**TIVAR® 1000 EC** is a PE-UHMW grade containing specific additives rendering this material a lower surface resistivity than TIVAR® 1000 antistatic, improving electrical conductivity and UV-resistance.

### Physical properties (indicative values *)

<table>
<thead>
<tr>
<th>Properties</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Density</strong></td>
<td>0.945 g/cm³ (ISO 1183-1)</td>
</tr>
<tr>
<td><strong>Coefficient of linear thermal expansion</strong></td>
<td>2 x 10⁻⁵ °C⁻¹</td>
</tr>
<tr>
<td><strong>Flammability</strong></td>
<td>HB</td>
</tr>
<tr>
<td><strong>Electrical Properties</strong></td>
<td></td>
</tr>
<tr>
<td>- <strong>Dielectric dissipation factor tan δ</strong>:</td>
<td>- at 1 MHz: IEC 60243-1</td>
</tr>
<tr>
<td>- <strong>Relative permittivity εr</strong>:</td>
<td>- at 1 MHz: IEC 60250</td>
</tr>
<tr>
<td>- <strong>Volume resistivity</strong>:</td>
<td>1000 MΩ.cm (IEC 60593)</td>
</tr>
<tr>
<td>- <strong>Surface resistivity</strong>:</td>
<td>≥ 10 Ω.cm² (ANSI/ESD STM 11.11)</td>
</tr>
</tbody>
</table>

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

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**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 Margules-equation:
   \[ M = 5.37 	imes 10^{4} \times [\eta]^{1.49}, \text{ with } [\eta] \text{ being the intrinsic viscosity (Staudinger index) derived from a viscosity measurement according to ISO 1628-2:2001, using decacyclene-naphthalene as a solvent (concentration of 0.0006 g/ml).} \]
2. According to method 1 of ISO 62 and done on discs Ø 50 mm x 3 mm.
3. The figures given for these properties are for the most part derived from raw material supplier data and other publications.
4. Temperature resistance over a period of min. 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 on many factors essentially on the duration and the magnitude of the mechanical stresses to which the material is subjected.
5. Impact strength decreases with decreasing 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.
6. 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 these stock shapes.
7. Most of the figures given for these mechanical properties of the materials are average values of tests run on dry test specimens machined either out of plate 15-20 mm thick or rod diameter 40-50mm, the test specimens were then taken from the stock shape with their length in the longitudinal direction (parallel to the extrusion direction).
8. Test specimens: Type 1 B
9. Test speed: either 5 or 50 mm/min (chosen acc. to ISO 10350-1 as a function of the ductile behaviour of the material (tough or brittle)
10. Test: speed: 1 mm/min.
11. Test specimens: cylinder Ø 6 mm x 16 mm.
12. Test specimens: bars 4 mm (thickness) x 10 mm x 80 mm; test speed: 2 mm/min; span: 64 mm.
15. Measured on 10 mm thick test specimens.
16. Test procedure similar to Test Method A: “Pin-on-disk” as described in ISO 7148-2. Load 3 MPa, slide velocity= 0.33 m/s, mating plate steel Ra= 0.7-0.9 μm, tested at 22 °C, 50% RH.
17. Test electrode: cylinder Φ 25 mm / 0.75 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 for dry material. However, they are not guaranteed and they should not be used to establish material specification limits nor used alone as the basis of design. It has to be noted that reinforced and filled material shows an anisotropic behaviour (properties differ when measured parallel and perpendicular to the manufacturing direction).