

INMAPOM K3008

- Technical Datasheet

The feedstock is based on an alumina powder (Al_2O_3 , 96.0%) 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.

Green parts need a binder removal in a single step catalytic debinding process.

These general guidelines are based on the processing of test parts with a wall thickness of 5mm.

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.

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. 2 years after opening if stored dry at room temperature. Vessel has to be closed airtight thoroughly after feedstock withdrawal. |
| <i>Quality after sintering</i> | Al_2O_3 , 96.0 % |
| <i>Density</i> | $\geq 3,80 \text{ g/cm}^3$ |
| <i>Shrinkage (approx.)</i> | 15.5 % |
| <i>Mould factor (approx.)</i> | 1.18 |

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: 15.5% |
| <i>Sintering temperature</i> | T_{\max} 1620 °C, in air |

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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>Material 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 ³ |
| <i>Decompression speed</i> | 0.5 cm ³ /s |
| <i>Injection speed</i> | 5 – 30 cm ³ /s |
| <i>Holding pressure</i> | ² / ₃ of switch over point pressure |
| <i>Holding pressure time</i> | 0.5 – 2.0 sec |

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