Acetal

High strength, stiff, low friction engineering plastic with good wear properties

Acetal (polyoxymethylene) is a high strength, low friction engineering plastic that has excellent wear properties in both wet and dry environments. Easy to machine, acetal makes an outstanding choice for applications that require complex, tight tolerances.

**Acetal Material Options**

**Homopolymer vs Copolymer** – Acetal is available in both homopolymer (Delrin® 150) and copolymer.

- Homopolymer acetal (Delrin®) has superior room temperature strength, stiffness, and toughness.
- Copolymer acetal has excellent performance in continuous high heat and hot water environments. Copolymer acetal also tends to have less porosity than homopolymer acetal.

**FDA Compliant Materials** – Acetal is available in FDA compliant grades.

**Acetal Grades** – Acetal is available in a number of grades, including enhanced bearing and wear Delrin® AF, Delrin® 100AF blend, Delrin® AF DES88, and TECAFORM® HPV13. Delrin® 511P is a homopolymer acetal that offers enhanced crystallization characteristics. This higher level of crystallization helps to augment aspects of the physical properties such as fatigue strength, stiffness, and creep resistance. Ask about special formulations that offer medical, metal detectable, x-ray detectable, or static dissipative grades.

**Chemical Attack** – Acetal is chemically resistant to many fuels and solvents.

**Wear Resistance** – Acetal offers good wear and abrasion properties.

**Acetal is widely used for:**

- Bearings and bushings
- Pump and valve parts
- Manifolds
- Gears
- Jigs and fixtures
- Food processing and other packaging machinery parts
- Wear pads
- Electrical components

**Performance characteristics:**

- Strong and stiff
- Excellent machinability
- Low moisture absorption
- Excellent wear properties in both wet and dry environments
- Low friction
- Good chemical resistance

**Common brands:**

- Delrin®
- SUSTARIN®
- TECAFORM®

**Available in:**

Sheet  Rod  Tube
# Typical Properties of Acetal

<table>
<thead>
<tr>
<th>Test Description</th>
<th>UNITS</th>
<th>ASTM Test</th>
<th>Homopolymer Acetal</th>
<th>Copolymer Acetal</th>
<th>Tezaform® HPV13 PTFE-Filled Acetal</th>
<th>20% Glass Fiber Filled Homopolymer Acetal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile strength</td>
<td>psi</td>
<td>D638</td>
<td>10,000</td>
<td>9,800</td>
<td>6,800</td>
<td>8,500</td>
</tr>
<tr>
<td>Flexural modulus</td>
<td>psi</td>
<td>D790</td>
<td>420,000</td>
<td>370,000</td>
<td>350,000</td>
<td>730,000</td>
</tr>
<tr>
<td>Izod impact (notched)</td>
<td>ft-lb/in of notch</td>
<td>D256</td>
<td>1.5</td>
<td>1.0</td>
<td>0.7</td>
<td>0.8</td>
</tr>
<tr>
<td>Heat deflection temperature @ 264 psi</td>
<td>°F</td>
<td>D648</td>
<td>257</td>
<td>230</td>
<td>244</td>
<td>316</td>
</tr>
<tr>
<td>Maximum continuous service temperature in air</td>
<td>°F</td>
<td></td>
<td>185</td>
<td>195</td>
<td>185</td>
<td>185</td>
</tr>
<tr>
<td>Water absorption (immersion 24 hours)</td>
<td>%</td>
<td>D570</td>
<td>0.25</td>
<td>0.20</td>
<td>0.22</td>
<td>0.25</td>
</tr>
<tr>
<td>Coefficient of linear thermal expansion</td>
<td>in/in/°F x 10^5</td>
<td>D696</td>
<td>6.8</td>
<td>6.1</td>
<td>5.1</td>
<td>2.0 - 4.5</td>
</tr>
<tr>
<td>Coefficient of friction (dynamic)</td>
<td></td>
<td></td>
<td>0.20</td>
<td>0.21</td>
<td>0.12</td>
<td>0.35</td>
</tr>
</tbody>
</table>

Values may vary according to brand name. Please ask your Curbell Plastics representative for more specific information about an individual brand.