

Polyetheretherketone

with carbon fibers, PTFE, lubricant modified, natural color (black)

| Physical properties    |            | Test method | Specimen   | Units             | Typical value |
|------------------------|------------|-------------|------------|-------------------|---------------|
| Specific gravity       |            | ISO 1183-3  |            | g/cm <sup>3</sup> | 1,5           |
| Water absorption       | 23°C / 24h | ISO 62      | ISO 3167 A | %                 | <0,1          |
| Linear mould shrinkage |            | DIN 16742   | ISO 3167 A | %                 | 0,1-0,4       |
| Flammability behaviour |            | UL 94       | 1/16"      |                   | (V-0)         |

**Mechanical properties at 23°C / 50% rh**

|                                |                 |             |            |                   |     |
|--------------------------------|-----------------|-------------|------------|-------------------|-----|
| Tensile strength               | dry, @50 mm/min | ISO 527     | ISO 3167 A | MPa               | 220 |
| Elongation @Fmax.              | dry, @50 mm/min | ISO 527     | ISO 3167 A | %                 | 1,5 |
| Tensile modulus                | dry, @1 mm/min  | ISO 527     | ISO 3167 A | GPa               | 28  |
| Flexural strength              | dry, @10 mm/min | ISO 178     | ISO 3167 A | MPa               | 320 |
| Flexural elongation @Fmax.     | dry, @10 mm/min | ISO 178     | ISO 3167 A | %                 | 2   |
| Flexural modulus               | dry, @2 mm/min  | ISO 178     | ISO 3167 A | GPa               | 21  |
| Impact strength                | dry             | ISO 179 1eU | 80x10x4mm  | kJ/m <sup>2</sup> | 40  |
| Impact strength                | -30°C           | ISO 179 1eU | 80x10x4mm  | kJ/m <sup>2</sup> | 27  |
| Impact strength, notched       | dry             | ISO 179 1eA | 80x10x4mm  | kJ/m <sup>2</sup> | 10  |
| Charpy Impact Strength notched | -30°C           | ISO 179 1eA | 80x10x4mm  | kJ/m <sup>2</sup> | 9   |

**Thermal properties**

|                          |                           |             |            |                     |     |
|--------------------------|---------------------------|-------------|------------|---------------------|-----|
| Vicat softening temp.    | VST A                     | DIN ISO 306 | ISO 3167 A | °C                  | 310 |
| Heat distortion temp.    | HDT A                     | ISO 75      | 80x10x4mm  | °C                  | 255 |
| Continuous service temp. | 20.000 h                  | IEC 60216   | ISO 3167 A | °C                  | 250 |
| Service temperature      | during lifetime max. 200h |             | ISO 3167 A | °C                  | 280 |
| CLTE, longitudinal       |                           | ISO 11359   | 10x8x4 mm  | 10 <sup>-5</sup> /K | 0,9 |

**Electrical properties**

|                       |                     |                  |              |   |                  |
|-----------------------|---------------------|------------------|--------------|---|------------------|
| Insulation resistance | strip electrode R25 | DIN EN 62631-3-3 | ISO 3167 A   | Ω | <10 <sup>5</sup> |
| Surface resistance    | ROB                 | DIN EN 62631-3-2 | Ronde 60x4mm | Ω | <10 <sup>4</sup> |

**Tribological properties**

|                             |                      |           |               |                                      |      |
|-----------------------------|----------------------|-----------|---------------|--------------------------------------|------|
| CoF - Block on Ring         | 100Cr6, 3 MPa, 1 m/s | ASTM G137 | molded sample |                                      | 0,48 |
| Sp. Wear Rate-Block on Ring | 100Cr6, 3 MPa, 1 m/s | ASTM G137 | molded sample | 10 <sup>-6</sup> mm <sup>3</sup> /Nm | 0,6  |
| Sp. Wear Rate-Block on Ring | 100Cr6, 3 MPa, 2 m/s | ASTM G137 | molded sample | 10 <sup>-6</sup> mm <sup>3</sup> /Nm | 1,7  |

**Main features**

Very strong and stiff parts; low coefficient of thermal expansion. Improved friction and wear behaviour. Optimised for dry running operations. Electrically conductive, suitable for continuous discharging of statically-generated electricity. High dimensionally stable precision parts with low warpage and narrow tolerance range.

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## Recommended processing parameters

### Delivery form & storage

Unless indicated otherwise, the material is delivered as 3mm long pellets in sealed bags on pallets. Preferably storage should be effected in dry and normally temperatured rooms.

### Predrying

It is advisable to predry the granules with a suitable dryer immediately before processing. The granule may absorb moisture from the environment.

| Dryer type          | Temperature °C | Drying time in h |
|---------------------|----------------|------------------|
| Dehumidifying dryer | 150            | 3 - 6            |
| or                  | 120            | 6 - 8            |

### Recommended processing parameters

In general this product can be processed on conventional injection moulding machines while observing the usual technical guidelines. Any added fibrous materials or fillers may have an abrasive effect. In this case the cylinder and screw should be protected against wear as is usual in the processing of reinforced thermoplastic materials. Lengthy dwell times for the melts in the cylinder should be avoided. Lower the temperatures during interruptions!

| Mold         | Melt temperature | Nozzle       | Zone 3       | Zone 2       | Zone 1       |
|--------------|------------------|--------------|--------------|--------------|--------------|
| 170 - 200 °C | 390 °C           | 360 - 380 °C | 390 - 400 °C | 380 - 390 °C | 360 - 370 °C |

### Additional information

During processing, the moisture content should not exceed 0.05%. To avoid internal stresses, a medium to high injection rate should be used. An increase in tool temperature may be helpful. Post-crystallization may lead to warpage at elevated operating temperatures. This can be counteracted by suitable heat treatment. The processing notes provided merely represent a recommendation for general use. Due to the large variety of machines, geometries and volumes of parts, etc., it may be necessary to employ different settings according to the specific application. High-temperature polymers place increased demands on the tool steels employed. Please contact us for further information.