

# AKROTEK®

## PK-VM black (4973)

PK

AKROTEK® PK-VM black (4973) 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/m <sup>2</sup>

## Mechanical Properties

<b>Tensile modulus</b>	1 mm/min   d.a.m.	<b>1500 MPa</b>
ISO 527-2	1 mm/min   conditioned	<b>1500 MPa</b>
<b>Tensile stress at yield</b>	50 mm/min   d.a.m.	<b>60 MPa</b>
ISO 527-2	50 mm/min   conditioned	<b>60 MPa</b>
<b>Tensile strain at break</b>	50 mm/min   d.a.m.	<b>&gt; 100 %</b>
ISO 527-2	50 mm/min   conditioned	<b>&gt; 100 %</b>
<b>Charpy impact strength</b>	23°C   d.a.m.	<b>no break</b>
ISO 179-1/1eU	23°C   conditioned	<b>no break</b>
<b>Charpy notched impact strength</b>	23°C   d.a.m.	<b>10 kJ/m<sup>2</sup></b>
ISO 179-1/1eA	23°C   conditioned	<b>10 kJ/m<sup>2</sup></b>

## Thermal Properties

<b>Temperature of deflection under load HDT/A</b>	1,8 MPa	<b>100 °C</b>
ISO 75		

## Melting temperature

ISO 11357-3

DSC, 10K/min

220 °C

## Flammability

### Flammability

UL 94

1,6 mm Wall thickness

HB Class

## General Properties

### Density

ISO 1183

23°C

1,24 g/cm<sup>3</sup>

### Humidity absorption

ISO 1110

70°C, 62% r.H.

0,8 - 0,9 %

### Water absorption

ISO 62

23°C, saturated

2,0 - 2,4 %

### Molding shrinkage

ISO 294-4

flow

1,4 - 1,6 %

transverse

1,5 - 1,7 %

## Electrical Properties

### Surface resistivity

IEC 62631-3-2

d.a.m.

10<sup>13</sup> Ω

conditioned

10<sup>10</sup> Ω

## Rheological Properties

### MVR

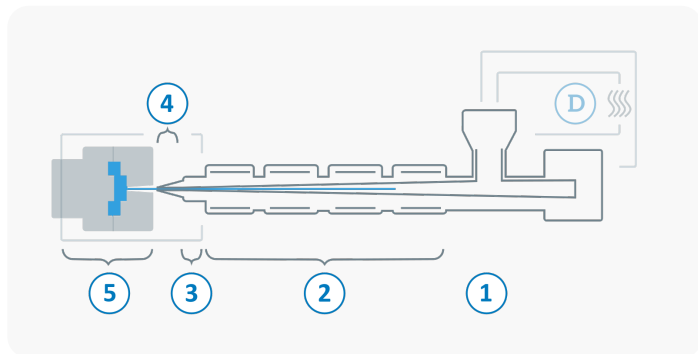
ISO 1133

240°C/2,16kg

60 cm<sup>3</sup>/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.



<b>D</b>	<b>Drying time</b>	<b>0 - 4 h</b>
	<b>Drying temperature (<math>\tau \leq -30^{\circ}\text{C}</math>)</b>	<b>80 °C</b>
	<b>Processing moisture</b>	<b>0,02 - 0,1 %</b>
<b>1</b>	<b>Feed section</b>	<b>60 - 80 °C</b>
<b>2</b>	<b>Temperature Zone 1 - Zone 4</b>	<b>220 - 250 °C</b>
<b>3</b>	<b>Nozzle temperature</b>	<b>230 - 250 °C</b>
<b>4</b>	<b>Melt temperature</b>	<b>230 - 250 °C</b>
<b>5</b>	<b>Mold temperature</b>	<b>60 - 120 °C</b>
<b>→</b>	<b>Holding pressure, spec.</b>	<b>300 - 800 bar</b>
<b>←</b>	<b>Back pressure, spec.</b>	<b>30 - 70 bar</b>
	<b>Injection speed</b>	<b>medium to high</b>
	<b>Screw speed</b>	<b>8 - 15 m/min</b>



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 polyolefins 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 polyolefins. Further processing instructions are available on request.