AKROTEK®
PK-VM HU natural (4774)

PK

PK-VM HU natural (4774) is an unreinforced Polyketone with high flowability. The outstanding friction and wear properties enable the use for demanding components exposed to tribological stress. PK is characterized by its outstanding media resistance, which qualifies it to be used for components that are in contact with chemicals. The most important markets for AKROTEK® PK are the automotive and furniture industry and mechanical engineering.

Features

hydrolysis / chemically stabilised

Properties

Modulus	Strength	Impact
1.500 MPa	**60** MPa	**180** kJ/m²

Mechanical Properties

Tensile modulus ISO 527-2	1 mm/min | d.a.m. 1 mm/min | conditioned	**1500 MPa** **1500 MPa**
Tensile stress at yield ISO 527-2	50 mm/min | d.a.m. 50 mm/min | conditioned	**60 MPa** **60 MPa**
Tensile strain at break ISO 527-2	50 mm/min | d.a.m. 50 mm/min | conditioned	**> 200 %** **> 200 %**
Flexural modulus ISO 178	2 mm/min | d.a.m. 2 mm/min | conditioned	**1900 MPa** **1500 MPa**
Flexural strength ISO 178	2 mm/min | d.a.m. 2 mm/min | conditioned	**70 MPa** **70 MPa**
Charpy impact strength ISO 179-1/1eU	23°C | d.a.m. 23°C | conditioned -30°C | d.a.m.	**no break** **no break** **no break**

Charpy notched impact strength ISO 179-1/1eA	23°C | d.a.m. 23°C | conditioned -30°C | d.a.m.	**10 kJ/m²** **10 kJ/m²** **3,5 kJ/m²**

Thermal Properties

Temperature of deflection under load HDT/A ISO 75	1,8 MPa	**100 °C**
Temperature of deflection under load HDT/B ISO 75	0,45 MPa	**190 °C**
Melting temperature ISO 11357-3	DSC, 10K/min	**220 °C**
Coefficient of linear thermal expansion ISO 11359-1/2	23°C to 80°C | parallel 23°C to 80°C | transverse	**1,11 10^{-4}/K** **1,11 10^{-4}/K**
Thermal conductivity DIN 52612		**0,255 W/mK**

Flammability

Flammability UL 94	1,6 mm Wall thickness	**HB Class**
GWFI IEC 60695-2-12	0,8 mm Wall thickness	**725 °C**
GWIT IEC 60695-2-13	0,8 mm Wall thickness	**725 °C**
Burning rate (<100 mm/min) FMVSS 302	> 1 mm Thickness	**+**

General Properties

Density ISO 1183	23°C	**1,24 g/cm³**
Humidity absorption ISO 1110	70°C, 62% r.H.	**0,8 - 0,9 %**

Molding shrinkage ISO 294-4	flow transverse	**1,7 - 1,9 %** **1,9 - 2,1 %**

Electrical Properties

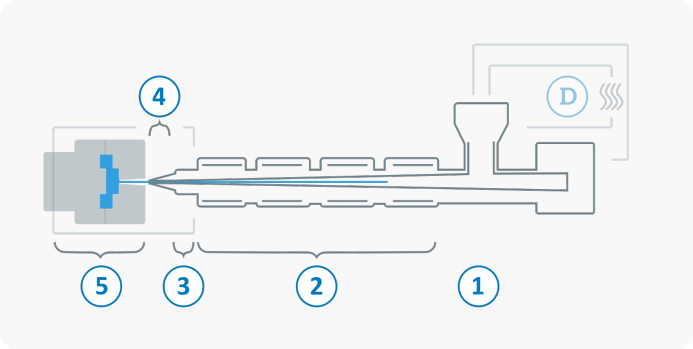
Volume resistivity IEC 62631-3-1	d.a.m. conditioned	**10^{13} Ω x cm** **10^{10} Ω x cm**
Surface resistivity IEC 62631-3-2	d.a.m. conditioned	**10^{13} Ω** **10^{10} Ω**
Comparative tracking index IEC 60112	Test liquid A	**600 V**

Rheological Properties

MVR ISO 1133	240°C/2,16kg	**60 cm^3/10 min**

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	220 - 250 °C
3	Nozzle temperature	230 - 250 °C
4	Melt temperature	230 - 250 °C
5	Mold temperature	60 - 120 °C
→	Holding pressure, spec.	300 - 800 bar
←	Back pressure, spec.	30 - 70 bar
	Injection speed	medium to high
	Screw speed	8 - 15 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 260 °C and under no circumstances go beyond 270 °C because crosslinking speed will increase. The use of a hot runner system is not recommended when processing polyketon. However, if it is used, it should be noted that the residence time in the barrel including the hot runner should not exceed 10 min. If interruptions of more than 10 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.