Silicones for Wind Power Applications

Wind power is an unlimited source of natural, clean energy, and wind farms are sprouting up all over the world. Wind turbine systems are used in tough environments, making high reliability a must. Silicones are advanced functional materials that are designed for use in a variety of applications.

**Blades & Tower sections**
- Durability improvement for composite materials
- High weatherability coatings
- Adhesion & sealing

**Generators & auxiliary systems**
- Heat dissipation for generator components
- Lubrication of rotating machinery and other parts
- Adhesion, sealing & coating
- Electrical insulation, protection & covering of connection cables

**Transformers**
- Transformer oil
<table>
<thead>
<tr>
<th>Application example</th>
<th>Product category</th>
<th>Product name</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving strength of propeller; improving durability of propeller</td>
<td>Silane coupling agent, alkoxy oligomer</td>
<td>KBM-403</td>
<td>For FRP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X-41-1053</td>
<td></td>
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<tr>
<td>Resin for exterior paint for tower</td>
<td></td>
<td>KC-895, KR-500</td>
<td></td>
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<tr>
<td>High weatherability coatings</td>
<td></td>
<td>KR-9218, KR-213</td>
<td>Additive for acrylic paints &amp; urethane paints</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X-41-1053</td>
<td></td>
</tr>
<tr>
<td>Adhesion &amp; sealing of tower components, internal and external</td>
<td>Sealant</td>
<td>SEALANT-N</td>
<td>General purpose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SEALANT-72</td>
<td>For plastics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SEALANT-FC-127</td>
<td>Rapid-cure sealing (for construction at factory). Can also be used for temporary fixation of machinery.</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Grease</td>
<td>G-30 Series</td>
<td>Low-temp. lubrication (-60 °C to 180 °C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G-40 Series</td>
<td>High-temp. lubrication (-30 °C to 200 °C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G-420</td>
<td>High-temp. lubrication (-30 °C to 250 °C)</td>
</tr>
<tr>
<td>Thermal interface materials</td>
<td>Fluid compound (grease)</td>
<td>G-747</td>
<td>General purpose, Thermal conductivity: 0.9W/m·K</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G-775</td>
<td>Less pump-out, and oil separation. Thermal conductivity: 3.6W/m·K</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G-777</td>
<td>High-temperature resistant. Thermal conductivity: 3.1W/m·K</td>
</tr>
<tr>
<td>For electrical insulation, protection &amp; covering</td>
<td>Heat-shrinkable rubber tubing</td>
<td>ST-DG Series</td>
<td>When heated, tubing shrinks to about 1/2 its original inner diameter. This rubber tubing is designed for electrical insulation, protection &amp; covering, and offers excellent heat and cold resistance, electrical properties, and flame resistance.</td>
</tr>
<tr>
<td>For adhesion, sealing &amp; coating of electric and electronic components</td>
<td>One-component RTV rubber (Condensation cure type)</td>
<td>KE-4895</td>
<td>Low viscosity, reduced low-molecular-weight siloxane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KE-4896</td>
<td>Medium viscosity, reduced low-molecular-weight siloxane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KE-3490</td>
<td>Paste consistency, reduced low-molecular-weight siloxane, UL94 V-0 certified</td>
</tr>
<tr>
<td>General purpose adhesion, sealing &amp; coating</td>
<td>One-component RTV rubber (Condensation cure type)</td>
<td>KE-45</td>
<td>Paste consistency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KE-445</td>
<td>Low viscosity</td>
</tr>
<tr>
<td>Transformer</td>
<td>Fluid</td>
<td>KF-96AE-20cs</td>
<td>Designed for use in transformers, this insulating oil is highly safe and offers excellent fire-resistance and electrical properties. (Meets JIS-C-2320, revised June 2010)</td>
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<tr>
<td></td>
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<td>KF-96AE-50cs</td>
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</tbody>
</table>

*Shin-Etsu customers have used our silicone materials to develop products including high-electrical-resistance stone (paving stone for electrical substations) and fire-resistant cables (ECCO cable). If you have an interest in these or other related products, please contact Shin-Etsu so we can tell you more about them and their manufacturers.
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