COMPATIBILIZATION OF ABS AND HDPE

In this report, we tested the compatibilization of ABS and HDPE mixtures with GRAFTABOND™ LL-GK 1005.

MATERIALS USED

Magnum 8391 ABS
Dow KT 10 000 UE
GRAFTABOND™ LL-GK 1005

TESTS PERFORMED

To determine the effectiveness of our additive,
We added 5% of our additive to two mixtures:
70% ABS + 30% HDPE
30% ABS + 70% HDPE
Mixtures were extruded on a laboratory scale extruder and injection molded.
Tensile properties and Charpy impact strength were measured in accordance with ISO 527 and ISO 1133.
Material Report

RESULTS

<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>Max. Tensile Stress [MPa]</th>
<th>Elongation at Break [%]</th>
<th>Charpy Impact Strength [kJ/m²]</th>
</tr>
</thead>
<tbody>
<tr>
<td>70% ABS + 30% HDPE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Additive</td>
<td>26.3</td>
<td>4.2</td>
<td>0.8</td>
</tr>
<tr>
<td>+ 5% GRAFTABOND™ LL-GK</td>
<td>30.4</td>
<td>4.6</td>
<td>1.23</td>
</tr>
<tr>
<td>30% ABS + 70% HDPE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Additive</td>
<td>20.1</td>
<td>1.6</td>
<td>0.7</td>
</tr>
<tr>
<td>+ 5% GRAFTABOND™ LL-GK</td>
<td>26.2</td>
<td>6.31</td>
<td>1.0</td>
</tr>
</tbody>
</table>

CONCLUSIONS

- GRAFTABOND™ LL-GK 1005 successfully increases tensile and impact properties of ABS/HDPE;
  - Increases tensile strength by up to 30%
  - Increases elongation by up to 300%
  - Increases Charpy impact strength by up to 50%
- Great compatibilizer for neat, filled and recycled mixtures, containing ABS and HDPE
- GRAFTALEN™ PP-FE 003 greatly increases the MFI of polypropylene, even at low additive amounts
- MFI increase follows a polynomial trend with GRAFTALEN™ PP-FE 003 added, meaning:
  More additive means even greater MFI increase than at low additive levels (exponential increase)
Material Report

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