PACKAGE LEVEL EMI SHIELDING SOLUTIONS
CONFORMAL AND COMPARTMENTAL SHIELDING TECHNOLOGIES
PACKAGE LEVEL EMI SHIELDING SOLUTIONS

With the increasing proliferation of wireless devices, designers are challenged with various electromagnetic waves from multiple sources radiating at the same spectrum of frequencies, resulting in electromagnetic interference (EMI). Radio-frequency (RF) emitting devices require effective isolation to limit the propagation of their interference to neighboring components to protect the end device from performance degradation. As electronics move toward miniaturization, lighter weight and higher speeds, these challenges become more significant as conventional shielding methods present functional and operational limitations. Henkel's specialized materials have optimal properties and characteristics that provide reliable shielding and adhesion performance in stressful electronic conditions and environments.
**CONFORMAL SHielding**

The thinly spray-coated material provides uniform coverage on top and sidewalls, clean edges without backside contamination, and excellent adhesion to mold compound with outstanding Shielding Effectiveness (SE). This technology is simple, allowing easy production scalability and design flexibility with minimal cost of ownership using spray-coating, compared to other costly methods such as PVD/sputtering.

**Conformal EMI Shielding Material Properties**

<table>
<thead>
<tr>
<th>GENERAL PROPERTIES</th>
<th>LOCTITE ABLESTIK EMI 8660S</th>
<th>LOCTITE ABLESTIK EMI 8880S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Method</td>
<td>Spray</td>
<td>Spray</td>
</tr>
<tr>
<td>Viscosity, 5 rpm (cP)</td>
<td>250</td>
<td>550</td>
</tr>
<tr>
<td>Thixotropic Index (0.5 rpm/5 rpm)</td>
<td>1.2</td>
<td>1.4</td>
</tr>
<tr>
<td>Conductive Filler Type</td>
<td>Propietary Ag</td>
<td>Propietary Ag</td>
</tr>
<tr>
<td>Volume Resistivity (Ω * cm)</td>
<td>(1.5 \times 10^{-5})</td>
<td>(7.9 \times 10^{-6})</td>
</tr>
<tr>
<td>Curing Condition</td>
<td>175°C, 1 hour in air</td>
<td>175°C, 1 hour in air</td>
</tr>
<tr>
<td>Optimal Coating Thickness (µm)</td>
<td>3–5</td>
<td>3–5</td>
</tr>
<tr>
<td>Adhesion to EMC (ASTM Cross Hatch Test)</td>
<td>5B (0% peel)</td>
<td>5B (0% peel)</td>
</tr>
<tr>
<td>Shielding Effectiveness (dB)</td>
<td>90 (Excellent)</td>
<td>90 (Excellent)</td>
</tr>
<tr>
<td>Target Frequency Range</td>
<td>500 MHz – 10 GHz</td>
<td>10 MHz – 10 GHz</td>
</tr>
</tbody>
</table>

**COMPARTMENTAL SHielding**

The jet-dispensed, highly flowable, conductive material is capable of filling a narrow trench with high aspect ratios to create shielded partitioning within a package. This material technology offers high adhesion to the inner sidewalls and the bottom of the trench.

**Typical Compartment EMI Shielding Material Properties**

<table>
<thead>
<tr>
<th>GENERAL PROPERTIES</th>
<th>TYPICAL HENKEL MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Method</td>
<td>Jet-Dispense</td>
</tr>
<tr>
<td>Viscosity, 5 rpm (cP)</td>
<td>5000</td>
</tr>
<tr>
<td>Thixotropic Index (0.5 rpm/5 rpm)</td>
<td>&lt; 1.5</td>
</tr>
<tr>
<td>Conductive Filler Type</td>
<td>Ag or Ag-coated Cu</td>
</tr>
<tr>
<td>Volume Resistivity (Ω * cm)</td>
<td>(7.0 \times 10^{-5})</td>
</tr>
<tr>
<td>Adhesion Interfaces</td>
<td>EMC, Copper, Solder</td>
</tr>
<tr>
<td>Supported Trench Width (µm)</td>
<td>60 and above</td>
</tr>
<tr>
<td>Trench Aspect Ratio (Depth: Width)</td>
<td>Up to 10:1</td>
</tr>
<tr>
<td>Cure Shrinkage</td>
<td>Low</td>
</tr>
<tr>
<td>Stress Management</td>
<td>Good</td>
</tr>
</tbody>
</table>