AKROTEK® UL PRELIMINARY

PK-VM GF 30 FR natural (8448)

PK GF30 FR(40)

AKROTEK® PK-VM GF 30 FR natural (8448) is a 30% glass fibre reinforced, flame retardant and process improved Polyketone compound. The flame retardant system is free of red phosphorous and halogens. Due to its good chemical resistance, good dimensional stability and high elongation at break it is suitable for high voltage components in e-mobility.

Features

hydrolysis / chemically stabilised | flame retardant | process improved | E&E | E-Mobility

Regulatory

Properties

Modulus	Strength	Impact
8.600 MPa	**125** MPa	**70** kJ/m²

Mechanical Properties

Tensile modulus ISO 527-2	1 mm/min | d.a.m.	**8600 MPa**
Tensile stress at break ISO 527-2	5 mm/min | d.a.m.	**125 MPa**
Tensile strain at break ISO 527-2	5 mm/min | d.a.m.	**3,5 %**
Charpy impact strength ISO 179-1/1eU	23°C | d.a.m. -30°C | d.a.m.	**70 kJ/m²** **80 kJ/m²**
Charpy notched impact strength ISO 179-1/1eA	23°C | d.a.m. -30°C | d.a.m.	**13 kJ/m²** **13 kJ/m²**

Thermal Properties

RTI electrical UL 746B	UL 0,8mm Wall thickness UL 1,6mm Wall thickness UL 3,2mm Wall thickness	**105 °C** **105 °C** **105 °C**
RTI impact UL 746B	UL 0,8mm Wall thickness UL 1,6mm Wall thickness UL 3,2mm Wall thickness	**70 °C** **70 °C** **80 °C**
RTI strength UL 746B	UL 0,8mm Wall thickness UL 1,6mm Wall thickness UL 3,2mm Wall thickness	**115 °C** **115 °C** **125 °C**
Temperature of deflection under load HDT/A ISO 75	1,8 MPa	**213 °C**
Melting temperature ISO 11357-3	DSC, 10K/min	**220 °C**
Ball pressure test IEC 60695-10-2		**> 115 °C**
Coefficient of linear thermal expansion ISO 11359-1/2	23°C to 80°C | parallel 23°C to 80°C | transverse	**0,14 10^{-4}/K** **1,19 10^{-4}/K**

Flammability

Flammability UL 94	UL 0,8 mm Wall thickness UL 1,6 mm Wall thickness UL 3,2 mm Wall thickness	**V-0 Class** **V-0 Class** **V-0 Class**
GWFI IEC 60695-2-12	UL 0,8 mm Wall thickness UL 1,6 mm Wall thickness UL 3,2 mm Wall thickness	**960 °C** **960 °C** **960 °C**
GWIT IEC 60695-2-13	UL 0,8 mm Wall thickness UL 1,6 mm Wall thickness UL 3,2 mm Wall thickness	**825 °C** **825 °C** **850 °C**
HWI UL 746A	UL 0,8 mm Wall thickness UL 1,6 mm Wall thickness UL 3,2 mm Wall thickness	**0 PLC** **0 PLC** **0 PLC**
HAI UL 746A	UL 0,8 mm Wall thickness UL 1,6 mm Wall thickness UL 3,2 mm Wall thickness	**0 PLC** **0 PLC** **0 PLC**

Burning rate (<100 mm/min) FMVSS 302	> 1 mm Thickness	+

General Properties

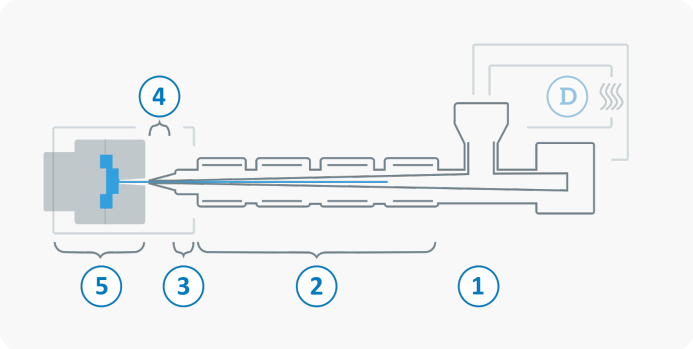
Density ISO 1183	23°C	**1,48 g/cm³**
Humidity absorption ISO 1110	70°C, 62% r.H.	**0,4 - 0,6 %**
Molding shrinkage ISO 294-4	flow transverse	**0,3 - 0,5 %** **0,8 - 1,0 %**

Electrical Properties

Volume resistivity IEC 62631-3-1	UL d.a.m.	**10^{10} Ω x cm**
Surface resistivity IEC 62631-3-2	UL d.a.m.	**10^{13} Ω**
Comparative tracking index IEC 60112	UL Test liquid A	**600 V**
Comparative tracking index ASTM D3638	UL	**0 PLC**
Dielectric strength IEC 60243	1 mm	**29 kV/mm**
Inclined-Plane Tracking, IPT ASTM D2303-13	UL	**1 kV**

Processing

The values mentioned are recommendations. We only recommend desiccant / dry air dryers or vacuum dryers. Too long a drying time and the resulting residual moisture content below the lower limit can lead to filling problems and surface defects. The specified drying time refers to closed and undamaged bagged material. When processing from previously opened bags or from octabins with polyolefin inliners, a longer drying time may be necessary. It is recommended to check the residual moisture content after the drying process.



D	Drying time	0 - 4 h
	Drying temperature (τ <= -30°C)	80 °C
	Processing moisture	0,02 - 0,1 %
1	Feed section	60 - 80 °C
2	Temperature Zone 1 - Zone 4	210 - 240 °C
3	Nozzle temperature	230 - 240 °C
4	Melt temperature	230 - 240 °C
5	Mold temperature	60 - 100 °C
→	Holding pressure, spec.	300 - 800 bar
←	Back pressure, spec.	30 - 50 bar
	Injection speed	medium
	Screw speed	5 - 10 m/min

Polyketones crosslink depending on time and temperature, crosslinking is noticed by an increase of viscosity and/or dark spots in natural colored compounds. The melt temperature should be at or below 240 °C and under no circumstances go beyond 250 °C because crosslinking speed will increase. The use of a hot runner system is not recommended when processing polyketone. However, if it is used, it should be noted that the residence time in the barrel including the hot runner should not exceed 4 min. If interruptions of more than 4 minutes are expected, the barrel and hot runner need to be purged and cleaned with polyolefins. The molding machine needs to be purged with polyolefines before and after processing of AKROTEK® PK! There is a risk of cross linking caused by reactions with POM or PA as well as unsuitable masterbatches or cleaning compounds! Crosslinking is noticed by an increase of viscosity and or dark spots in natural colored compounds. In this case purge immediately with polyolefines. Further processing instructions are available on request.