Thanks to the lubricant built into a PE-UHMW matrix with higher molecular weight, TIVAR DrySlide offers a lower coefficient of friction and enhanced wear and abrasion resistance than TIVAR 1000. The additives used also make this material static dissipative and considerably improve UV-resistance.

Physical properties (indicative values *)

<table>
<thead>
<tr>
<th>PROPERTIES</th>
<th>Test methods</th>
<th>Units</th>
<th>VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td></td>
<td></td>
<td>black</td>
</tr>
<tr>
<td>Average molar mass (average molecular weight) - (1)</td>
<td></td>
<td>g/mol</td>
<td>10^6</td>
</tr>
<tr>
<td>Density</td>
<td></td>
<td>g/cm³</td>
<td>0.935</td>
</tr>
<tr>
<td>Water absorption at saturation in water of 23 °C (2)</td>
<td></td>
<td>%</td>
<td>0.02</td>
</tr>
<tr>
<td>Thermal Properties (3)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Melting temperature (DSC, 10 °C/min)</td>
<td></td>
<td>°C</td>
<td>135</td>
</tr>
<tr>
<td>Thermal conductivity at 23 °C</td>
<td></td>
<td>W/(K.m)</td>
<td>0.40</td>
</tr>
<tr>
<td>Average coefficient of linear thermal expansion between 23 and 100 °C</td>
<td></td>
<td>m/(m.K)</td>
<td>200 x 10^-6</td>
</tr>
<tr>
<td>Temperature of deflection under load:</td>
<td></td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>- method A: 1.8 MPa</td>
<td></td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>Vical softening temperature - VST/B50</td>
<td></td>
<td>°C</td>
<td>80</td>
</tr>
<tr>
<td>Max. allowable service temperature in air:</td>
<td></td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>- for short periods (4)</td>
<td></td>
<td></td>
<td>120</td>
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<tr>
<td>- continuously: for 20,000 h (5)</td>
<td></td>
<td>°C</td>
<td>80</td>
</tr>
<tr>
<td>Min. service temperature (6)</td>
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<td>°C</td>
<td>-150</td>
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<tr>
<td>Flammability (7):</td>
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<tr>
<td>- &quot;Oxygen Index&quot; ISO 4588-1/2</td>
<td></td>
<td>%</td>
<td>&lt; 20</td>
</tr>
<tr>
<td>- according to UL 94 (6 mm thickness)</td>
<td></td>
<td></td>
<td>HB</td>
</tr>
<tr>
<td>Mechanical Properties at 23 °C (8)</td>
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<tr>
<td>Tension test (9):</td>
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<tr>
<td>- tensile stress at yield (10)</td>
<td></td>
<td>MPa</td>
<td>18</td>
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<tr>
<td>- tensile strain at yield (10)</td>
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<td>%</td>
<td>20</td>
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<tr>
<td>- nominal tensile strain at break (10)</td>
<td></td>
<td>%</td>
<td>&gt; 80</td>
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<tr>
<td>- tensile modulus of elasticity (11)</td>
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<td>950</td>
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<td>Compression test (12):</td>
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<tr>
<td>- compressive stress at 1 / 2 / 5 % nominal strain (11)</td>
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<td>MPa</td>
<td>6 / 10 / 16</td>
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<tr>
<td>Flexure test (13)</td>
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<tr>
<td>- flexural strength ISO 178</td>
<td></td>
<td>MPa</td>
<td>16</td>
</tr>
<tr>
<td>Charpy impact strength - unnotched (14)</td>
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<tr>
<td>Charpy impact strength - notched ISO 178-1116</td>
<td></td>
<td>J/m²</td>
<td>100</td>
</tr>
<tr>
<td>Charpy impact strength - notched (double 14° notch) ISO 1148-2</td>
<td></td>
<td>J/m²</td>
<td>130</td>
</tr>
<tr>
<td>Ball indentation hardness (16) ISO 2039-1</td>
<td></td>
<td>N/mm²</td>
<td>32</td>
</tr>
<tr>
<td>Shore hardness D (15 s) - (16) ISO 2039-2</td>
<td></td>
<td></td>
<td>59</td>
</tr>
<tr>
<td>Relative weight loss during a wear test in &quot;sand/water-slurry&quot; TIVAR 1000 = 100</td>
<td>ISO 15527</td>
<td></td>
<td>85</td>
</tr>
<tr>
<td>Electrical Properties at 23 °C (16)</td>
<td></td>
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</tr>
<tr>
<td>Electric strength (17) IEC 60243-1</td>
<td>kV/mm</td>
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<tr>
<td>Volume resistivity IEC 60093</td>
<td></td>
<td>Ohm.cm</td>
<td></td>
</tr>
<tr>
<td>Surface resistivity IEC 60093</td>
<td></td>
<td>Ohm</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>Relative permittivity εr ≥ at 100 Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dielectric dissipation factor tan δ; ≥ at 100 Hz</td>
<td></td>
<td></td>
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<tr>
<td>Comparative tracking index (CTI) IEC 60112</td>
<td></td>
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</tr>
</tbody>
</table>

**Note:** 1 g/cm³ = 1,000 kg/m³; 1 MPa = 1 N/mm²; 1 kV/mm = 1 MV/m.

**Legend:**

(1) This is the average molar mass of the PE-UHMW resins (irrespective of any additives) used for the manufacture of this material. It is calculated by means of the Margolies-equation $M = 5.57 \times 10^6 \times [\eta]^{75}$, with $[\eta]$ being the intrinsic viscosity (Staudinger index) derived from a viscosity measurement according to ISO 1628-3:2001, using decalin/toluene as a solvent (concentration of 0.0002 g/cm³).

(2) Measured on 1 mm thick test specimens.

(3) The figures given for these properties are for the most part derived from raw material supplier data and other publications.

(4) Only for short time exploitation (a few hours) in applications where no or only a very low load is applied to the material.

(5) Temperature resistance over a period of 20,000 hours. After this period of time, there is a decrease in tensile strength – measured at 23 °C – of about 50 % as compared with the original value. The temperature value given here is thus based on the thermal-oxidative degradation which takes place and causes a reduction in properties. Note, however, that the maximum allowable service temperature depends in many cases essentially on the duration and the magnitude of the mechanical stresses to which the material is subjected.

(6) Impact strength decreasing with increasing temperature, the minimum allowable service temperature is practically mainly determined by the extent to which the material is subjected to impact. The value given here is based on unfavourable impact conditions and may consequently not be considered as being the absolute practical limit.

(7) These estimated ratings, derived from raw material supplier data and other publications, are not intended to reflect hazards presented by the material under actual fire conditions. There is no 'UL File Number' available for TIVAR DrySlide stock shapes.

(8) The figures given for these properties are average values of tests run on test specimens machined out of 30 mm thick plates.

(9) Test specimens: Type 1 B

(10) Test speed: 50 mm/min

(11) Test speed: 1 mm/min.

(12) Test specimens: cylinders Ø 6 x 16 mm

(13) Test specimens: bars d (thickness) x 10 x 80 mm ; test speed: 2 mm/min ; span: 64 mm.

(14) Pendulum used: 15 J

(15) Pendulum used: 25 J

(16) Measured on 10 mm thick test specimens.

(17) Electrode configuration: Ø 25 / Ø 75 mm coaxial cylinders ; in transformer oil according to IEC 60296 ; 1 mm thick test specimens.

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

AVAILABILITY

Plates: Thicknesses 1-150 mm

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