KIMYA
Additive Manufacturing by ARMOR

Kimya PEKK-SC 3D Filament

The Kimya **PEKK-SC** 3D filament belongs to the polyaryletherketone family. Polyetherketoneketone (**PEKK**) is a semi-crystalline thermoplastic polymer. PEKK-SC is PEKK in semi-crystalline form, imparting it with increased heat resistance. It is therefore resistant to high temperatures, abrasion and chemical products. Manufactured from KEPSTAN® Arkema, PEKK has excellent mechanical properties. Manufacturers use it to produce components exposed to acids and hydrocarbons, such as fuel and lubricants. It is compatible with the smoke/fire standard EN 45 545 - essential in the railway sector. The Kimya PEKK-SC 3D filament has the following properties:

- Semi-crystalline structure
- Excellent mechanical properties
- Heat resistance (up to 260°C)
- Railway fire and smoke standard **EN45545**
- Aerospace **FAR 25.853** Standard
- Flame retardant – eligible to **UL94 V0**
- Complies with the **RoHS** and **REACH standard**

2-year ARMOR warranty.

FILAMENT PROPERTIES

PROPERTIES	TEST METHODS	VALUES
Diameter	INS-6712	1,75 ± 0,1 mm 2,85 ± 0,1 mm
Density	ISO 1183-1	1,27 g/cm3
Moisture rate	INS-6711	< 1 %
Melt flow index (MFI)	ISO 1133-1 (@380°C – 5 kg)	35 g/10min
Glass transition temperature (Tg)	ISO 11357-1 DSC (10°C/min - 20-410°C)	161 °C
Heat distortion temperature (HDT) (1.8 MPa)	ISO 75f	172°C
Melting Temperature (Tm)	ISO 11357-1 DSC (10°C/min – 20-410°C)	332 °C

PRINT PARAMETERS AND SPECIMENS DIMENSIONS

PRINTING DIRECTION	XZ	ZX
Infill Angle	45°/-45°	45°/-45°

PRINTED SPECIMENS PROPERTIES

	PROPERTIES	TEST METHODS	XZ	ZX
ELECTRICAL PROPERTIES	Dielectric constant	IEC 60243-1 (100µm)	84 kV/mm	84 KV/mm
	Relative permittivity	IEC 60250 (1 MHz)	2,6	2,6
	Loss tangent	IEC 60250 (1 kHz)	0,007	0,007
	Surface resistivity	ASTM D257	10^{16} Ohms/m²	10^{16} Ohms/m²
	Volume resistivity	ASTM D257	10^{16} Ohms/cm	10^{16} Ohms/cm
MECHANICAL PROPERTIES	Tensile modulus	ISO 527-2/1A/50	2 448 MPa	2 784 MPa
	Tensile Strength	ISO 527-2/1A/50	64,1 MPa	32,4 MPa
	Tensile strain at strength	ISO 527-2/1A/50	4,5 %	1,4 %
	Tensile Stress at Break	ISO 527-2/1A/50	64,1 MPa	32,4 MPa
	Tensile strain at break	ISO 527-2/1A/50	4,5 %	1,4 %
	Flexural modulus	ISO 178	1 918 MPa	1 705 MPa
	Flexural strength*	ISO 178		62.9 %
	Flexural stress at conventional deflection (3,5% strain)*	ISO 178	79,3 MPa	61,6 MPa
	Flexural stress at break	ISO 178		62,9 MPa
	Flexural strain at flexural strength	ISO 178		3.8 %
	Charpy impact resistance	ISO 179-1/1eA	5,35 kJ/m²	1,9 kJ/m²

Note 1	*Fin de l'essai à 5% d'allongement d'après la norme ISO 178 même si l'éprouvette ne rompt pas.
Note 2	Les données doivent être considérées comme des valeurs indicatives - Les propriétés peuvent être influencées par les conditions de production.

Created on 30/03/2020 - Revised on 30/03/2020.