

## Delrin Rod and Acetal Rods

Many of our clients assume that Delrin rod and Acetal rod is the same thing. This is not quite true. Yes, all Delrin rod is Acetal rod, but not all Acetal rod is Delrin rod. Delrin is a trade name for Homo-Polymer Acetal made by Dupont. This is the most recognized of all Acetal materials, but far from the only available Acetal material.

The Co-Polymer Acetal is produced by a wide variety of large plastic manufacturers, BASF is probably one of the largest and most well known. Some main resin names are: BASF Ultraform H4320, Kepital F10-02, or Hostaform M25. While Delrin is a wonderful material, in larger cross sections or larger diameters, the Delrin brand Homo-Polymer can exhibit center line porosity. This can sometimes be seen with the naked eye, and is a darker white in a normally milky white natural colored material. This center line porosity can cause problems in some applications. This porosity can cause leakage of fluid if under pressure, or 'soft centers' of Delrin Rod and Delrin Sheet.

This should not stop you from considering Delrin though. Many other properties of the Delrin resin are superior to the Co-Polymer resins. These properties are:

<i>General Property</i>	<i>ASTM Test</i>	<i>Typical Value Unfilled Delrin® Homo-Polymer</i>	<i>Typical Value Unfilled Co-Polymer</i>
<b>Specific Gravity</b>	<b>D792</b>	<b>1.42</b>	<b>1.40</b>
<b>Tensile Strength Yield</b>	<b>D638</b>	<b>9,600 – 11,000</b>	<b>9,000 – 10,200</b>
<b>Tensile Modulus</b>	<b>D638</b>	<b>450,000</b>	<b>400,000</b>
<b>Izod Impact – Notched</b>	<b>D256</b>	<b>1.2</b>	<b>1.0</b>
<b>Hardness – Rockwell</b>	<b>D785</b>	<b>M94</b>	<b>M90</b>
<b>Deflection Temp @ 264psi</b>	<b>D648</b>	<b>257</b>	<b>220</b>
<b>Deflection Temp @ 66 psi</b>	<b>D648</b>	<b>347</b>	<b>335</b>
<b>Water Absorption @ 24 hrs</b>	<b>%</b>	<b>0.24</b>	<b>0.25</b>
<b>Co. Thermal Expansion</b>	<b>D696</b>	<b>6.83X10<sup>-5</sup></b>	<b>5.4X10<sup>-5</sup></b>

The key properties that Delrin are: higher tensile strength, increased Izod impact, higher deflection temperatures and it is slightly harder. The co-efficient of thermal expansion is a bit higher, and needs to be considered when designing a new part.