

Material Information

USP Class VI TECAPEEK



Introduction

USP Class VI TECAPEEK is a medical-grade unfilled PEEK material designed for applications requiring biocompatibility and high-performance mechanical properties. It combines the strength, chemical resistance, dimensional stability, and high-temperature performance of PEEK with suitability for demanding medical and pharmaceutical applications. TECAPEEK MT natural is tested according to USP Class VI and ISO 10993 requirements.

Advantages

Excellent chemical resistance, high dimensional stability, good strength and stiffness, excellent sterilization resistance, and good wear and sliding properties. USP Class VI TECAPEEK can withstand repeated steam sterilization while maintaining its dimensional stability and physical properties, making it suitable for reusable medical and laboratory components.

Disadvantages

USP Class VI TECAPEEK is significantly more expensive than standard engineering plastics such as POM, Nylon, and Polycarbonate. Its high-performance properties may also exceed the requirements of general-purpose components, making it more suitable for specialized medical, pharmaceutical, and other demanding applications.

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 biocompatibility, chemical resistance, sterilization resistance, dimensional stability, and high-temperature performance makes USP Class VI TECAPEEK suitable for CNC-machined medical, pharmaceutical, laboratory, and precision components. It is particularly appropriate for parts requiring repeated sterilization and reliable performance in demanding medical environments.

Material Specifications (For reference only.)	
Tensile strength	97 to 110MPa
Elongation at Break	30% to 50%
Hardness	94 to 99 HRM
Heat deflection temperature	160°C
Glass transition temperature	150°C

Attention

USP Class VI compliance should be verified for the specific grade and material form being purchased rather than assumed for all TECAPEEK products. TECAPEEK MT natural is tested according to USP Class VI, while other medical TECAPEEK grades may have different compliance profiles. When the finished component is intended for a regulated medical application, the complete material, machining, cleaning, sterilization, and validation requirements should be considered together.

Applications

3DSPRO finds people using USP Class VI TECAPEEK to make functional parts and prototypes in the following industries and applications.

Medical equipment:

Surgical instrument components, medical device parts, reusable instrument components, and other precision parts requiring biocompatibility and sterilization resistance.

Pharmaceutical equipment:

Processing components, fittings, guides, housings, and other parts exposed to chemicals and repeated sterilization.

Laboratory equipment:

Laboratory fixtures, equipment components, fluid-handling parts, and other precision components requiring chemical resistance and dimensional stability.

Medical and precision engineering:

Bushings, guides, supports, fixtures, insulators, and other CNC-machined components requiring high-performance PEEK properties combined with medical-grade material requirements.