

# Material: Polyamide 66

## Abbreviation: PA 66

### Short description of Material:

This extruded polyamide has good hardness, stiffness and wear resistance but worse impact resistance. The properties of PA 66 are comparable to PA 6 G, however PA 66 absorbs more moisture and is less dimensionally stable.

### Application examples:

- gears
- bearings
- slider parts
- guide strips

**Colours:** natural, black

### Mechanical values

|  |            | Dry / Humid            |                   |
|--|------------|------------------------|-------------------|
| Density  | ISO 1183   | <b>1,14</b>            | g/cm <sup>3</sup> |
| Yield stress   | ISO 527    | <b>85 / 65</b>         | MPa               |
| Elongation due to tearing  | ISO 527    | <b>30 / 150</b>        | %                 |
| Modulus of elasticity resulting from tensile test                      | ISO 527    | <b>3.000 / 1.900</b>   | MPa               |
| Modulus of elasticity resulting from bending test                      | ISO 178    | <b>2.900 / 1.200</b>   | MPa               |
| Flexural strength  | ISO 178    | <b>135 / 60</b>        | MPa               |
| Impact strength <sup>1)</sup>  | ISO 179    | <b>W.B.</b>            | kJ/m <sup>2</sup> |
| Notched-bar impact strength  | ISO 179    | <b>&gt;3 / &gt; 15</b> | kJ/m <sup>2</sup> |
| Ball indentation hardness H <sub>358/30</sub>                          | ISO 2039-1 | <b>170 / 100</b>       | MPa               |
| Creep rate stress at 1% elongation <sup>2)</sup>                       | DIN 53 444 | <b>&gt; 8</b>          | MPa               |
| Sliding friction coefficient against steel (dry running) <sup>3)</sup> | —          | <b>0,35 / 0,42</b>     | —                 |
| Sliding wear against steel (dry running) <sup>3)</sup>                 | —          | <b>0,10</b>            | µm/km             |

### Thermal values

|  |            |                     |                                   |
|--|------------|---------------------|-----------------------------------|
| Melting temperature                                    | ISO 3146   | <b>+ 265</b>        | °C                                |
| Thermal conductivity                                   | DIN 52 612 | <b>0,23</b>         | W/(K·m)                           |
| Specific thermal capacity                              | —          | <b>1,7</b>          | J/(g·K)                           |
| Coefficient of linear expansion <sup>4)</sup>          | —          | <b>9 - 10</b>       | 10 <sup>-5</sup> ·K <sup>-1</sup> |
| Operating temperature range (long-term) <sup>5)</sup>  | —          | <b>- 30 / + 100</b> | °C                                |
| Operating temperature range (short-term) <sup>5)</sup> | —          | <b>+ 150</b>        | °C                                |
| Fire behaviour   | UL 94      | <b>HB</b>           | —                                 |

### Electrical values

|                                      |         |  |       |
|--------------------------------------|---------|--|-------|
| Dielectric constant <sup>6)</sup>    | IEC 250 | <b>3,2 / 5,0</b>                         | —     |
| Dielectric loss factor <sup>6)</sup> | IEC 250 | <b>0,025 / 0,2</b>                       | —     |
| Specific volume resistance           | IEC 93  | <b>10<sup>15</sup> / 10<sup>12</sup></b> | Ω·cm  |
| Surface resistance                   | IEC 93  | <b>10<sup>12</sup> / 10<sup>10</sup></b> | Ω     |
| Dielectric strength                  | IEC 243 | <b>50 / 20</b>                           | KV/mm |
| Creep current resistance             | IEC 112 | <b>CTI 600</b>                           | —     |

### Miscellaneous data

|   |            |            |   |
|---|------------|------------|---|
| Moisture absorption in normal climate until saturated | DIN 53 715 | <b>2,5</b> | % |
| Water absorption until saturated                      | ISO 62     | <b>9,0</b> | % |

<sup>1)</sup>: Measured with a pendulum impact testing machine 0,1 DIN 51 222

<sup>2)</sup>: Tension resulting in 1% total elongation after 1.000 h

<sup>3)</sup>: against steel, hardened and ground, P = 0,05 MPa, V = 0,6 m/s, t = 60 °C near running surface

<sup>4)</sup>: For a temperature range of + 23 °C to + 60 °C

<sup>5)</sup>: Experience values established with finished parts that are not under any stress in heated air, depending on the type and form of heat exposure, short-term = max. 1 h, long-term = months

<sup>6)</sup>: at 10<sup>6</sup> Hz

|                     |   |                         |
|---------------------|---|-------------------------|
| w.b.                | = | without breakage        |
| 1 MPa               | = | 1 N/mm <sup>2</sup>     |
| 1 g/cm <sup>3</sup> | = | 1.000 kg/m <sup>3</sup> |
| 1 kV/mm             | = | 1 MV/m                  |

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