Clearstrength® E-950
MBS Impact Modifier for Engineering Resins

**PRODUCT DESCRIPTION**

Clearstrength® E-950 is a new methylmethacrylate-butadiene-styrene (MBS) core-shell impact modifier designed to impart excellent ambient and cold temperature toughness to engineering polymers.

Clearstrength® E-950 impact modifier is produced using a proprietary technology resulting in improved impact performance consistency and stability under severe processing conditions.

Clearstrength® E-950 impact modifier is aimed to formulate polycarbonate, polyesters and a variety of polycarbonate blends, particularly PC/PBT.

**TYPICAL PHYSICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form</td>
<td>White Powder</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.02</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>0.39 g/cc</td>
</tr>
<tr>
<td>Particle Size</td>
<td>2% Max on 850 µm</td>
</tr>
<tr>
<td>Percent Volatiles</td>
<td>1.0% Max</td>
</tr>
</tbody>
</table>

Clearstrength® E-950 impact modifier is also available in pellet form; please refer to Clearstrength® E-952 impact modifier technical data sheet for more information.

**SUGGESTIONS FOR USE**

Clearstrength® E-950 impact modifier is recommended for use in automotive applications, such as bumpers, front radiator grills and battery housing for electrical vehicles. Clearstrength® E-950 impact modifier is also designed for electrical and electronic applications including TV, monitor and mobile phone housing, home appliances and all polycarbonate and polyester blends applications where excellent impact strength and colorability are required.

The loading concentration depending on impact requirement is generally from 3 to 15%. Prospective clients should evaluate Clearstrength® E-950 impact modifier in their own laboratories to establish optimum conditions for use in their process and applications. Arkema’s Technical Service Team is available to discuss your application requirements, provide formulations guidance and laboratory testing as needed.

**PACKAGING**

Clearstrength® E-950 impact modifier is packaged in 20 kg bags (500 kg per pallet) and 700 kg bulk bags (700 kg per pallet).

**PRODUCT BENEFITS**

**Superior Low temperature Impact**

Clearstrength® E-950 impact modifier allows to create products that can withstand impact at <-40°C and still remain ductile. Through optimized rubber particle size distribution brought by Arkema proprietary technology, Clearstrength® E-950 impact performance is remarkably consistent.

**Improved Thermal Stability**

Clearstrength® E-950 impact modifier provides improved impact retention compared to other high impact MBS when used under hot processing conditions.

**Good Dispersion and Mechanical Properties Retention**

Easily dispersed using conventional compounding techniques, Clearstrength® E-950 impact modifier imparts exceptional toughening while keeping good melt flow and modulus.

<table>
<thead>
<tr>
<th>Property</th>
<th>PC/PBT (50/50)</th>
<th>PC/PBT + 12 % Clearstrength® E-950 IM</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVR, 280°C, 1.2 kg</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Modulus (MPa)</td>
<td>2200</td>
<td>2100</td>
</tr>
<tr>
<td>Impact Energy* (kJ/m²)</td>
<td>6</td>
<td>55</td>
</tr>
<tr>
<td>-30°C</td>
<td>ND**</td>
<td>42</td>
</tr>
<tr>
<td>-40°C</td>
<td>ND**</td>
<td>32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Property</th>
<th>Neat PC</th>
<th>PC + 5 % Clearstrength® E-950 IM</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVR, 280°C, 1.2 kg</td>
<td>25</td>
<td>19</td>
</tr>
<tr>
<td>Modulus (MPa)</td>
<td>2200</td>
<td>2100</td>
</tr>
<tr>
<td>Impact Energy* (kJ/m²)</td>
<td>15</td>
<td>45</td>
</tr>
<tr>
<td>-10°C</td>
<td>ND**</td>
<td>39</td>
</tr>
<tr>
<td>-20°C</td>
<td>ND**</td>
<td>36</td>
</tr>
</tbody>
</table>

ISO 1133:2011 for MVR, Melt Volume-flow Rate

*ISO 180:2000 type 1eA specifications for notched Izod impact tests.
**Not Determined
ENVIRONMENTAL AND SAFETY INFORMATION

BEFORE HANDLING THIS MATERIAL, READ AND UNDERSTAND THE MSDS (MATERIAL SAFETY DATA SHEET) / SDS (SAFETY DATA SHEET) FOR ADDITIONAL INFORMATION ON SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION.

The MSDS/SDS are available on our Website www.arkema.com or upon request at our Customer Service Department. Arkema believes strongly in Responsible Care® as a public commitment.

MORE TECHNICAL INFORMATION AVAILABLE

Ask your Arkema account manager for further information on high quality Arkema additives for use in PVC, PC, PBT, ABS, PLA and other polymer systems. Arkema produces a full line of impact modifiers, processing aids and epoxidized vegetable oils. In addition, Arkema’s Technical Service staff is also available to assist compounders and processors with formulation and processing advice.

Durastrength® Impact Modifiers
Durastrength® acrylic impact modifiers deliver outstanding impact characteristics for outdoor durable applications in PVC and Engineering Resins.

Plastistrength® Process Aids
Plastistrength® process aids offer producers a complete line of melt strengtheners and metal release agents for PVC and Engineering Resins. Plastistrength® process aids can improve fusion, surging, and aesthetics.

Clearstrength® Impact Modifiers
Clearstrength® MBS impact modifiers are designed for extreme impact or impact/clarity combination in PVC and Engineering Resins.

Biostrength® Additives
The Biostrength® product line of impact modifiers, melt strengtheners and metal release agents are designed to improve properties and enhance processability of polylactic acid (PLA) and other biopolymers compounds.

FOR MORE INFORMATION CONTACT

Please contact your local account manager or our headquarters:

In Europe:
ARKEMA
Arkema Coating Resins
420 Rue d’Estienne d’Orves
92705 COLOMBES Cedex, France
Tel: +33 (0) 1 49 008 080
www.arkema.com/en/products/contact

In US:
Arkema Inc.
Arkema Coating Resins
410 Gregson Dr
Cary, NC 27511
Tel: +1 (877) 331-6696
www.arkema.com/en/products/contact

In Asia:
Arkema Pte Ltd.
10, Science Park Road, #01-01A,
The Alpha Singapore Science Park II,
Singapore 117684 Tel: +65 6419 9199
www.arkema.com/en/products/contact

VISIT US AT OUR WEBSITE
www.additives-arkema.com

The statements, technical information and recommendations contained herein are believed to be accurate as of the date hereof. Since the conditions and methods of use of the product and of the information referred to herein are beyond our control, Arkema expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE CONCERNING THE GOODS DESCRIBED OR THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be applicable when such product is used in combination with other materials or in any process. The user should thoroughly test any application before commercialization. Nothing contained herein constitutes a license to practice under any patent and it should not be construed as an inducement to infringe any patent and the user is advised to take appropriate steps to be sure that any proposed use of the product will not result in patent infringement. See SDS for Health & Safety Considerations.

Arkema has implemented a Medical Device Policy regarding the use of Arkema products in medical device applications that are in contact with the body or circulating bodily fluids: (http://www.arkema.com/en/social-responsibility/responsible-product-management/medical-device-policy/index.html). Arkema has designated Medical grades to be used for such medical device applications. Products that have not been designated as medical grades are not authorized by Arkema for use in medical device applications that are in contact with the body or circulating bodily fluids. In addition, Arkema strictly prohibits the use of any Arkema products in Medical Device applications that are implanted in the body or in contact with bodily fluids or tissues for greater than 30 days. The Arkema trademarks and the Arkema name shall not be used in conjunction with customers’ medical devices, including without limitation, permanent or temporary implantable devices, and customers shall not represent to anyone else, that Arkema allows, endorses or permits the use of any Arkema products in Medical Device applications that are implanted in the body or in contact with bodily fluids or tissues for greater than 30 days. In addition, Arkema strictly prohibits the use of any Arkema products in such medical devices. It is the sole responsibility of the manufacturer of the medical device to determine the suitability (including biocompatibility) of all raw materials, products and components, including any medical grade Arkema products, in order to ensure that the final end-use product is safe for its end use, performs or functions as intended, and complies with all applicable legal and regulatory requirements (FDA or other national drug agencies) It is the sole responsibility of the manufacturer of the medical device to conduct all necessary tests and inspections to evaluate the medical device under actual end-use requirements and to adequately advise and warn purchasers, users, and/or learned intermediaries (such as physicians) of pertinent risks and fulfill any postmarket surveillance obligations. Any decision regarding the appropriateness of a particular Arkema material in a particular medical device should be based on the judgment of the manufacturer, seller, the competent authority, and the treating physician.

Clearstrength® and Plastistrength® are registered trademarks of Arkema.
Biostrength® and Durastrength® are registered trademarks of Arkema Inc.
Responsibe Care® is a registered trademark of the American Chemistry Council Inc.
2017 Arkema Inc. All rights reserved.

www.clearstrength.com