Material Report

COMPATIBILIZATION OF ZINC SULFIDE WITH POLYAMIDE WITH GRAFTAMID™ EB-PA 01506

In this report, we determined the effect of GRAFTAMID™ EB-PA 01506 on polyamide 6 (PA6) compounds with zinc sulfide (ZnS)

MATERIALS USED

Blends:
Polyamide 6 Taromid B 280 S 40%  
ZnS 60%

Compatibilizer:
GRAFTAMID™ EB-PA 01506 5%

Two blends were prepared: No compatibilizer and 5% GRAFTAMID™ EB-PA 01506
TESTS PERFORMED

- All compounds were extruded on a laboratory scale extruder
- Specimen were injection molded to size 1A
- Mechanical properties were determined: Tensile properties (ISO 527) and Charpy impact strength (ISO 179)
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RESULTS

<table>
<thead>
<tr>
<th>PA6</th>
<th>ZnS</th>
<th>GRAFTAMID™ EB-PA 01506</th>
<th>Tensile Stress [MPa]</th>
<th>Elongation at Break [%]</th>
<th>Charpy Impact Strength [kJ/m²]</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>60</td>
<td>-</td>
<td>55,1</td>
<td>2,9</td>
<td>1,02</td>
</tr>
<tr>
<td>40</td>
<td>60</td>
<td>5</td>
<td>68,6</td>
<td>3,3</td>
<td>1,16</td>
</tr>
</tbody>
</table>

![Mechanical properties of prepared blends](image)

CONCLUSIONS

- From economic and environmental point of view, compatibilization of PA6, filled with ZnS is more feasible than modification of filler – costly production and disposal of waste
- *GRAFTAMID™ EB-PA 01506* was successfully used to improve mechanical properties of PA6, filled with 60% ZnS
- At 5% added compatibilizer, tensile stress increased by 25%, elongation by 15% and impact strength by 13%
- Mechanical properties are dependent on the distribution of compatibilizer and filler: better distribution means better effect of compatibilizer → higher mechanical properties
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