NEW DUPONT THERMALLY CONDUCTIVE POLYMERS DRIVING AL DIE-CASTING REPLACEMENT AND PART INTEGRATIONS

Unique Combination of Thermal Conductivity, Mechanical Properties and Electrical Insulation

MARKET TRENDS

Due to the miniaturization and increasing power of microelectronics, heat dissipation is key to the reliability, performance and further miniaturization of microelectronics. Materials with high thermal conductivity are required for the conduction of heat for the purpose of cooling.

In applications where thermal conductivity is the limiting factor, metals remain the favored materials. However, in the many applications where convection is the limiting factor, thermally conductive plastics are increasing the preferred choice.

WHY THERMALLY CONDUCTIVE POLYMERS ARE NEEDED?

Striking a good balance between Thermal Conductivity (TC) and thermal radiation, thermally conductive polymer technology encourages metal replacement and part integration to help reduce the total cost and lower device weight. It facilitates the development of energy-efficient systems with concern for environment sustainability. (refer to Fig.1)

THERMALLY AND ELECTRICALLY CONDUCTIVE

Crasin® FR1300TC BK350
Electrically conductive PBT grade, V-0, High Thermal Conductivity (14 W/m.K, in-plane), low density, black colour, good balance of mechanical properties, for injection moulding.

THERMALLY CONDUCTIVE & ELECTRICALLY INSULATED

Zytel® FR73200TC WT001
Electrically insulated PA 6 grade, V-0, Thermal Conductivity (2 W/m.K, in-plane), white colour, F1 (suitable for outdoor applications), good balance of mechanical properties, for injection moulding.

FEATURES AND BENEFITS:

vs Al Alloys
- Potential cost and weight reduction
- Design flexibility enables part integration

vs Standard non TC resins
- Higher heat transfer which is translated into higher efficiency and lifetime of the final device
NEW DUPONT THERMALLY CONDUCTIVE POLYMERS
DRIVING AL DIE-CASTING REPLACEMENT AND PART INTEGRATIONS

Thermally Conductive DuPont Performance Polymers for TC Applications

<table>
<thead>
<tr>
<th>Grade</th>
<th>Colour</th>
<th>Polymer Type</th>
<th>Thermal Conductivity in Plane (mm)</th>
<th>Volume Resistivity</th>
<th>Flammability Rating (mm)</th>
<th>GWIT (mm)</th>
<th>Density (gs/cm²)</th>
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<tbody>
<tr>
<td>Cramin®</td>
<td>Black</td>
<td>PBT</td>
<td>14 (0.3)</td>
<td>&gt;1E3</td>
<td>V0 (0.75)</td>
<td>675 (0.75)</td>
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<tr>
<td>Zytel®</td>
<td>White</td>
<td>PA6</td>
<td>2 (0.3)</td>
<td>2.8E15</td>
<td>V0 (0.75)</td>
<td>775 (0.75)</td>
<td>800 (1.5)</td>
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* Thermally conductive specimen prepared by hot-press.

EXAMPLES OF POTENTIAL APPLICATIONS

- LED Lighting (e.g. bulb cover, driver casing)
- Hand Held Devices (e.g. laptops/tablets bottom covers)
- Battery (e.g. casing)
- Electrical Components (e.g. motor housings)

- LCD Projectors (e.g. heat sink)
- Auto Lighting (e.g. heat sink)
- PV Converters (e.g terminal block)

WE CAN HELP

DuPont is strongly committed to expansion and investment in environmentally friendly solutions. Please contact the DuPont representative in your country or global region to discuss how we can work together.

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