

# INMAPOM K3017 - black

## - Technical Datasheet

The INMAPOM K 3017 black feedstock is based on an zirconia powder  $ZrO_2$ , 94,5 %  $Y_2O_3$  partially stabilised and a POM based binder system for the powder injection moulding process. Injection moulding of this feedstock is possible on standard injection moulding machines. Due to the abrasive behaviour of ceramic powder we strongly recommend production with cylinder, screw and mould made from hard metal only.

Debinding in a single step catalytic debinding process. Sintering in air at 1500 °C.

The recommendations are considered to work as a standard guideline and have to be adapted to individual wall-thickness and part-design. For more details please contact the INMATEC experts.

Do not hesitate to contact the INMATEC experts: +49 (0) 2226/ 9087-0

### Feedstock: Specifications

#### *Typical material properties*

<i>Product</i>	feedstock for ceramic injection moulding process
<i>Binder basis</i>	POM based binder system
<i>Appearance</i>	grey granulates
<i>Storage and Lifetime</i>	Product can be used for approx. 6 months after opening if stored dry at room temperature. Vessel has to be closed airtight thoroughly after feedstock withdrawal.
<i>Quality after sintering</i>	$ZrO_2$ , 94,5 % $Y_2O_3$ partially stabilised
<i>Density</i>	$\geq 5,96 \text{ g/cm}^3$
<i>Shrinkage (approx.)</i>	21.87 %
<i>Mould factor (approx.)</i>	1.28

#### *Typical processing properties*

<i>Mould temperatures</i>	130°C – 140 °C
<i>Temperatures heating zones and nozzle</i>	170°C – 175 °C
<i>Debinding process</i>	single step catalytic debinding process
<i>Catalytic debinding weight loss</i>	weight loss: 15.4 %
<i>Sintering temperature</i>	$T_{\max}$ 1500 °C, in air

## INMAPOM K3017 - black

### Process recommendation injection moulding process

<i>Settings Temperature</i>	<i>Recommendation</i>
<i>Mould nozzle side</i>	135 °C
<i>Mould ejector side</i>	135 °C
<i>Mould feeding zone</i>	170 °C
1. <i>Heating zone</i>	172 °C
2. <i>Heating zone</i>	172 °C
3. <i>Heating zone</i>	172 °C
4. <i>Heating zone</i>	172 °C
<i>Nozzle band</i>	175 °C

<i>Settings injection moulding</i>	<i>Recommendation</i>
<i>Rotation speed of screw</i>	5 – 6.5 m/min
<i>Back pressure</i>	20 bar
<i>Decompression</i>	0.25 cm <sup>3</sup>
<i>Decompression speed</i>	0.5 cm <sup>3</sup> /s
<i>Injection speed</i>	5 – 30 cm <sup>3</sup> /s
<i>Holding pressure</i>	<sup>2</sup> / <sub>3</sub> of switch over point pressure
<i>Holding pressure time</i>	0.5 – 2.0 sec

November 2017