Teonex® HV
The New High Temperature Dielectric Film for Power Capacitors
Teonex® HV

The New High Temperature Dielectric Film for Power Capacitors

DuPont Teijin Films, the world’s leading supplier of thin PET and PEN films for capacitors, has developed a new high temperature film dielectric aimed at capacitors used in power conversion systems for transportation, automotive, industrial and lighting.

The Benefits

Highest Energy Density Storage

This allows capacitors to be made smaller which gives benefits in applications where space or weight reductions are desirable.

High Temperature Operation up to 150°C

This allows capacitors to be used with higher operating temperatures which gives benefits in reduction or elimination of cooling systems and corresponding reductions in cost and weight.

Energy Density of Teonex® HV

The energy density of a dielectric indicates how much energy the capacitor dielectric can store within a defined volume (or weight) and is dependant on the film’s physical parameters such as breakdown voltage and dielectric constant.

Capacitors using Teonex® HV as dielectric have the highest energy density per volume and weight over the entire temperature range from ~55 to 150°C.

The Teonex® HV characteristics will allow the most compact capacitor design in power applications, especially when they have to operate at highest temperatures.

Metalised Teonex® HV film capacitors exhibit self-healing properties required in power applications.
The graph shows typical relative energy density for capacitors made from different dielectric materials. Actual values may vary depending on the capacitor design and construction. Customers are advised to check actual values with the capacitor manufacturer before use.

**Energy Density per Volume of Teonex® HV**

![Graph showing relative energy density per volume vs. temperature (°C).]

**Key**
- Teonex HV
- SCFF
- FET
- FSN
- FPC

---

*Active Hybrid*
Energy Density of Teonex® HV

Teonex® HV offers the high temperature capability of DuPont Teijin Films existing PEN film range for capacitors, but operates at significantly higher operating voltage.

This makes it suitable for use in power capacitors in general and in particular those applications where a high temperature operating range is important.

The film is available in thickness of 2.5, 2.8, 3.0 and 4.0 microns. Other thickness grades could be offered depending on the demand.

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Units</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modulus MD</td>
<td>ASTM D-982</td>
<td>N/mm²</td>
<td>400</td>
</tr>
<tr>
<td>Elongation MD</td>
<td>ASTM D-982</td>
<td>%</td>
<td>85</td>
</tr>
<tr>
<td>Shrinkage MD</td>
<td>150°C, 30 min</td>
<td>%</td>
<td>1.5</td>
</tr>
<tr>
<td>Shrinkage TD</td>
<td>20°C, 30 min</td>
<td>%</td>
<td>0.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Units</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrinkage MD</td>
<td>200°C, 30 min</td>
<td>%</td>
<td>4.5</td>
</tr>
<tr>
<td>Shrinkage TD</td>
<td></td>
<td>%</td>
<td>2.5</td>
</tr>
<tr>
<td>Dielectric Constant, 1kHz</td>
<td>JIS C-2318, 1kHz, 25°C</td>
<td>(µF/mm²)</td>
<td>2.95</td>
</tr>
<tr>
<td>Dissipation Factor, 1kHz</td>
<td>1kHz, 25°C</td>
<td>%</td>
<td>0.35</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>25 mm² electrode, 25°C(1)</td>
<td>(V/micron)</td>
<td>1750</td>
</tr>
<tr>
<td>Melting Point</td>
<td>DSC</td>
<td>°C</td>
<td>263</td>
</tr>
</tbody>
</table>

(1) DuPont Teijin Films method - metallized film sheet, typical average value
(2) DuPont Teijin Films method - aluminium sheet electrodes - 25mm²
For further information on this range of polyester films please contact

DuPont Teijin Films Luxembourg SA
PO Box 1681
L-1016
Luxembourg

Tel: +352 2616 4004
Fax: +352 2616 5000