EXT Titan Pellet Series

PEKK GF30, Natural Technical Data Sheet

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Original Instructions

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1 PEKK GF30, NATURAL

PolyEtherKetoneKetone reinforced with 30% Glass Fiber (PEKK GF30, Natural)

Materials Available for purchase:

- 68-0068 PEKK Glass Fiber Filled- Natural Pellets

1.1 **PEKK GF30, Natural** - Product Description

Titan PEKK GF-30 pellets are engineered high performance thermoplastic additive manufacturing material based on PEKK with chopped glass fiber. The PEKK brings a highly stable chemical backbone with distinctive structural features which permits possibilities in the control of crystallinity that include a low Ether/Ketone ratio and a copolymer structure incorporating Terephthalic and Isophthalic moieties. The glass fiber reinforcement lowers the melting point and slows crystallization behavior with transition glass (Tg) of about 160 ^{0}C. PEKK GF-30 material is a highly versatile copolymer and designed for applications that require high temperature resistance, high chemical resistance, semicrystalline structures, amorphous, robust and low flammable parts.

1.2 **PEKK GF30, Natural** - Advantages

Easily processable, low flammability, excellent layer adhesion, great strength, ductile and toughness over a wide temperature range, high melting point, low warpage, repeatable, durable, high temperature resistance, great mechanical properties with ASTM standards and good chemical resistance compared to PEI and PESU.

1.3 **PEKK GF30, Natural** - Applications

- Aerospace, automotive and transportation
- Air ducts, brackets, connectors, fittings, components, fixtures
- Tooling and prototypes

1.4 **PEKK GF30, Natural** - Storage and Use

PEKK GF30, Natural is hygroscopic; hence it will absorb moisture from the atmosphere which would potentially affect the print quality and mechanical properties of the printed part. For optimal results, the pellets should be dried for 6-8 hours in a pellet dryer at 120 °C (248 °F). Store in bins, drums, or buckets. Respirator or dust mask is required when handling large quantities of material (i.e., pouring into feed source).

1.5 **PEKK GF30, Natural** - Safety

Consult the SDS for the safety properties of the material. Molten material and hot surfaces can cause thermal burns. Therefore, wear personal protective equipment for the hands, eyes, and body.

1.6 **PEKK GF30, Natural** - Material Properties

MECHANICAL PROPERTIES- DRIED BEFORE PRINTING			
	In-Plane (XZ)	Out of plane (ZX)	Method
Tensile Modulus (GPa)	6.48	4.24	ASTM D638
Strength @Break (MPa)	143.1	50.67	ASTM D638
Elongation @Break, %	2.81	1.28	ASTM D638
Shrink factor during printing	0.5		

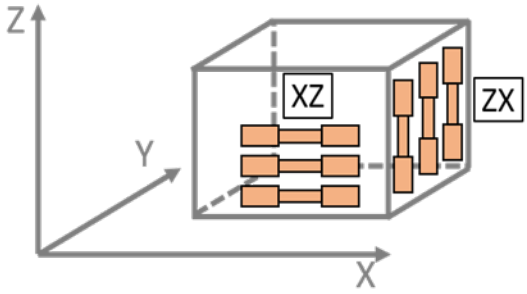
MECHANICAL PROPERTIES- DRIED BEFORE PRINTING		
Max moisture content for printing *	<0.01%	Moisture analyzer

* The Max Moisture content is dependent on print geometry.

1.7 **PEKK GF30, Natural** - Print Orientation

All test samples were routed from 3D printing a single wall 12”x12”x12” cube was printed with a 2 mm nozzle, 3.3 mm extrusion width, 1 mm layer height and typical print speeds at nominal temperatures (melt temperature @305 °C +/- 2). The tensile strips were routed along XZ direction for in-plane specimens and along ZX for the out of plane specimens. Layer cooling is not recommended.

*Layer lines were not removed from the surface. The surface of the coupons was as printed.



1.8 **PEKK GF30, Natural** - Typical Print Parameters

PARAMETER	TYPES
Bed Material	Polycarbonate
Adhesion Promoter	ABS Cement, Nano Polymer Adhesive
Purge/Buffer Material	From High Temp: GF PC -> HDPE From Low Temp: HDPE -> GF PC

1.9 **PEKK GF30, Natural** - Disclaimer

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