Cereplast Hybrid Resins® Product Line

**Key Features & Benefits**

- Partially Biobased
- Lower carbon footprint than conventional plastics
- Replaces up to 50% of the petroleum content
- FDA compliant for direct food contact
- Injection molding and extrusion grades
- PP, TPE and EVA starch blends

**Applications**

- Consumer products
- Interior automotive parts
- Furniture
- Cosmetics packaging
- Housewares
- Footwear
- Fashion accessories
- Cable insulation
- Tubes and hoses
- Adhesion for multi-layer films
- Tool and bicycle handles

**Biopropylene® PP-Based Resins**

The Cereplast Hybrid Resins grades replace up to 50% of the petroleum content in traditional plastic products with biobased materials such as starches from annually renewable plants. The result is a truly sustainable solution: a durable product that dramatically reduces the petroleum content, providing products with a lower carbon footprint.

In addition to providing a lower carbon footprint than traditional PP, many of the desirable PP properties are maintained including chemical resistance, mold shrinkage, mold flow, surface appearance, heat deflection temperature, and hinge performance.

Cereplast’s Biopropylene PP-based resin is polypropylene encapsulating starch particles, and includes Hybrid 101, Hybrid 102D, Hybrid 105D, and Hybrid 106D. These injection molding grades are for durable applications including consumer goods, interior automotive parts, furniture and cosmetics packaging.

**Plastic, reimagined**

Cereplast creates a wide range of bioplastic resins to meet a variety of demands.

The Cereplast Hybrid Resins® product line provides low-carbon footprint alternatives to traditional plastics for a variety of durable applications.
The starches that Cereplast uses to produce bioplastics are unmodified industrial non-food grade starches. However, the industrial starch grades used by Cereplast are compliant for direct food contact. For industrial grade corn starch, the largest industrial users are paper manufacturers.

Thermoplastic Elastomer (TPE) Starch Hybrid Resins

Hybrid 111D and Hybrid 112D are thermoplastic elastomer (TPE) starch hybrid compounds for injection molding applications. Hybrid 111D boasts 25% starch and Hybrid 112D has 50% starch, which lowers the environmental impact of the material compared to conventional TPE. Both grades are soft and pliable, offering stretch with some recovery for soft grip applications such as handles for bicycles and tools, cosmetics packaging, housewares, household appliances, footwear and automotive applications.

Ethylene Acrylate (EA) Starch Hybrid Resins

Hybrid 651D is an Ethylene Acrylate (EA) and starch hybrid compound, which is a tough, soft touch, pliable material that is ideal for extrusions and soft injection moldable applications. Hybrid 651D provides the desirable properties of conventional EA, while offering a lower carbon footprint.

Hybrid 651D is a proprietary formulation of EA and industrial starch, which is compounded on state-of-the-art mixing equipment. Hybrid 651D can be used for the manufacture of consumer goods and packaging, footwear, handbags and other fashion accessories, as well as wire and cable insulation, soft plastic goods such as tubes and hoses and adhesion layers for multi-layer films.

Hybrid Grade Comparisons

<table>
<thead>
<tr>
<th>Product</th>
<th>Density</th>
<th>Melt Flow</th>
<th>Flex Modulus</th>
<th>Tensile Str. Yield</th>
<th>Elongation</th>
<th>Gardner Impact</th>
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<tr>
<td></td>
<td>g/cc</td>
<td>g/10 min</td>
<td>kpsi</td>
<td>psi</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>2.16 kg @230C</td>
<td>MPa</td>
<td>%</td>
<td>Joule</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>g/10 min 2.16 kg @190C</td>
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<tr>
<td>Hybrid 101</td>
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NASDAQ: CERP

Cereplast, Inc. 300 N. Continental Blvd. Suite 100, El Segundo, CA 90245 310.615.1900 www.cereplast.com