as SMT Reflow ( $245 - 265^{\circ}\text{C}$ )
- Geometric Stability during & after Processing
- True Replication of Sub-Micron Detail
- Injection Moldable
- Reduced Cycle Times (Up to 40%)
- Homogeneity/ Compatibilization/High Flow
- Impact Resistance & Chemical Resistance
- High Operating Temperatures ( $150 - 200^{\circ}\text{C}$ )
- Surface Treatable / AR and High Temperature Coatings
- High Thermal Stability ( $450^{\circ}\text{C}/$  TGA)
- Thermal, Photolytic & Hydrolytic Oxidative Resistance
- Inherent, Non-Halogenated Fire Retardancy

INDUSTRY	SUB INDUSTRY
Automotive	Automotive Under the Hood, Electro-Hydraulic Valves, Sensors, Transmission Components, Braking & Air Conditioning Systems, Seals, Washers, Bearings, Lightweight Chemical Resistant Components
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 ( $245^{\circ}\text{C} - 265^{\circ}\text{C}$ 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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