



## PEKK VS. PEEK IN FFF



✦ KEPSTAN® resin is a high performance thermoplastic material based on a highly stable backbone of PolyEtherKetoneKetone (PEKK). Its semi-crystalline structure offers an outstanding combination of mechanical and thermal strength together with chemical and fire resistance.

✦ PEKK and PEEK are both in the Polyaryletherketone family of ultra-high performance polymers.

✦ Unlike PEEK, Kepstan® PEKK is a copolymer with a slower and highly tunable crystallization rate making it the preferred choice for additive manufacturing.

✦ Kepstan® PEKK can be printed directly in either the amorphous or semi-crystalline state, or printed amorphous and crystallized in a secondary process, offering the ultimate combination in performance and processing flexibility.



## KEPSTAN® PEKK BENEFITS OVER PEEK:

- ✦ Better layer adhesion
- ✦ Lower print temperatures
- ✦ Improved dimensional stability (less warping)
- ✦ Faster print speeds
- ✦ Production of amorphous or semi-crystalline parts
- ✦ Ability to print larger parts

### PEKK FILAMENT

LOW temperature build chamber

**Amorphous PEKK**

HIGH temperature build chamber

**Semi-crystalline PEKK**



# KEPSTAN® PEKK IS AVAILABLE AS FILAMENT FOR ADDITIVE MANUFACTURING – CONTACT ARKEMA TO LEARN MORE

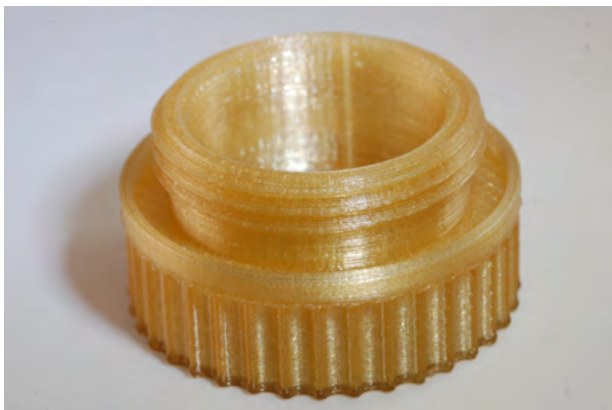
Processing Temperatures (°C)	PEEK	PEKK
Extruder Temperature	375-450	350-380
Bed Temperature	130-145	120-140
Enclosure Temperature	90-200	25-150

PEKK can be printed on most machines with a hot end capable of reaching 350-380°C with or without a heated chamber.

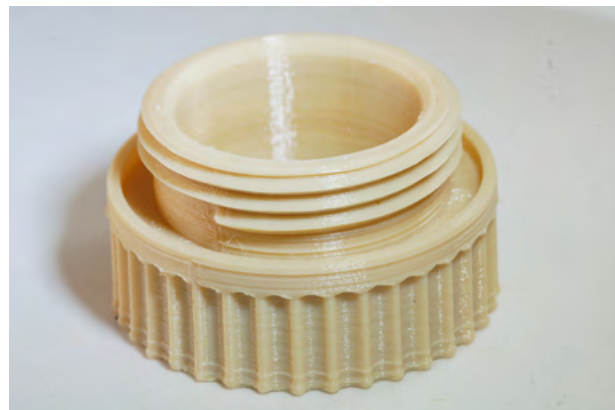
PEKK and PEEK are high performance polymers with similar properties, but printed PEKK parts tend to have better dimensional stability and layer adhesion.

Printed Part Properties	Condition	Test Method	Unit	PEEK	PEKK
Tensile Strength	Annealed, X/Y, 23°C	ISO 527-1BA (modified)	MPa	80 - 105	80 - 100
	Annealed, Z, 23°C	ISO 527-1BA (modified)	MPa	<20	48-65
Tensile Elongation (break)	Annealed, X/Y, 23°C	ISO 527-1BA (modified)	%	5-10	6-10
	Annealed, Z, 23°C	ISO 527-1BA (modified)	%	1-3	4-6

Intrinsic Material Properties	Condition	Test Method	Unit	PEEK	PEKK
Tensile Modulus	23°C	ISO 527-1BA	GPa	3.7	3.9
Tensile Strength	23°C	ISO 527-1BA	MPa	105	110
Melting Point		DSC	°C	343	334
Glass Transition (Tg)		DSC	°C	143	162
Density	23°C	ISO 1183	g/cm <sup>3</sup>	1.30	1.29
Limiting Oxygen Index	> 1.6 mm thickness	ISO 4589	% O <sub>2</sub>	35	35
Flammability		UL 94 1.5 mm		V0	V0



Amorphous Kepstan® PEKK part



Semi-crystalline Kepstan® PEKK part

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**Roderick REBER III**  
Technical Service Engineer  
610-878-6326  
roderick.reber@arkema.com

**Arkema Inc. (Americas)**  
900 First Avenue  
King of Prussia, PA 19406  
Tel.: +1 610 205 7000  
Fax: +1 610 205 7497  
[arkema3D.com](http://arkema3D.com)

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