### Material Specification Overview

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>Material Shortcut</th>
<th>Operating Temperature</th>
<th>Colour**</th>
<th>Flammability</th>
<th>Material Properties*</th>
<th>Material Specifications</th>
</tr>
</thead>
</table>
| Aluminium-alloy | AL | -40 °C to +180 °C | Natural (NA) | | • Corrosion resistant  
• Antimagnetic | **RoHS** |
| Chloroprene | CR | -20 °C to +80 °C | Black (BK) | | • Weather-resistant  
• High yield strength | **RoHS** |
| Ethylene Tetrafluoroethylene | E/TFE | -80 °C to +170 °C | Blue (BU) | UL94 V0 | • Resistance to radioactivity  
• UV-resistant, not moisture sensitive  
• Good chemical resistance to: acids, bases, oxidizing agents | **RoHS** |
| Polycetal | POM | -40 °C to +90 °C, (+110 °C, 500 h) | Natural (NA) | UL94 HB | • Limited brittleness sensitivity  
• Flexible at low temperature  
• Not moisture sensitive  
• Robust on impacts | **RoHS** |
| Polyamide 11 | PA11 | -40 °C to +85 °C, (+105 °C, 500 h) | Black (BK) | UL94 HB | • Good chemical resistance to: acids, bases, oxidizing agents  
• UV-resistant | **RoHS** |
| Polyamide 12 | PA12 | -40 °C to +85 °C, (+105 °C, 500 h) | Black (BK) | UL94 HB | • Resistance to high temperatures  
• Very moisture sensitive  
• Low smoke sensitive | **RoHS** |
| Polyamide 4.6 | PA46 | -40 °C to +150 °C (5000 h), +195 °C (500 h) | Natural (NA), Grey (GY) | UL94 V2 | • Bio-plastic, derived from vegetable oil  
• Strong impact resistance at low temperature  
• Very low moisture absorption  
• Weather-resistant  
• Good chemical resistance | **HF**  
**RoHS** |
| Polyamide 6 | PA6 | -40 °C to +80 °C | Black (BK) | UL94 V2 | • High yield strength | **RoHS** |
| Polyamide 6, high impact modified | PA6HIR | -40 °C to +80 °C | Black (BK) | UL94 HB | • Limited brittleness sensitivity  
• Higher flexibility at low temperature | **RoHS** |
| Polyamide 6.6 | PA66 | -40 °C to +85 °C, (+105 °C, 500 h) | Black (BK), Natural (NA) | UL94 V2 | • High yield strength | **RoHS** |
| Polyamide 6.6, glass-fibre reinforced | PA66GF13, PA66GF15 | -40 °C to +105 °C | Black (BK) | UL94 HB | • Good resistance to: lubricants, vehicle fuel, salt water and many solvents | **HF**  
**RoHS** |
| Polyamide 6.6, heat and UV stabilised | PA66HSW | -40 °C to +105 °C | Black (BK) | UL94 V2 | • High yield strength  
• Modified elevated max. temperature  
• UV-resistant | **HF**  
**RoHS** |
| Polyamide 6.6, heat stabilised | PA66HS | -40 °C to +105 °C | Black (BK), Natural (NA) | UL94 V2 | • High yield strength  
• Modified elevated max. temperature | **HF**  
**RoHS** |
| Polyamide 6.6, high impact modified | PA66HIR | -40 °C to +80 °C, (+105 °C, 500 h) | Black (BK) | UL94 HB | • Limited brittleness sensitivity  
• Higher flexibility at low temperature | **RoHS** |
| Polyamide 6.6, high impact modified, heat and UV stabilised | PA66HIRHSW | -40 °C to +110 °C | Black (BK) | UL94 HB | • Limited brittleness sensitivity  
• Higher flexibility at low temperature  
• Modified elevated max. temperature  
• High yield strength, UV-resistant | **HF**  
**RoHS** |
| Polyamide 6.6, high impact modified, heat stabilised | PA66HIRH5 | -40 °C to +105 °C | Black (BK) | UL94 HB | • Limited brittleness sensitivity  
• Higher flexibility at low temperature  
• Modified elevated max. temperature | **RoHS** |
| Polyamide 6.6, high impact modified, scan black | PA66HIR(S) | -40 °C to +80 °C, (+105 °C, 500 h) | Black (BK) | UL94 HB | • Limited brittleness sensitivity  
• Higher flexibility at low temperature | **HF**  
**RoHS** |
| Polyamide 6.6, UV-resistant | PA66W | -40 °C to +85 °C, (+105 °C, 500 h) | Black (BK) | UL94 V2 | • High yield strength  
• UV-resistant | **HF**  
**RoHS** |

**HF = Halogenfree  
LFH = Limited Fire Hazard  
RoHS = Restriction of Hazardous Substances**

*Tefzel® is a registered trademark of DuPont. General linguistic usage for cable ties made from raw material E/TFE is Tefzel®-Tie. In addition to Tefzel® from DuPont HellermannTyton is also using equivalent E/TFE raw material from other suppliers.

**More colours on request.**

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<tr>
<td>Polyamide 6.6, PA66MP</td>
<td>-40 °C to +85 °C, Blue (BU)</td>
<td>UL94 HB</td>
<td>High yield strength</td>
<td>Metal and X-Ray detectable</td>
<td>HF</td>
<td>RoHS</td>
</tr>
<tr>
<td>Polyamide 6.6 V0</td>
<td>-40 °C to +85 °C, White (WH)</td>
<td>UL94 V0</td>
<td>High yield strength</td>
<td>Low smoke emission</td>
<td>HF</td>
<td>LFH</td>
</tr>
<tr>
<td>Polyamide 6.6 V0, PA66V0-HOI</td>
<td>-40 °C to +85 °C, White (WH)</td>
<td>UL94 V0</td>
<td>High yield strength</td>
<td>Low smoke emissions</td>
<td>HF</td>
<td>LFH</td>
</tr>
<tr>
<td>Polyester</td>
<td>SP</td>
<td>-50 °C to +150 °C, Black (BK)</td>
<td>Halogen free</td>
<td>UV-resistant</td>
<td>Good chemical resistance to: most acids, alkalis and oils</td>
<td>HF</td>
</tr>
<tr>
<td>Polyetheretherketone</td>
<td>PEEK</td>
<td>-55 °C to +240 °C, Beige (BGE)</td>
<td>UL94 V0</td>
<td>Resistance to radioactivity</td>
<td>Not moisture sensitive</td>
<td>Good chemical resistance to: acids, bases, oxidizing agents</td>
</tr>
<tr>
<td>Polyethylene</td>
<td>PE</td>
<td>-40 °C to +50 °C, Black (BK), Grey (GY)</td>
<td>UL94 HB</td>
<td>Low moisture absorption</td>
<td>Good chemical oilresistance to: most acids, alcohol and oils</td>
<td>HF</td>
</tr>
<tr>
<td>Polyolefin</td>
<td>PO</td>
<td>-40 °C to +90 °C, Black (BK)</td>
<td>UL94 V0</td>
<td>Low smoke emissions</td>
<td>HF</td>
<td>LFH</td>
</tr>
<tr>
<td>Polypropylene</td>
<td>PP</td>
<td>-40 °C to +115 °C, Black (BK), Natural (NA)</td>
<td>UL94 HB</td>
<td>Floats in water</td>
<td>Moderate yield strength</td>
<td>Good chemical resistance to: organic acids</td>
</tr>
<tr>
<td>Polypropylene, EPDM PP</td>
<td>-20 °C to +95 °C, Black (BK)</td>
<td>UL94 HB</td>
<td>Good resistance to high temperatures</td>
<td>Good chemical and abrasion resistance</td>
<td>HF</td>
<td>RoHS</td>
</tr>
<tr>
<td>Polypropylene, Ethylene-PPDM, Terpolymere-rubber free of Nitrosamine</td>
<td>PP, EPDM</td>
<td>-20 °C to +95 °C, Black (BK)</td>
<td>UL94 HB</td>
<td>Floats in certain liquids</td>
<td>Metal and X-Ray detectable</td>
<td>Heat resistant</td>
</tr>
<tr>
<td>Polyvinylchloride</td>
<td>PVC</td>
<td>-10 °C to +70 °C, Black (BK), Natural (NA)</td>
<td>UL94 V0</td>
<td>Low moisture absorption</td>
<td>Good chemical resistance to: acids, ethanol and oil</td>
<td>HF</td>
</tr>
<tr>
<td>Stainless Steel, SS304, SS316</td>
<td>-80 °C to +538 °C, Natural (NA)</td>
<td>Non burning</td>
<td>Corrosion resistant</td>
<td>Weather resistant</td>
<td>Outstanding chemical resistance</td>
<td>RoHS</td>
</tr>
<tr>
<td>Thermoplastic Polyurethane</td>
<td>TPU</td>
<td>-40 °C to +85 °C, Black (BK)</td>
<td>UL94 HB</td>
<td>High elastic</td>
<td>Good chemical resistance to: acids, bases and oxidizing agents</td>
<td>HF</td>
</tr>
</tbody>
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