

Technical Data

TIVAR® Materials

| Material designation | | | TIVAR® Special DS |
|---|-------------|----------------------|--|
| ISO designation | | | PE-UHMW Table Group 1 |
| Material description | | | Ultra High Molecular Weight Polyethylene, wear optimised |
| Colour(s) | | | yellow |
| Material properties | Standard | Unit | |
| Average molecular weight (average molecular mass) | | (g/mol) | approx. $9 * 10^6$ |
| Density | ISO 1183 | (kg/m ³) | 925 |
| Water absorption at 23° C until saturation | ISO 62 | (%) | < 0,01 |
| Mechanical properties | Standard | Unit | |
| Tensile stress at yield (tensile strength) | ISO 527 | (MPa) | ≥ 17 |
| Elongation at break | ISO 527 | (%) | ≥ 350 |
| Tensile modulus | ISO 527 | (MPa) | 700 |
| Impact strength (Charpy) at 23° C | ISO 179 | (kJ/m ²) | no break |
| Notched impact strength (Charpy) at 23° C | ISO 11542-2 | (kJ/m ²) | ≥ 120 |
| Ball indentation hardness | ISO 2039-1 | (N/mm ²) | 30 - 35 |
| Shore-Hardness D, 15 s value | ISO 868 | (-) | 60 - 65 |
| Coefficient of friction | - | (-) | approx. 0,15 |
| Abrasion (Sand-Slurry) | - | (%) | 80 |
| Thermal properties | Standard | Unit | |
| Melting point DSC, 10 K/min | ISO 3146 | (°C) | 135 - 138 |
| Vicat softening point | ISO 306 | (°C) | 80 |
| Coefficient of linear thermal expansion between 23 and 80° C | ISO 11359 | (K ⁻¹) | approx. $2 * 10^{-4}$ |
| Thermal conductivity | ISO 52612 | (W/[m * K]) | approx. 0,4 |
| Use temperature (max.) | - | (°C) | 80 |
| Use temperature (briefly) | - | (°C) | 90 |
| Use temperature (min.) | - | (°C) | -200 |
| Electrical properties | Standard | Unit | |
| Relative permittivity at 100 Hz | IEC 60250 | (-) | 2,1 |
| Dissipation factor at 100 Hz | IEC 60250 | (-) | $3,9 * 10^{-4}$ |
| Volume resistivity | IEC 60093 | (Ohm * m) | > 10^{12} |
| Surface resistivity | IEC 60093 | (Ohm) | > 10^{12} |
| Dielectric strength | IEC 60243 | (kV/mm) | 45 |
| Physiological properties | Standard | Unit | |
| Food conformances according to EU Directive 2002/72/EC | | | yes |
| FDA Regulation 21CFR177.1520 | | | yes |
| FDA Regulation 21CFR178.2010 | | | N/A |
| FDA Regulation 21CFR178.3297 | | | yes |

Notice to users:

The technical data shown in this data sheet refers to a 40 mm thick sheet. Due to the production process the data may vary depending on the material thickness.

The information contained in this technical data sheet can not be construed as a promise or guarantee of specific properties of our products. Any determination of the suitability of a particular material and part design for any use contemplated by the user is the sole responsibility of the user. The information contained in this technical data sheet is based on present knowledge and may be subject to change without further notice.

Reference to Table Group:

The Table Group mentioned above complies with (German Standard) DIN 16972 (PE-UHMW, TG 1 and TG 2).