

# Physical properties POM-C

| Properties                                          | Test methods    | Units             | Values                            |
|-----------------------------------------------------|-----------------|-------------------|-----------------------------------|
| Colour                                              | -               | -                 | natural (white) / black / colours |
| Density                                             | ISO 1183-1      | g/cm <sup>3</sup> | 1.41                              |
| Water absorption:                                   |                 |                   |                                   |
| - after 24/96 h immersion in water of 23°C          | ISO 62          | mg                | 20 / 37                           |
| - at saturation in air of 23°C / 50% RH             | ISO 62          | %                 | 0.24 / 0.45                       |
| - at saturation in water of 23°C                    | -               | %                 | 0.20                              |
| - at saturation in water of 23°C                    | -               | %                 | 0.80                              |
| <b>Thermal Properties</b>                           |                 |                   |                                   |
| Melting temperature (DSC, 10° C/min.)               | ISO 11357-1/-3  | °C                | 165                               |
| Glass transition temperature                        | ISO 11357-1/-2  | °C                | -                                 |
| Thermal conductivity at 23°C                        | -               | W/(K.m)           | 0.31                              |
| Coefficient of linear thermal expansion:            |                 |                   |                                   |
| - average value between 23 and 60°C                 | -               | m/(m.K)           | 110 x 10 <sup>-6</sup>            |
| - average value between 23 and 100°C                | -               | m/(m.K)           | 125 x 10 <sup>-6</sup>            |
| Temperature of deflection under load:               |                 |                   |                                   |
| - method A: 1.8 MPa                                 | + ISO 75-1/-2   | °C                | 100                               |
| Max. allowable service temperature in air:          |                 |                   |                                   |
| - for short periods                                 | -               | °C                | 140                               |
| - continuously: for 5'000 / 20'000 h                | -               | °C                | 115 / 100                         |
| Min. service temperature                            | -               | °C                | -50                               |
| Flammability:                                       |                 |                   |                                   |
| - „Oxygen Index“                                    | ISO 4589-1/-2   | %                 | 15                                |
| - according to UL 94 (3 / 6 mm thickness)           | -               | -                 | HB / HB                           |
| <b>Mechanical Properties at 23°C</b>                |                 |                   |                                   |
| Tension test:                                       |                 |                   |                                   |
| - tensile stress at yield / tensile stress at break | + ISO 527-1/-2  | MPa               | 66 / -                            |
|                                                     | ++ ISO 527-1/-2 | MPa               | 66 / -                            |
| - tensile strength                                  | + ISO 527-1/-2  | MPa               | 66                                |
| - tensile strain at yield                           | + ISO 527-1/-2  | %                 | 15                                |
| - tensile strain at break                           | + ISO 527-1/-2  | %                 | 40                                |
|                                                     | ++ ISO 527-1/-2 | %                 | 40                                |
| - tensile modulus of elasticity                     | + ISO 527-1/-2  | MPa               | 3000                              |
|                                                     | ++ ISO 527-1/-2 | MPa               | 3000                              |
| Compression test:                                   |                 |                   |                                   |
| - compressive stress at 1 / 2 / 5% nominal strain   | + ISO 604       | MPa               | 23 / 40 / 72                      |
| Charpy impact strength - unnotched                  | + ISO 179-1/1eU | kJ/m <sup>2</sup> | no break                          |
| Charpy impact strength - notched                    | + ISO 179-1/1eA | kJ/m <sup>2</sup> | 8                                 |
| Ball indentation hardness                           | + ISO 2039-1    | N/mm <sup>2</sup> | 140                               |
| Rockwell hardness                                   | + ISO 2039-2    | -                 | M 84                              |
| <b>Electrical Properties at 23°C</b>                |                 |                   |                                   |
| Electrical strength                                 | + IEC 60243-1   | kV/mm             | 20                                |
|                                                     | ++ IEC 60243-1  | kV/mm             | 20                                |
| Volume resistivity                                  | + IEC 60093     | Ohm.cm            | > 10 <sup>14</sup>                |
|                                                     | ++ IEC 60093    | Ohm.cm            | > 10 <sup>14</sup>                |
| Surface resistivity                                 | + IEC 60093     | Ohm               | > 10 <sup>13</sup>                |
|                                                     | ++ IEC 60093    | Ohm               | > 10 <sup>13</sup>                |
| Relative permittivity $\epsilon_r$ :                |                 |                   |                                   |
| - bei 100 Hz                                        | + IEC 60250     | -                 | 3.8                               |
|                                                     | ++ IEC 60250    | -                 | 3.8                               |
| - bei 1 MHz                                         | + IEC 60250     | -                 | 3.8                               |
|                                                     | ++ IEC 60250    | -                 | 3.8                               |
| Dielectric dissipation factor $\delta \tan$ :       |                 |                   |                                   |
| - bei 100 Hz                                        | + IEC 60250     | -                 | 0.003                             |
|                                                     | ++ IEC 60250    | -                 | 0.003                             |
| - bei 1 MHz                                         | + IEC 60250     | -                 | 0.008                             |
|                                                     | ++ IEC 60250    | -                 | 0.008                             |
| Comparative tracking index (CTI)                    | + IEC 60112     | -                 | 600                               |
|                                                     | ++ IEC 60112    | -                 | 600                               |

Note: 1 g/cm<sup>3</sup> = 1000 kg/m<sup>3</sup>; 1 Mpa = 1 N/mm<sup>2</sup>; 1 kV/mm = 1 MV/m.

+ : Values referring to dry material  
++ : Values referring to material in equilibrium with the standard atmosphere 23°C / 50% RH (mostly derived from literature)

This table is a valuable help in the choice of a material. The data listed here fall within the normal range of products properties, but they should not be used to establish material specification limits nor used alone as the basis of design.

## POM-C

These are virgin copolymer ant homopolymer acetal grades. The acetal copolymer ist more resistant against hydrolysis, strong alkalis and thermal-oxidative degradation than the acetal homopolymer. The latter, however, has higher mechanical strength, stiffness, hardness and creep resistance as well as a lower thermal expansion rate and often it also presents a better wear resistance.

Main characteristics:

- high mechanical strength, stiffness and hardness
- excellent resilience
- good creep resistance
- high impact strength, even at low temperatures
- very good dimensional stability
- good sliding properties and wear resistance
- excellent machinability
- good electrical insulating and dielectric properties
- physiologically inert (suitable for food contact)
- not self-extinguishing

POM is very well suited for machining an automatic lathes and is particularly recom-mended for mechanical precision parts.