**DESCRIPTION**

**CLEARTUF P82** resin is a food grade PET copolymer based on Terephthalic Acid. Its high clarity and sparkle make it well suited for the production of bottles and other containers by conventional single and two stage processing machines. It is a high molecular weight polymer for general use in manufacturing containers.

The following table provides the Parameters that characterize the grade. Some Parameters are shown with values which are specified to fall within limits as shown. Other Parameters are shown as a single value which we regard as typical of the grade. Minor differences around this typical value will not detract from the performance of the product. All Parameters are measured, under laboratory conditions, by the analytical method shown. Different methods or conditions of analysis may give rise to different values. Purchased material may be accompanied by a Certificate of Analysis or other document, confirming that the product is within specified limits and is consistent with the other values for the stated Parameters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Value</th>
<th>Limits</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic viscosity (IV)</td>
<td>dl/g</td>
<td>0.80</td>
<td>± 0.02</td>
<td>M&amp;G/QC-01</td>
</tr>
<tr>
<td>Acetaldehyde content</td>
<td>ppm</td>
<td>1</td>
<td>Max</td>
<td>M&amp;G/QC-03</td>
</tr>
<tr>
<td>Color (L*-value)</td>
<td>--</td>
<td>80</td>
<td>Min</td>
<td>M&amp;G/QC-02</td>
</tr>
<tr>
<td>Color (b*-value)</td>
<td>--</td>
<td>+1</td>
<td>Max</td>
<td>M&amp;G/QC-02</td>
</tr>
<tr>
<td>Melting point +</td>
<td>°C</td>
<td>249</td>
<td>--</td>
<td>M&amp;G/QC-06</td>
</tr>
<tr>
<td>Foreign particles</td>
<td>--</td>
<td>None</td>
<td>-</td>
<td>Visual Detection</td>
</tr>
</tbody>
</table>

+ Monitored on PET portion of feed resin only

**REGULATORY STATUS**

**CLEARTUF P82** resin is suitable for the manufacture of food packaging articles but specific regulations differ from country to country. For information about the regulatory status within the USA under FDA regulations or within Europe under EC and/or national regulations, please contact your local sales representative or our Product Safety and Compliance Department on (001) 330 798 6430.
**PHYSICAL - CHEMICAL PROPERTIES**

Bottles made from CLEARTUF P82 resin have good dimensional stability and low creep, high optical clarity and glossing, good barrier properties to oxygen, carbon dioxide and moisture. These bottles also have high chemical resistance to alcohol, oils, fats and dilute aqueous solutions of minerals acids, bases, salts and soaps. CLEARTUF P82 resin is available in natural granular form, bulk or packed in big bags.

**IMPORTANT ASPECTS OF USE IN PROCESSING**

**Drying**

Thermoplastic polyesters such as CLEARTUF P82 resin can undergo hydrolysis if moisture is not eliminated leading to a decrease in molecular weight and loss in mechanical properties of the bottle, particularly top load performance and impact strength. A level of 0.003% (30ppm) or less, is required prior to final processing. Drying is best accomplished in a continuous high heat dehumidifying type air hopper dryer with a regenerative desiccant bed using -20 °F max. (-29 °C max.) dew point air. Typical drying conditions are an air temperature of 175°C (350°F), 4-6 hours residence time and a minimum air flow rate of 1.0 ft$^3$ per minute per pound of polymer per hour.

**Injection molding and Stretch blow molding**

Injection molding temperatures should be maintained at the minimum levels needed to produce clear quality preforms. In addition to temperature limits, care should be taken to avoid excessive shear during injection. Typical processing temperatures are generally between 10°C and 30°C hotter than the Melting Point Parameter indicated on the front of this Data Sheet, largely dependent upon injection barrel dynamics such as residence time and shear. When stretch blow molding, preforms should be heated to minimum levels needed to produce clear, quality biaxially oriented containers. Typical preform surface temperatures are generally between 90°C to 105°C, largely dependent upon the equipment setup and efficiency.

**SAFETY ASPECTS**

Please read the Material Safety Data Sheet written for this product. It may be obtained from your M&G account manager.

- **Handling**
  
  CLEARTUF P82 Polyester Resin presents no toxic hazards, either from skin contact or inhalation, under normal conditions. Contact with melted polymer should be avoided. Product delivered in bags must not be stacked.

- **Fire precautions**

  In common with most other organic polymers, PET polymers will burn. They are difficult to ignite, but are defined as ‘combustible’ but not ‘highly inflammable’. Reasonable precautions should be taken to ensure absence of sources of ignition in warehouses and storage areas. If large quantities are stored, normal good housekeeping should be enforced, including freedom from dust, uncluttered access ways, sprinkler system etc.
WARRANTY

All products purchased from or supplied by M&G Polimeri Italia SPA, are subject to terms and conditions set out in the contract, order acknowledgment and/or bill of lading. M&G warrants only that its product will meet those specifications designated as such herein or in other publications. All other information, including that herein, supplied by M&G is considered accurate but is furnished upon the express condition that the customer shall make its own assessment to determine the product's suitability for a particular purpose. M&G makes no other warranty either express or implied, regarding such other information, the data upon which the same is based, or the results to be obtained from the use thereof; that any products shall be merchantable or fit for any particular purpose; or that the use of such other information or product will not infringe any patent.