Electrical Connectors

Ascend Performance Materials’ high-performance nylon 6,6 compounds are ideal for electrical and electronic (E&E) applications. With over 150 grades with more than 100 UL approvals and VDE recognition, Vydyne® grades for E&E applications are designed to meet ever stricter regulatory requirements, including fire and safety standards. Vydyne grades provide superior mechanical and thermal performance while maintaining dimensional integrity, and exhibit excellent flow and moldability for complex designs.


Application Description

Electrical current produces heat, and the connectors, wires and other infrastructure used to direct the flow of electricity must withstand persistent exposure to elevated temperatures. Furthermore, given the potential hazards should electrical systems fail, how a material behaves during a failure is vitally important. And as electrical components find their way into more everyday applications, miniaturization, thin walls and reliable molding and processability become increasingly important.

Applications

- Electrical and electronic applications
  - Household electrical devices
  - Unattended appliances
  - PV panels
- Automotive applications
  - Hybrid and electric auto batteries
  - Multicircuit systems
  - EV charger plugs and face covers
  - Airbag housings
  - Interface modules
  - Automotive onboard component sensors

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The Vydyne Difference

Vydyne PA66 grades exhibit outstanding dielectric strength and electrical insulation properties. Superior flow makes it possible to mold thinner wall sections for smaller parts without sacrificing strength or toughness. Vydyne quality can also lower costs by reducing cycle times and molding reject rates. For non-halogenated V-0 flame rated electronic applications, ECO315J, ECO366 and ECO366H meet the challenge without losing processing performance. FR350J for unattended appliances meets all these requirements plus IEC 60335-1 750°C glow wire on molded parts with no flame (<2 seconds).

Benefits

- High electrical tracking resistance (CTI)
- High dielectric strength
- Electrical insulating properties
- Excellent flow
- Chemical resistance
- Excellent heat resistance
- Non-halogenated V-0 flame ratings
- Excellent mechanical strength
- Excellent ductility
- Good long-term heat stability
- Colorable at the press
- Superior GWIT
- Low contact corrosion

Product Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Units</th>
<th>21SPF</th>
<th>20NSP</th>
<th>ECO315J</th>
<th>ECO366H</th>
<th>R515J</th>
<th>R535J</th>
<th>FR350J</th>
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<tbody>
<tr>
<td>Density</td>
<td>ISO 1183</td>
<td>g/cm³</td>
<td>1.14</td>
<td>1.14</td>
<td>1.16</td>
<td>1.17</td>
<td>1.24</td>
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<tr>
<td>Tensile Strength @ Break</td>
<td>ISO 527-2</td>
<td>MPa</td>
<td>88</td>
<td>95</td>
<td>75</td>
<td>80</td>
<td>83</td>
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<tr>
<td>Tensile Elongation @ Break</td>
<td>ISO 527-2</td>
<td>%</td>
<td>20</td>
<td>13</td>
<td>25</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>2.8</td>
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<tr>
<td>Notched Charpy Impact @ 23°C</td>
<td>ISO 179/1eA</td>
<td>kJ/m²</td>
<td>6</td>
<td>6</td>
<td>5.4</td>
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<td>6.0</td>
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<td>Notched Charpy Impact @ ~30°C</td>
<td>ISO 179/1eA</td>
<td>kJ/m²</td>
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<td>5.4</td>
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<td>6.0</td>
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<td>Flammability @ 0.4 mm¹</td>
<td>UL 94</td>
<td>NA</td>
<td>V-2-V</td>
<td>V-2-V</td>
<td>V-0-V</td>
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<td>V-0</td>
<td>HB</td>
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<td>RTI Electrical @ 0.4 mm¹</td>
<td>UL 746B</td>
<td>°C</td>
<td>130</td>
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<td>130</td>
<td>120</td>
<td>150</td>
<td>120***</td>
<td>120***</td>
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<tr>
<td>RTI Strength @ 0.4 mm²</td>
<td>UL 746B</td>
<td>°C</td>
<td>75</td>
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<td>100</td>
<td>105</td>
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<td>125***</td>
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<td>Dielectric Strength</td>
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<td>kV/mm</td>
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<td>17</td>
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<td>Volume Resistivity</td>
<td>IEC 6093</td>
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<td>1.0 E+13</td>
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<td>V</td>
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<td>°C</td>
<td>825</td>
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All properties dry as molded (DAM)  
*Except as otherwise noted  
†@ 0.2 mm  
‡@ 0.38 mm  
§@ 0.75 mm

For more information, contact our expert applications specialists or visit ascendmaterials.com.