



## Transparent Composite Thermoplastic

*Leveraging Light & Innovation for a Sustainable Future*

### DESCRIPTION

HTLT™ PPSU is an amorphous, transparent composite thermoplastic comprising neat polyphenylsulfone (PPSU) resin modified with Suncolor’s High Temperature Light Transmissible (HTLT™) Additive. HTLT™ PPSU transparent composite thermoplastic offers inherent flame retardancy, operating temperatures  $\geq 150^{\circ}\text{C}$ , impact resistance  $\geq$  polycarbonate, chemical resistance, visible light transparency ( $\geq 70\%$  @ 450 nm) and near infrared (NIR) transparency ( $\geq 87\%$  @ 850 nm).

The HTLT™ PPSU transparent composite thermoplastic offers the highest NIR transparency, lowest CTE, 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™ 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™ PPSU with balanced, totally integrated performance properties. Glass and fiber reinforced polyphenylsulfone composites modified with the HTLT™ PPSU Additive can benefit from lower viscosity, improved rheology, and strong coupling of the PPSU resin and filler. The dynamic result is a highly reinforced, homogeneous thermoplastic with low, stable, compatible CTEs for the PPSU resin and reinforcing filler.

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

- High Transparency, Visible & Near Infrared (NIR) Light
- High Glass Transition Temperature (Tg) ( $\geq 260^{\circ}\text{C}$ )
- Coefficient of Thermal Expansion (CTE) ( $\geq 25$  ppm)
- Low Birefringence, High Index of Refraction (1.672)
- 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
- 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	Electric Vehicles, Automotive Under the Hood, Valves, Impact Resistance Components, Valve Technologies, Transmission Parts, Braking & Air Conditioning Systems, Seals, Washers, Bearings, Electro-Mechanical Systems, Hydrolytic & Chemical Resistance
Electrical and Electronics	Electrical Devices and Displays, Lighting, Electrical Components and Infrastructure, Cable Couplings & Connectors, PCBs, Miniaturization
Photonics	Advanced Driver Assistance Systems (ADAS), Autonomous Driving, Visible Light & Infrared Lenses for LIDAR, VCSELs, 5G, Smart Factories, Robotics, Drones, Robots, Manufacturing & Construction Tools, Internet of Things, Night Vision & Thermographic Sensors, High Heat Processes ( $245^{\circ}\text{C}$ - $265^{\circ}\text{C}$ SMT Reflow)
Industrial	Energy Storage, Semiconductors, Electronic Material Handling, Electro-Optical Construction Instruments, Electrical Components, Thermoplastic/Thermoset Composite Instruments & Tools
Aviation	Infrared Sensors, Imaging, Chemical Resistant Components

**TECHNICAL DATA SHEET:**

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