Polymer powder based on MP-UHMWPE by using the most innovative technology method of Solid-state graft copolymerization.

UHMWPE graft copolymers having enhanced thermal stability and excellent nucleating efficiency & improved rheological properties.
### Product Line & Product Market

<table>
<thead>
<tr>
<th>GRAFTABOND™</th>
<th>Reactive Monomer</th>
<th>Grafting Degree [%]</th>
<th>Form</th>
<th>Olefin/PA Blends</th>
<th>Glass Fiber or Mineral Filled PP</th>
<th>Natural Fiber Filled Polyolefins</th>
<th>Metal Adhesion</th>
<th>Polymer Film Adhesion</th>
<th>Non-Halogen FR</th>
<th>Mixed Recyclates</th>
<th>ABS</th>
<th>PA</th>
<th>SAN</th>
<th>PVC WPC</th>
<th>PC</th>
<th>Polysters (PET,PBT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UHP-MAH</td>
<td>00030</td>
<td>IM</td>
<td>MAH</td>
<td>2,5-3</td>
<td>Powder</td>
<td>●</td>
<td>●</td>
<td></td>
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</tr>
<tr>
<td>UHP-GMA</td>
<td>00015</td>
<td>IM</td>
<td>GMA</td>
<td>~1,5</td>
<td>Powder</td>
<td></td>
<td>●</td>
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<td></td>
<td></td>
<td>●</td>
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<td></td>
</tr>
<tr>
<td>UHP-SAN</td>
<td>00055</td>
<td>IM</td>
<td>SAN</td>
<td>4,5-5</td>
<td>Powder</td>
<td></td>
<td>●</td>
<td>●</td>
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</tr>
</tbody>
</table>

**Adhesives & Sealants**
To change module – increase or decrease, increase adhesion

**Cast Polyurethane, Epoxy, Polyether Abrasion resistance, flexibility, adhesion**

**Nanomodified polymer powders & composites**

**Rubber Goods**
Increase abrasive resistance, coefficient of friction, adhesion

**Pains & Coating**
To increase: abrasive resistance (Mar, Scrab, Rub, Scratch), gloss, toughness, adhesion to metatl, glass, concrete etc.

**Heavy duty goods**
Coefficient of friction (increase or decrease to increase abrasion resistance)

**Thermoplastic & Thermosets**
Abrasion resistance, creep resistance, solvent resistance, adhesion and compatibilization.
**PRODUCT INFORMATION**

**GRAFTABOND™ UHP-MAH 00030 IM** - Compatibilizer in engineering plastics composites, compounds and alloys as impact modifier.

**Processing**
- Processable on most thermoplastic processing equipment.
- Preferable for: Extrusion (Compounding)

*Supplied as: Granulate

**GRAFTABOND™ UHP-GMA 00015 IM** - Increase impact properties of thermoplastic and thermosetting polyesters

**Special Features and Benefits**
- Improves mechanical properties: stiffness tensile and flexural properties, impact strength,

**Processing**
- Material is processable on most thermoplastics processing equipment.
- Preferable processing method: Extrusion (Compounding).

*Supplied as: Granulate also as a Powder in a special request

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Non-treated UHMWPE (left) and surface-modified UHMWPE (right) in water.

Non-treated (left) and surface-modified (right) GRAFTABOND™ UHP Particles in a polyurethane matrix clearly illustrate
GRAFTABOND™
UHP-SAN 00055 PDIM

Ultra High Molecular Weight Polyethylene, grafted with Styrene Acrylonitrile

PRODUCT INFORMATION

GRAFTABOND™ UHP-SAN 00055 PDIM - is UHMWPE powder, grafted with SAN. This product provides enhanced impact strength to the base material, while also maintaining compatibility with polymers that contain nitrile and amide groups.

Applications

- Is a great additive for increasing impact strength of soft materials,
- Provides excellent compatibility with polymers, containing nitrile or amide groups (e.g. SAN, ABS),

Processing

- Processable on most thermoplastic processing equipment.
- Preferable for: Extrusion (Compounding)
TECHNICAL REPORT

UHMWPE-MAH / GMA

Ultra High Molecular Weight Polyethylene

Product information

<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>PRODUCT DESCRIPTION</th>
<th>MANUFACTURER</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAFTABOND™ UH-MAH</td>
<td>Ultra High Molecular Weight Polyethylene grafted with Maleic Anhydride in powder form</td>
<td>Graft Polymer</td>
</tr>
<tr>
<td>GRAFTABOND™ UH-GMA</td>
<td>Ultra High Molecular Weight Polyethylene grafted with Glycidyl Methacrylate in powder form</td>
<td>Graft Polymer</td>
</tr>
</tbody>
</table>

Measured Properties

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>MFI (190°C, 2,16 KG)</th>
<th>DRYING LOSS (105°C)</th>
<th>DEGREE OF GRAFTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAFTABOND™ UH-MAH</td>
<td>/</td>
<td>&lt; 0,7 %</td>
<td>1,4 %</td>
</tr>
<tr>
<td>GRAFTABOND™ UH-GMA</td>
<td>/</td>
<td>&lt; 0,7 %</td>
<td>&gt; 2 %</td>
</tr>
</tbody>
</table>
Graftabond™ UH-MAH used as an additive for polyethylene increase mechanical properties, especially impact strength and flexural modulus. Because of the grafted maleic anhydride, Graftabond™ UH-MAH has increased compatibility, adhesion and wettability to other fibers (glass, natural) or natural/mineral fillers.

FTIR spectra shows a clear peak at the wavelength 1780 cm⁻¹, which signals the presence of anhydride group.
Graftabond UH-GMA is a polymer additive for polyethylene that increases the base material’s mechanical properties and allows for better bonding with the base material. Because of the grafted Glycidyl Methacrylate, Graftabond UH-GMA provides better interfacial interactions between the base polymer and ultra high molecular weight polyethylene.

FTIR spectra of Graftabond UH-GMA shows a large peak at 1720 cm$^{-1}$, which signals the presence of Glycidyl Methacrylate.
CONTACTS

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