

Material Information



ULTEM 2300

Introduction

ULTEM 2300 is a 30% glass fiber-reinforced polyetherimide (PEI) thermoplastic designed for applications requiring high strength, stiffness, creep resistance, and dimensional stability at elevated temperatures. It combines the inherent high-temperature and chemical resistance of PEI with the increased rigidity and dimensional stability provided by glass fiber reinforcement, making it suitable for demanding CNC-machined components.

Advantages

High strength and stiffness, excellent dimensional stability, strong creep resistance, high-temperature performance, and good chemical resistance. The 30% glass fiber reinforcement substantially increases rigidity and reduces thermal expansion compared with unfilled ULTEM, making ULTEM 2300 suitable for components subjected to high static loads and elevated temperatures.

Disadvantages

ULTEM 2300 is more expensive and more specialized than common engineering plastics such as ABS, POM, and Polycarbonate. The glass fiber reinforcement can also increase tool wear during CNC machining and may produce a more abrasive machined surface than unfilled PEI.

Tolerance

3DSPRO can manufacture and inspect to tight tolerances, including sub ± 0.001 " tolerances, per your drawing specifications and GD&T callouts.

Recommendation

The combination of high strength, rigidity, creep resistance, dimensional stability, flame resistance, and high-temperature performance makes ULTEM 2300 suitable for CNC-machined components used in aerospace, automotive, electrical and electronics, semiconductor, and industrial applications. It is particularly appropriate for precision parts exposed to high static loads and elevated temperatures where maintaining dimensional stability is important.

Material Specifications (For reference only.)	
Tensile strength	117MPa
Elongation at Break	3%
Hardness	114 HRM
Heat deflection temperature	210°C
Glass transition temperature	210°C to 215°C

Attention

ULTEM 2300 contains 30% glass fiber, so appropriate tooling and cutting parameters should be used to manage tool wear during CNC machining. The glass fibers also create material anisotropy and can influence surface characteristics, thermal expansion, and dimensional behavior. For close-tolerance components, the material's thermal history, machining sequence, and fiber orientation should be considered during production and inspection.

Applications

3DSPRO finds people using ULTEM 2300 to make functional parts and prototypes in the following industries and applications.

Aerospace components:

Aircraft interior components, structural brackets, electrical housings, supports, fittings, and other lightweight parts requiring high strength, rigidity, and flame resistance.

Electrical and electronics equipment:

Electrical connectors, insulators, housings, terminal components, mounting structures, and other precision parts requiring high dielectric strength and dimensional stability.

Automotive and transportation:

Sensor housings, brackets, electrical components, structural supports, and other parts requiring high-temperature performance and dimensional stability.

Industrial and semiconductor equipment:

Fixtures, equipment components, precision mounts, wafer-processing components, housings, and other CNC-machined parts requiring high rigidity, creep resistance, chemical resistance, and stable performance at elevated temperatures.