POWER UP YOUR CABLES

Case Study: Wires & Cables
The trend toward halogen-free flame retardants (HFFRs) has placed new processing demands on wire and cable manufacturers. The new compounds are heavily loaded and can create issues with die drool, poor surface quality, and pigment/filler dispersion. Incorporating GENIOPLAST® Pellet S significantly improves the material flow, extrusion process, and creates a synergistic effect with flame-retardant fillers.

**GENIOPLAST® PELLET S FOR WIRES AND CABLES**

Adding 0.1 – 1% of GENIOPLAST® Pellet S
- Improved processing and flow
- Less extruder torque
- Lower die pressure
- Reduced die drool and melt fracture
- Faster throughput
- Better melt flow

Adding 1 – 3% of GENIOPLAST® Pellet S
- Improved surface lubricity and slip
- Lower coefficient of friction
- Better abrasion resistance
- Better surface touch and feel
- Better mechanical properties
- Better synergy with flame retardants

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**Table:**

<table>
<thead>
<tr>
<th>Material</th>
<th>Without Additive</th>
<th>+0.5% GENIOPLAST® Pellet S</th>
<th>+1% GENIOPLAST® Pellet S</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDPE/ATH (60%)</td>
<td>LOI [% 0 J] 26</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>UL 94 V-1</td>
<td>V-0</td>
<td>V-0</td>
</tr>
<tr>
<td>PP/MDH (60%)</td>
<td>LOI [% 0 J] 26</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>UL 94 V-0</td>
<td>V-0</td>
<td>V-0</td>
</tr>
</tbody>
</table>

**Key Benefits**
- Higher throughput
- No die drool
- Better surface properties
- Better flame retardancy

GENIOPLAST® is a registered trademark of Wacker Chemie AG.
In polyolefin-based HFFR compounds containing flame retardant filler, such as aluminum hydroxide (ATH) or magnesium hydroxide (MDH), GENIOPLAST® Pellet S acts as char former and can reduce heat release and smoke generation. This benefit is demonstrated in the cone calorimetry graph and data below.

<table>
<thead>
<tr>
<th></th>
<th>Reference</th>
<th>+2% GENIOPLAST® Pellet S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of ignition [s]</td>
<td>68</td>
<td>61</td>
</tr>
<tr>
<td>Peak heat release rate [kW/m²]</td>
<td>203</td>
<td>151</td>
</tr>
<tr>
<td>Total heat released [MJ/m²]</td>
<td>110</td>
<td>102</td>
</tr>
<tr>
<td>Total smoke released [m²/m²]</td>
<td>866</td>
<td>313</td>
</tr>
<tr>
<td>Burning time [s]</td>
<td>1217</td>
<td>1820</td>
</tr>
</tbody>
</table>

**Cone Calorimetry**

**Combustion residue: reference**

**Combustion residue: +2% GENIOPLAST® Pellet S**
The data presented in this medium are in accordance with the present state of our knowledge but do not absolve the user from carefully checking all supplies immediately on receipt. We reserve the right to alter product constants within the scope of technical progress or new developments. The recommendations made in this medium should be checked by preliminary trials because of conditions during processing over which we have no control, especially where other companies’ raw materials are also being used. The information provided by us does not absolve the user from the obligation of investigating the possibility of infringement of third parties’ rights and, if necessary, clarifying the position. Recommendations for use do not constitute a warranty, either express or implied, of the fitness or suitability of the product for a particular purpose.