

Thermal Properties

An outstanding property of PEI resin is its ability to withstand long-term exposure to elevated temperatures. This high-heat performance, combined with excellent flammability ratings and UL recognition, qualifies PEI resin for demanding high temperature applications. UL rates PEI resin for continuous use at 170°C. The resin's high glass transition temperature, T_g, of 419°F (215°C), coupled with its high heat deflection temperature of 392°F (200°C) at 264 psi (1.82 N/mm²), contributes to its excellent retention of physical properties at elevated temperatures.

The coefficient of thermal expansion is an important design consideration in the production of large composite enclosures, fittings and mating connectors. The table below lists the coefficients of thermal expansion for PEI and the matching values for various metals:

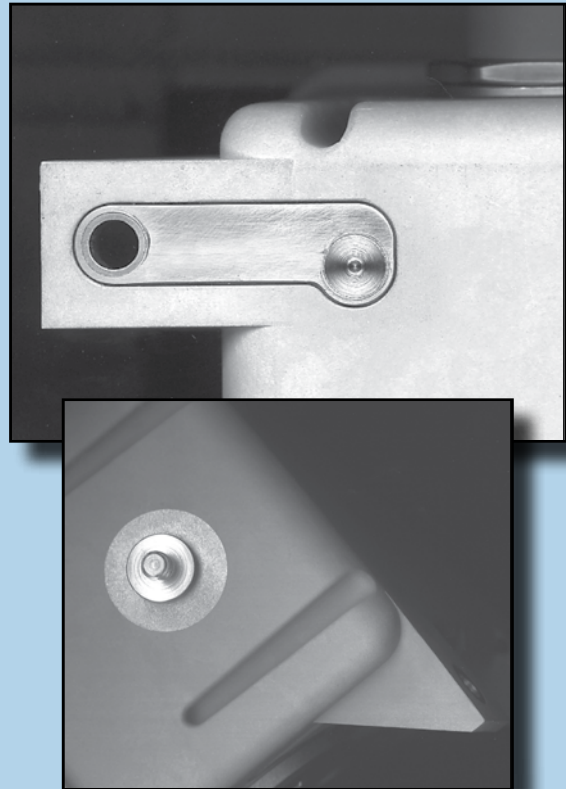
Coefficient of Linear Thermal Expansion

Material	10 ⁻⁵ in/in -°F	10 ⁻⁵ m/m -°C
PEI	1.1	2.0
Brass	0.4 - 1.0	1.6-1.8
Zinc	1.5	2.7
Aluminum	1.2	2.2
Steel	0.7-0.8	1.2-1.5

Strength

At room temperature PEI resin exhibits strength far beyond that of most engineering thermoplastics, with a tensile strength yield of over 15,000 psi (100 N/mm²) and a flexural strength at 5% deflection of 21,000 psi (145 N/mm²). Even more impressive is the strength at elevated temperatures. At 375°F (190°C), a temperature well beyond the useful range of most other engineering thermoplastics, PEI retains approximately 6,000 psi (41 N/mm²) tensile strength. The inherent strength of PEI is increased by reinforcement with glass fibers, such as the 30% fiber mix used by Glenair.

Step Three: Select the (Optional) Grounding/Earthing Device



Choose from Two Standard Grounding Device Designs

MIL-STD-1310G (NAVY) requires that electrical equipment operated from an external power source be grounded to provide electrical safety and personnel shock protection. Glenair's integrated grounding foot (top photo) combines the earthing function into one of the box mounting feet; thus eliminating the need for an additional, external grounding strap and mounting point.

The simple grounding stud (bottom photo) is an inexpensive and yet effective way to provide overall grounding of the box. Typically, a wire grounding strap is fixed to the stud and taken to ground on an adjacent bulkhead. The threaded stud penetrates the box for easy attachment of an internal ground wire.

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