Plastics
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WARNING: These products can potentially expose you to chemicals including, 4-Dioxane, Acetaldehyde, Acrylonitrile, Bisphenol-A, Carbon Black, Chromium, Cumene, Dichloromethane, Ethyl Acrylate, Ethylbenzene, Ethylene Glycol, Formaldehyde, Glass Fibers, Hexachlorobenzene, Lead, Methanol, Nickel, Polyvinyl Chloride, Silica-crystalline, Styrene, Tetrafluoroethylene, Titanium Dioxide, and Toluene, which are known to the state of California to cause cancer and/or birth defects or other reproductive harm. For more information, visit www.P69Warnings.ca.gov
ABS (Acrylonitrile-Butadiene-Styrene)

The ABS thermoplastic family bridges the gap between standard plastics and high-performance engineering thermoplastics. The versatility of ABS is found within its basic 3 monomer system, acrylonitrile, butadiene and styrene. Acrylonitrile enhances heat stability and chemical resistance, butadiene gives impact strength and toughness, while styrene allows for good formability and rigidity. ABS is defined typically by a good cost/performance balance, colorability, toughness, high gloss and good processability. ABS can be processed by a variety of methods, including, injection molding, thermoforming, blow molding, extrusion and structural foam. ABS also adapts well to bonding, fastening, painting, plating and machining.

Typical Features:

- High impact strength & rigidity
- Creep resistance
- Excellent ductility
- Excellent electrical properties
- Excellent formability
- Excellent high and low temperature performance
- Abrasion resistance
- Easy to paint and glue
- High tensile strength & stiffness
- Resistant to inorganic salts, alkalies & acids
- Resistant to several chemicals & plasticizers
- Good machinability

Product Applications:

- Architectural Models
- Automotive Components
- Construction Applications
- Engineering Prototypes
- Machine Housing/Parts
- Splash Guards
- Wall Coverings
- Tote bins & trays
- Aircraft interior trim
- Industrial enclosures

<table>
<thead>
<tr>
<th>PROPERTY TESTED</th>
<th>ASTM</th>
<th>UNITS</th>
<th>UNFILLED</th>
<th>FR</th>
</tr>
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<tr>
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<td>D695</td>
<td>psi</td>
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<td>7,650</td>
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<tr>
<td>Flexural Modulus</td>
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<td>psi</td>
<td>340,000</td>
<td>330,000</td>
</tr>
<tr>
<td>Flexural Strength at Yield</td>
<td>D790</td>
<td>psi</td>
<td>10,500</td>
<td>9,500</td>
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<tr>
<td>Hardness, Rockwell</td>
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<td>---</td>
<td>R105</td>
<td>R97</td>
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<td>ft•lbs/in</td>
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<td>ft•lbs/in</td>
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<td>psi</td>
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<td>HB</td>
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<td>5V-A</td>
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<td>°F</td>
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## ABS

### Product Availability

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<tr>
<td>Standard Sheet Color(s):</td>
<td>Black or White</td>
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</tr>
<tr>
<td>Standard Sheet Finish:</td>
<td>Haircell one side</td>
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</tr>
<tr>
<td></td>
<td>Smooth both sides</td>
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<tr>
<td>Sheet Tolerances:</td>
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<td>Length / Width +3/8&quot; / -0</td>
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*Special alloys, plateable grades, flame retardant and colors quoted on request*

#### Compression Molded Sheet

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<th>1/2</th>
<th>5/8</th>
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<th>1</th>
<th>1-1/4</th>
<th>1-1/2</th>
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<tbody>
<tr>
<td></td>
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<tr>
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<td></td>
<td>1-1/2 and over = + only</td>
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#### Rod / Round Stock

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<tr>
<td></td>
<td>2-1/8 to 8 dia = 24&quot; and 48&quot;</td>
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*Rod can be ground to any intermediate diameter, additional charge may apply*
ABS

**King KPC ABS**

The advantage of King KPC ABS is that this material combines strength and rigidity of the acrylonitrile and styrene polymers with the toughness of the polybutadiene rubber. A variety of modifications have been made to improve impact resistance, toughness and heat resistance. The impact resistance does not fall off rapidly at low temperatures and stability under load is excellent with limited loads. KPC ABS is considered superior for its hardness, gloss, toughness, and electrical insulation properties. KPC ABS is easily machinable and available in smaller sizes. It is extensively used in prototyping, the modeling industry and other mechanical applications.

A growing outlet for ABS is the electronics industry where it is used in business machines, computers, radios, monitors and cell and smart phones. An important market is the automobile sector where it is used in instrument panels, consoles, radiator grills, headlight housings and interior trim parts with growing use in recreational vehicles.

**Product Applications:**
- Automotive parts
- Industrial enclosures
- Machine parts
- Prototype modeling
- Short run production parts

### King KPC ABS

<table>
<thead>
<tr>
<th>Standard Thickness (inches)</th>
<th>1/16</th>
<th>1/8</th>
<th>1/4</th>
<th>3/8</th>
<th>1/2</th>
<th>5/8</th>
<th>3/4</th>
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<td>4</td>
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<table>
<thead>
<tr>
<th>Standard Sheet Size (inches)</th>
<th>24&quot; x 48&quot; and 48&quot; x 96&quot;</th>
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<table>
<thead>
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<th>Standard Sheet Colors :</th>
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<th>1/2</th>
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<td></td>
<td>1-1/2 and over = + tolerance only</td>
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ABS

King KPC ABS FR (Flame Retardant)

The advantage of King KPC ABS Black FR is that this material combines strength and rigidity of the acrylonitrile and styrene polymers with the toughness of the polybutadiene rubber. A variety of modifications have been made to improve impact resistance, toughness and heat resistance. The impact resistance does not fall off rapidly at low temperatures and stability under load is excellent with limited loads. King KPC ABS Black FR is considered superior for its hardness, gloss, toughness, and electrical insulation properties. KPC ABS Black FR is easily machinable and is available in smaller sizes. It is extensively used in prototyping, the modeling industry and other mechanical applications.

Product Applications:
- Air conditioning components
- Industrial enclosures
- Transformer housings
- Shelving
- Switches

King KPC ABS FR

<table>
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<tbody>
<tr>
<td>1/2</td>
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<tr>
<td>1-3/4</td>
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<table>
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<td>1/2&quot; through 1-1/4&quot; thick = +/- 10%</td>
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<td>1-1/2 and over = + tolerance only</td>
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King KPC ABS Comparison

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<th>UNITS</th>
<th>KPC ABS BLK/NAT</th>
<th>KPC ABS WHITE</th>
<th>KPC ABS FR (BLK)</th>
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<td>psi</td>
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<td>&gt;6,400</td>
<td>&gt;6,400</td>
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<td>Elongation at Break</td>
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<td>%</td>
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<td>V-0</td>
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Acetal, Copolymer

Acetal provides high strength and stiffness coupled with enhanced dimensional stability and ease of machining. As a semi-crystalline material, acetal is also characterized by a low coefficient of friction and good wear properties — especially in wet environments.

Because acetal absorbs minimal amounts of moisture, its physical properties remain constant in a variety of environments. Low moisture absorption results in excellent dimensional stability for close-tolerance machined parts. In high moisture or submerged applications, acetal bearings outperform nylon 4 to 1. Acetal is ideally suited for close tolerance mechanical parts and electrical insulators which require strength and stiffness. It also offers resistance to a wide range of chemicals including many solvents.

Alro Plastics offers both homopolymer and copolymer grades of acetal including enhanced bearing grade materials. Acetal copolymer is porosity-free and offered as our standard general purpose grade. For slightly higher mechanical properties, we offer a broad size range of the homopolymer acetal (Delrin®) products. For improved frictional properties PTFE-enhanced Delrin® AF products are available.

Common Trade Names:
- Acetron® GP (Mitsubishi Chemical)
- Celcon® (Celanese)
- Delrin® (DuPont resin, homopolymer)
- Pomalux® (Westlake Plastics)
- Sustarin® C (Rochling Sustaplast)
- Tecaform® (Ensinger)
- Ultraform® (BASF)
- ZL™ 900 (ZL Engineering)

Typical Features:
- Low moisture absorption
- High strength and stiffness
- Excellent dimensional stability
- Easy to machine
- No centerline porosity
- Better chemical resistance than Delrin®
- FDA, USDA, NSF, Canada AG and 3-A Dairy compliant

Product Applications:
- Bearings and bushings
- Anti-friction parts
- Electrical components
- Gears and pulleys
- Food and dairy parts
- Structural keels
- Timing screws
- Fuel system parts
Acetal, Copolymer
Product Comparison: Acetal vs Delrin®

Acetal is the common name for a family of thermoplastics with the chemical name “PolyOxyMethylene”, or POM. Acetal is available in two general types of resins: Copolymer acetal (POM-C) and Homopolymer acetal (POM-H); commonly called Delrin®. Each type of acetal has its own set of advantages and disadvantages.

### Acetal Copolymer (POM-C)

The copolymer grade offers excellent performance at a slightly lower cost than Delrin®. Acetal copolymer offers consistent properties throughout the shape (being free of centerline porosity). Low stress levels and high strength assure flatness and dimensional stability up to a maximum continuous service temperature of 180°F (80°C). Copolymer acetal grades are FDA, USDA, NSF and 3A Dairy compliant. In addition, acetal copolymers are available in a wide variety of colors, including: natural (white), black, blue, red, yellow, green, brown and gray. Advantages over homopolymer acetal are:

- Better dimensional stability due to its lower level of crystallinity.
- Better resistance to hot water and strong caustics, or high pH (basic) solutions.
- Lower coefficient of friction and better impact and wear properties, especially in wet or moist environments.

### Acetal Homopolymer (POM-H)

Delrin® acetal homopolymer offers slightly higher mechanical properties than acetal copolymer, but may contain a low density center (also known as “centerline porosity”) especially in large cross-sections. Delrin® also gives slightly less chemical resistance than copolymer acetal. As an example, Delrin® is ideal for small diameter, thin-walled bushings that benefit from the additional strength and rigidity of homopolymer acetal. Delrin® is available in colors of natural (white) and black. Other advantages over copolymer acetal are:

- Greater stiffness, with higher flexural modulus at room & elevated temperature applications.
- Slightly higher tensile and impact strength at room temperatures and lower.
- Slightly harder, thus giving the homopolymer acetals a lower coefficient of friction.

In most applications, Delrin® and acetal copolymer can be interchanged because many material properties are within approximately 10% of each other. Notably, the most significant difference between Delrin® and copolymer acetal relates to what is commonly known as centerline porosity - an inherent characteristic of Delrin®. It is most prominent in thick slab and large diameter rod stock. Visually, it is clearly evident around the center portion of the rod, which extends down the entire length. In sheet, porosity appears as a line along the center of each cut edge. In some cases, the slab may appear to be laminated or glued together. Excessive centerline porosity is undesirable for the following reasons:

- Aesthetic - inconsistent color appearance in finished parts.
- Provides areas which the bacteria can grow in food processing applications.
- Presents potential routes for leakage of gas and liquids.
- Compromises structural integrity.
Acetal, Copolymer
Acetron® GP from Mitsubishi Chemical

Acetron® GP is Mitsubishi Chemical’s general purpose copolymer acetal and is the only porosity-free acetal product available today. Investments in process technology by Mitsubishi Chemical now provide the performance and machinability of acetal without center core porosity. Our in-line photometric quality procedure assures every plate and rod is porosity-free as measured by MCAM’s dye penetrant test making it the preferred acetal for food contact and medical applications. Acetron® GP natural is FDA, USDA, NSF, Canada AG and 3A-Dairy compliant.

Typical Features:
- Low moisture absorption
- High strength and stiffness
- Excellent dimensional stability
- Easy to machine
- No centerline porosity
- Better chemical resistance than Delrin®
- FDA, USDA, NSF, Canada AG and 3-A Dairy compliant

Product Applications:
- **Electrical Components** - Porosity-free Acetron® GP acetal is intricately fabricated into this electrical test part with dozens of tight tolerance machined holes required at its centerline.
- **Gears** - Acetron® GP maintains tight tolerances despite environmental and clean in place chemical exposure on dairy equipment.
- **Rollers** - Guide rollers machined from Acetron® GP rod operate smoothly and reliably in lift gate systems used to load cargo onto truck beds.

Acetron® AF Blend is a unique thermoplastic material for use in moving parts in which low friction and long wear life are important. It is a combination of PTFE fibers uniformly dispersed in Delrin acetal resin. This combination offers better wear characteristics than unfilled Delrin.

Acetron® Blend POM-H, supplied as a 2:1 blend of PTFE filled POM-H and virgin POM-H resins, has excellent sliding/friction properties. Bearings made of Acetron® AF Blend can operate at higher speeds while exhibiting reduced wear. These bearings are also essentially free of slip-stick behavior because the static and dynamic coefficient of friction are closer than with most plastics. The natural color of Acetron® AF Blend is dark brown.

**Engineering Note:**
In general, acetals do not perform as well in abrasive wear applications as nyons. Compensation for moisture related growth generally allows Nylatron® nyons to be used for wet, abrasive applications. If your application requires dimensional consistency in an abrasive, high humidity or submerged environment, Ertalyte® PET-P will often offer improved performance.
# Acetal, Copolymer

**Acetron® GP Product Availability**

## Sheet / Slab Stock

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Sheet Size (inches)</td>
<td>24&quot; x 48&quot; and 48&quot; x 120&quot;</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Sheet Color(s)</td>
<td>Black or Natural (White)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sheet Tolerance(s)</td>
<td>1/16 to 1/8 .... +/- .005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;1/8 to 2 ...... +.025&quot; / -0</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>&gt;2 to 3 .......... +.050&quot; / -0</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;3 and up ....... +.125&quot; / -0</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Now available in FDA compliant colors, please inquire about availability**

---

ACETRON® GP is produced from resin certified to ASTM D 4181, POM 211. ACETRON® GP natural, meets ASTM D 6100 S-POM 0211, LP (Low Porosity), FDA CFR 21, Section 177.2470 (a), (b), (c) and (d)(2) and is 3-A Dairy approved.

## Rod / Round Stock

<table>
<thead>
<tr>
<th>Standard Diameter (inches)</th>
<th>1/8</th>
<th>3/16</th>
<th>1/4</th>
<th>5/16</th>
<th>3/8</th>
<th>7/16</th>
<th>1/2</th>
<th>9/16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Rod Length (inches)</td>
<td>1/8 to 1 .......... 8 ft .......... (+.003&quot; / -0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;1 to 2 .......... 8 ft .......... (+.005&quot; / -0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;2 to 2-3/4 ...... 8 ft .......... (+.015&quot; / -0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;2-3/4 to 8 ...... 4 ft .......... (+.250&quot; / -0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;8 to 10 ........ 3 ft .......... (+.300&quot; / -0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Rod Color(s)</td>
<td>Black or Natural (White)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Acetal Copolymer rod is available up to 19-1/2" diameter (non stock item)**
# Acetal, Copolymer & Homopolymer

## Typical Properties Comparison

<table>
<thead>
<tr>
<th>PROPERTY TESTED</th>
<th>ASTM</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MECHANICAL PROPERTIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gravity, 73°F</td>
<td>D792</td>
<td>---</td>
</tr>
<tr>
<td>Tensile Strength, 73°F</td>
<td>D638</td>
<td>psi</td>
</tr>
<tr>
<td>Tensile Modulus of Elasticity, 73°F</td>
<td>D638</td>
<td>psi</td>
</tr>
<tr>
<td>Tensile Elongation (at break), 73°F</td>
<td>D638</td>
<td>%</td>
</tr>
<tr>
<td>Flexural Strength, 73°F</td>
<td>D790</td>
<td>psi</td>
</tr>
<tr>
<td>Flexural Modulus of Elasticity, 73°F</td>
<td>D790</td>
<td>psi</td>
</tr>
<tr>
<td>Shear Strength, 73°F</td>
<td>D732</td>
<td>psi</td>
</tr>
<tr>
<td>Compressive Strength, 10% Deformation, 73°F</td>
<td>D695</td>
<td>psi</td>
</tr>
<tr>
<td>Compressive Modulus of Elasticity, 73°F</td>
<td>D695</td>
<td>psi</td>
</tr>
<tr>
<td>Hardness, Rockwell, Scale as noted, 73°F</td>
<td>D785</td>
<td>M (R)</td>
</tr>
<tr>
<td>Hardness, Durometer, Shore &quot;D&quot;</td>
<td>D2240</td>
<td>&quot;D&quot;</td>
</tr>
<tr>
<td>Izod Impact (Notched), 73°F</td>
<td>D256, Type &quot;A&quot;</td>
<td>ft.-lb./in. of notch</td>
</tr>
<tr>
<td>Coefficient of Friction (Dry vs. Steel) Dynamic</td>
<td>QTM 55007</td>
<td>---</td>
</tr>
<tr>
<td>Limiting PV (with 4:1 safety factor applied)</td>
<td>QTM 55007</td>
<td>psi-fpm</td>
</tr>
<tr>
<td>Wear Factor &quot;k&quot; x 10^-10</td>
<td>QTM 55010</td>
<td>10^-15in^3-min/lb-ft-hr</td>
</tr>
<tr>
<td>FDA Compliant</td>
<td>---</td>
<td>---</td>
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<tr>
<td><strong>THERMAL PROPERTIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient of Linear Thermal Expansion</td>
<td>E831 (TMA)</td>
<td>in./in./°F</td>
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<tr>
<td>Heat Deflection Temperature @ 264 psi</td>
<td>D648</td>
<td>°F</td>
</tr>
<tr>
<td>Melting Point (Crystalline) Peak</td>
<td>D3418</td>
<td>°F</td>
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<tr>
<td>Continuous Service Temp in Air (Max.)</td>
<td>---</td>
<td>°F</td>
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<tr>
<td>Thermal Conductivity</td>
<td>F433</td>
<td>BTU-in/hr-ft·°F</td>
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<tr>
<td><strong>ELECTRICAL PROPERTIES</strong></td>
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<tr>
<td>Dielectric Strength, Short Term</td>
<td>D149</td>
<td>Volts/mil</td>
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<tr>
<td>Surface Resistivity</td>
<td>EOS/ESD S11.11</td>
<td>Ohm/Sq</td>
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<tr>
<td>Dielectric Constant, 10^6Hz</td>
<td>D150</td>
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</tr>
<tr>
<td>Dissipation Factor, 10^6Hz</td>
<td>D150</td>
<td>---</td>
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<tr>
<td>Flammability @ 3.1mm (1/8 in.)</td>
<td>UL 94</td>
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<tr>
<td><strong>CHEMICAL PROPERTIES</strong></td>
<td></td>
<td></td>
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<tr>
<td>Water Absorption Immersion - 24 hours</td>
<td>D570(2)</td>
<td>% by Weight</td>
</tr>
<tr>
<td>Water Absorption Immersion - Saturation</td>
<td>D570(2)</td>
<td>% by Weight</td>
</tr>
</tbody>
</table>

Note: Values listed are typical and are meant only as a guide to aid in design only. As always we highly recommend testing any new material in the application first before converting over to new material based on guide data information alone. Applications and usage vary and Alro does not guarantee any results as this data is for information only.
## Acetal, Copolymer & Homopolymer
### Typical Properties Comparison

<table>
<thead>
<tr>
<th>ACETRON® GP</th>
<th>SUSTARIN® C</th>
<th>TECAFORM®</th>
<th>DELRIN®</th>
<th>DELRIN® AF</th>
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</thead>
<tbody>
<tr>
<td>(Copolymer)</td>
<td>(Copolymer)</td>
<td>(Copolymer)</td>
<td>(Homopolymer)</td>
<td>(PTFE Blend)</td>
</tr>
<tr>
<td>1.41</td>
<td>1.41</td>
<td>1.41</td>
<td>1.41</td>
<td>1.50</td>
</tr>
<tr>
<td>9,500</td>
<td>9,500</td>
<td>9,300</td>
<td>11,000</td>
<td>8,000</td>
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<tr>
<td>40,000</td>
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<td>45,000</td>
<td>43,500</td>
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</tr>
<tr>
<td>12,000</td>
<td>12,000</td>
<td>13,000</td>
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<td>12,000</td>
</tr>
<tr>
<td>400,000</td>
<td>400,000</td>
<td>400,000</td>
<td>450,000</td>
<td>445,000</td>
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<td>400,000</td>
<td>400,000</td>
<td>250,000</td>
<td>450,000</td>
<td>350,000</td>
</tr>
<tr>
<td>M85 (115)</td>
<td>M88 (120)</td>
<td>M86</td>
<td>M89 (122)</td>
<td>M85 (115)</td>
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<tr>
<td>M88 (120)</td>
<td>85D</td>
<td>86D</td>
<td>86D</td>
<td>83D</td>
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<tr>
<td>1.00</td>
<td>1.20</td>
<td>1.00</td>
<td>1.00</td>
<td>0.7</td>
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<td>0.25</td>
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<td>0.21</td>
<td>.25</td>
<td>.19</td>
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<td>2,700</td>
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<td>2,700</td>
<td>8,300</td>
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<tr>
<td>200</td>
<td>---</td>
<td>65</td>
<td>200</td>
<td>60</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

|                  | 5.4 x 10⁻⁵      | 5.50 x 10⁻⁵     | 4.7 x 10⁻⁵      | 4.7 x 10⁻⁵      | 5 x 10⁻⁵        |
|                  | 220°            | 225°            | 230°            | 250°            | 244°            |
|                  | 335°            | ---             | 329°            | 347°            | 347°            |
|                  | 180°            | ---             | 195°            | 180°            | 180°            |
|                  | 1.6             | ---             | 2.5             | ---             |

|                  | 420             | 450             | 500             | 450             | 400             |
|                  | >10¹³           | ---             | ---             | >10¹³           | >10¹³           |
|                  | 3.80            | 3.80            | 3.70            | 3.7             | 3.1             |
|                  | 0.005           | ---             | 0.001           | 0.005           | 0.01            |
|                  | HB              | HB              | HB              | HB              | HB              |

|                  | 0.20            | 0.20            | .018            | 0.20            | 0.20            |
|                  | 0.90            | 0.90            | 0.80            | 0.90            | 1.00            |

Note: Values listed are typical and are meant only as a guide to aid in design only. As always we highly recommend testing any new material in the application first before converting over to new material based on guide data information alone. Applications and usage vary and Alro does not guarantee any results as this data is for information only.
**Acetal, Homopolymer**

**Delrin® Product Offerings:**

Delrin® is an acetal homopolymer made by DuPont®. It is characterized as having an excellent combination of physical properties that make it suitable for numerous applications. With low moisture absorption and a low coefficient of friction, Delrin® is uniquely tailored for wear applications in high humidity or moisture environments. Delrin® will maintain constant physical properties under high moisture conditions and out-perform nylon in bearings under these conditions.

**Typical Features:**
- Excellent dimensional stability
- Excellent machinability
- FDA approved (Natural color)
- Good wear & abrasion resistance
- Low coefficient of friction
- Low moisture absorption
- Good strength and stiffness

Delrin® AF Blend is a combination of oriented PTFE/TFE fluorocarbon fibers uniformly dispersed in Delrin® acetal resin. This combination produces a material that has strength, toughness, dimensional stability and fabrication economy which approaches that of Derlin®, plus the surface characteristics of unlubricated PTFE, the world's most slippery solid material.

**Typical Features:**
- Excellent dimensional stability
- Good wear & abrasion resistance
- Low coefficient of friction
- No lubrication needed
- No slip or stick

Delrin® Glass-Filled stock shapes exhibit the basic Delrin® properties plus high strength. Overall mechanical properties and dimensional stability are enhanced in this tough material. Specific property advantages include increased stiffness, better creep resistance and a higher dimensional stability. Parts designed using glass-filled will exhibit high fatigue endurance, low deformation under load and good impact resistance.

**Typical Features:**
- Excellent dimensional stability
- Great stiffness
- High tensile strength
- Improved creep resistance
- Lightweight
Acetal, Homopolymer

Delrin® Product Availability:

### Delrin® Sheet / Slab

<table>
<thead>
<tr>
<th>Standard Thickness (inches)</th>
<th>1/8</th>
<th>1/4</th>
<th>3/8</th>
<th>1/2</th>
<th>5/8</th>
<th>3/4</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-1/4</td>
<td>1-1/2</td>
<td>1-3/8</td>
<td>2</td>
<td>2-1/4</td>
<td>2-1/2</td>
<td>2-3/4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Sheet Size (inches)</th>
<th>1/4 to 1-1/2 thick..... 24 x 48 and 48 x 96</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-3/4 to 4 thick ...... 24 x 48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Sheet Color(s)</th>
<th>Black or Natural (White)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Thickness Tolerance(s)</th>
<th>1/4 to 2 .................. +.025” / -0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt;2 to 4 .................. +.050” / -0</td>
</tr>
</tbody>
</table>

**DELRIN® 150 natural, plate and rod, is produced from resin certified to ASTM D 4181, POM 111 and meets ASTM D 6100 S-POM 0111, FDA CFR 21, Section 177.2480.**

### Delrin® Rod / Round

<table>
<thead>
<tr>
<th>Standard Diameter (inches)</th>
<th>1/4</th>
<th>5/16</th>
<th>3/8</th>
<th>7/16</th>
<th>1/2</th>
<th>9/16</th>
<th>5/8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3/4</td>
<td>7/8</td>
<td>1</td>
<td>1-1/8</td>
<td>1-1/4</td>
<td>1-3/8</td>
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<td>1-7/8</td>
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<td>4-1/2</td>
<td>5</td>
<td>5-1/2</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Rod Length (feet)</th>
<th>1/4 to 1 .............. 8 ft .............. (+.003” / -0)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt;1 to 2 .............. 8 ft .............. (+.005” / -0)</td>
</tr>
<tr>
<td></td>
<td>&gt;2 to 2-3/4 ...... 8 ft .............. (+.015” / -0)</td>
</tr>
<tr>
<td></td>
<td>3 and up ........... 4 ft .............. (+.250” / -0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Rod Color(s)</th>
<th>Black or Natural (White)</th>
</tr>
</thead>
</table>

*Longer and intermediate lengths available on request.*
Acetal, Copolymer
FDA Compliant Blue Acetal Sheet & Rod

The foremost goal in the food and beverage production and packaging industry is to deliver high quality, healthy and safe products. With that goal in mind, Alro Plastics is now stocking FDA compliant Blue Acetal in both sheet and rod stock. The FDA compliance makes it safe to use in the food and beverage industry, while the blue color makes it easier to identify should the part ever chip or break off and fall into the product being made.

Because acetal absorbs minimal amounts of moisture, its physical properties remain constant in a variety of environments. Low moisture absorption results in excellent dimensional stability for close-tolerance machined parts. In high moisture or submerged applications, acetal bearings outperform nylon bearings 4 to 1. Acetal is ideally suited for close tolerance mechanical parts and electrical insulators which require strength and stiffness. It also offers resistance to a wide range of chemicals including many solvents.

Alro Plastics is now stocking FDA Compliant Blue Acetal in a select few sizes, please see below for specific sizes in both sheet and round rod.

Typical Features:
- Low moisture absorption
- High strength and stiffness
- Excellent dimensional stability
- No centerline porosity
- Easy to machine
- FDA compliant

### FDA Compliant Blue Acetal

<table>
<thead>
<tr>
<th>Stock Thickness (inches)</th>
<th>3/4&quot;</th>
<th>1&quot;</th>
<th>1-1/2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Sheet Size (inches)</td>
<td>24&quot; x 48&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stock Diameter (inches)</td>
<td>2&quot; and 3&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stock Rod Length</td>
<td>8 foot</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please inquire on other sizes as stock levels can change over time
Acetal, Detectable
Tecaform® UD Blue (Ultra Detectable Acetal)

With new regulations in place, the FDA now mandates that all food processors have comprehensive preventive controls and safety programs in place. They have the complete authority to recall food due to contamination, and it is well known to food processors that a recall can kill a brand.

Tecaform® UD Blue is the revolutionary new Ultra Detectable acetal copolymer designed specifically for applications in the food industry. High speed food production lines detect particulate matter in the food product one of three ways; Using optical scanners, metal detection equipment, or X-ray equipment Tecaform® UD Blue is the first engineering thermoplastic that will show up regardless of the scanning method used.

Tecaform® UD Blue can detect chunks as small as 3mm thick and plastic shavings down to 1 mm in thickness. Tecaform® UD Blue is perfect for a great number of applications in the food industry. Whether you are looking at food processing, packaging or conveying, Tecaform® UD Blue can be an important tool in avoiding costly food product contamination.

Typical Features:
- Detectable by X-ray or metal detection equipment
- Plastic chunks as small as 3mm detected
- Plastic shavings to 1mm thick detected
- Food contact Blue in color
- High visibility of filler
- Easily machined

Product Applications:
- Filler valve and pump parts
- Forming plates
- Scraper blades
- Bushings and bearings
- Cam followers

Tecaform® UD Blue

<table>
<thead>
<tr>
<th>Standard Thickness (inches)</th>
<th>1/2”  3/4”  1”  1-1/2”  2” thick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Sheet Size (inches)</td>
<td>Please inquire, non-stock item</td>
</tr>
<tr>
<td>Standard Diameter (inches)</td>
<td>1”  1-1/4”  1-1/2”  1-3/4”  2”  3”  5” dia.</td>
</tr>
<tr>
<td>Standard Rod Length (inches)</td>
<td>Please inquire, non-stock item</td>
</tr>
<tr>
<td>Standard Color</td>
<td>Food Contact Blue</td>
</tr>
</tbody>
</table>
Acetal, Detectable
Sustarin® C MDT (Metal Detectable Acetal)

Finally, an engineering plastic is available that provides all of the physical properties of acetal, can be sensed by metal detectors and best of all it is FDA compliant.

Röchling Engineering Plastics offers Sustarin® C MDT as a solution to many food processing and packaging applications. Most of the food products that we consume every day come into contact with different machines during the manufacturing and packaging processes. If just a small part or component from any one of those machines finds its way into the food there can be serious health risks.

Sustarin® C MDT has special additives that allow it to be traced by standard metal detectors and removed before causing further contamination. Quality assurance engineers at some of the largest food processing manufacturers in the country have already tested this product and found it to be highly effective. The important mechanical, thermal and chemical resistance properties remain unchanged in comparison to standard acetal. This engineering plastic is easily machined and has excellent dimensional stability for close tolerance parts.

Typical Features:
- Can be sensed by standard metal detectors
- Excellent dimensional stability
- FDA Compliant
- Food contact Blue in color
- High visibility of filler
- Easily machined

Product Applications:
- Filler valve and pump parts
- Piston and pocket fillers
- Scraper blades
- Mixer Components
- Cups and sleeves
- Volumetric fillers

<table>
<thead>
<tr>
<th><strong>Sustarin® C MDT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Thickness (inches)</strong></td>
</tr>
<tr>
<td><strong>Standard Sheet Size (inches)</strong> :</td>
</tr>
<tr>
<td><strong>Standard Diameter (inches)</strong> :</td>
</tr>
<tr>
<td><strong>Standard Rod Length (inches)</strong> :</td>
</tr>
<tr>
<td><strong>Standard Color</strong> :</td>
</tr>
</tbody>
</table>
Röchling Engineering Plastics is the first manufacturer to offer extruded X-ray detectable Acetal Copolymer sheets and rods for machined parts and components in the food processing industry.

Repeated handling, cleaning and normal wear and tear of plastic component parts on processing machinery increases the risk of a fragment breaking off and contaminating the product, especially with the ongoing pressure to increase production line speeds. Quality checks are performed at process control points typically with either metal or X-ray detection systems. In many cases, X-ray systems are required or preferred due to the food (such as meat products) and the fact that the system can effectively detect contamination post-packaging.

Rochling Engineering Plastics is the first manufacturer to offer extruded X-ray detectable acetal copolymer sheets and rod for machined parts and components in the food processing industry. Sustarin® C XDT has been proven to be detected in a particle as small as 3mm cube on production lines running as fast as 250 feet-per-minute.

Typical Features:
- Can be sensed by standard metal detectors
- Excellent dimensional stability
- Plastic chunks as small as 3mm detected
- FDA compliant, blue in color
- High visibility of filler
- Easily machined

Product Applications:
- Filler valve and pump parts
- Piston and pocket fillers
- Scraper blades
- Mixer Components
- Cups and sleeves
- Volumetric fillers

Sustarin® C XDT

<table>
<thead>
<tr>
<th>Standard Thickness (inches)</th>
<th>3/8&quot; up to 4&quot; thick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Sheet Size (inches)</td>
<td>Please inquire, non-stock item</td>
</tr>
<tr>
<td>Standard Diameter (inches)</td>
<td>1/4&quot; up to 6&quot; diameter</td>
</tr>
<tr>
<td>Standard Rod Length (inches)</td>
<td>Please inquire, non-stock item</td>
</tr>
<tr>
<td>Standard Color</td>
<td>Blue</td>
</tr>
</tbody>
</table>
Acrylic, Sheet

Acrylic plastic sheet is completely transparent, flexible and has great resistance to breakage. It is an excellent material which can replace glass for windows, doors, partitions and skylights. It is lightweight, with only half the weight of glass, and it is virtually unaffected by nature.

Acrylic sheet is supplied in general purpose grades and in many special grades formulated to meet specific physical requirements. Most formulations are supplied in a variety of transparent, translucent, and opaque colors as well as colorless transparencies. The material is also supplied in a number of surface patterns. Acrylic plastic can be thermoformed or molded economically to create shapes suitable for a variety of applications.

Common Trade Names:
- Acrylite® (Cyro)
- Excelon® (TPI)
- Kamax® (Rohn & Haas)
- Lucite® (Lucite International)
- Plexiglas® (Arkema Inc.)
- Polycast® (Spartech)
- Optix® (Plaskolite, Inc.)
- Zylar® (Novacor)

Typical Features:
- Dimensional stability
- Tough and durable
- Excellent clarity
- Heat and Impact resistant
- Lightweight
- Good U.V. factor
- Weather resistant
- Excellent fabrication characteristics

Product Applications:
- Conveyor Shields
- Doors (entry/patio/shower/etc...)
- Electronic game faces
- Equipment enclosures
- Skylights / Sunscreens
- Printer covers
- Food sneeze guards
- Forklift shields
- Museum display cases
- Security barriers
- Vending machine windows
- Viewing ports

Acrylic Sheet

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1/2</td>
<td>3/4</td>
<td>1</td>
<td>1-1/2*</td>
<td>1-3/4*</td>
<td>2*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Thickness (inches) for Whites and Solar Tints:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Sheet Size (inches):</th>
</tr>
</thead>
<tbody>
<tr>
<td>48 x 96</td>
</tr>
</tbody>
</table>

Extruded acrylic ends at 1” (.944”) thick, Cast Acrylic* over 1” thick
## Acrylic, Sheet

### Typical Properties

<table>
<thead>
<tr>
<th>PROPERTY TESTED</th>
<th>ASTM</th>
<th>UNITS</th>
<th>ACRYLIC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHYSICAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tensile Strength</td>
<td>D638</td>
<td>psi</td>
<td>10,000</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>D790</td>
<td>psi</td>
<td>17,000</td>
</tr>
<tr>
<td>Modulus of Elasticity</td>
<td>D790</td>
<td>psi</td>
<td>480,000</td>
</tr>
<tr>
<td>Compressive Strength @ yield</td>
<td>D695</td>
<td>psi</td>
<td>17,000</td>
</tr>
<tr>
<td>Izod Impact Strength (notch)</td>
<td>D256</td>
<td>ft•lbf/in</td>
<td>0.4</td>
</tr>
<tr>
<td>Hardness: Rockwell</td>
<td>D785</td>
<td>M</td>
<td>93</td>
</tr>
<tr>
<td>Barcol</td>
<td>D2583</td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>Light Transmission</td>
<td>D1003</td>
<td>%</td>
<td>92</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>D792</td>
<td>1 = water</td>
<td>1.19</td>
</tr>
<tr>
<td>Water Absorption/Saturation</td>
<td>D570</td>
<td>%</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>THERMAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deflection Temp Under Load, 264 psi</td>
<td>D648</td>
<td>°F</td>
<td>195</td>
</tr>
<tr>
<td>Thermal Expansion</td>
<td>D696</td>
<td>in/in°F</td>
<td>0.0004</td>
</tr>
<tr>
<td>Flammability/Burning Rate, 0.125&quot;</td>
<td>D635</td>
<td>in/min</td>
<td>1.00</td>
</tr>
<tr>
<td>Self Ignition Temperature</td>
<td>D1929</td>
<td>°F</td>
<td>830</td>
</tr>
<tr>
<td><strong>ELECTRICAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dielectric Strength (short time), 0.125&quot;</td>
<td>D149</td>
<td>V/mil</td>
<td>430</td>
</tr>
<tr>
<td>Dielectric Constant 60 Hz</td>
<td>D150</td>
<td>---</td>
<td>3.6</td>
</tr>
<tr>
<td>1000 Hz</td>
<td>D150</td>
<td>---</td>
<td>3.3</td>
</tr>
<tr>
<td>Dissipation Factor 60 Hz</td>
<td>D150</td>
<td>---</td>
<td>0.06</td>
</tr>
<tr>
<td>1000 Hz</td>
<td>D150</td>
<td>---</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Note: Values listed are typical and are meant only as a guide to aid in design. Values shown are for 0.250” thickness unless otherwise noted above. Some values will change with thickness.

### Advantages of Acrylic:

- **Ease of Fabrication** - When Acrylic is heated to its forming temperature (approximately 325°F) it becomes soft and pliable and can be formed into a variety of shapes. As the material cools in its formed state, it solidifies and holds the shape to which it has been formed. Because the material is formed at low pressure, molds can be made from plastic and low-cost wood. Acrylic can also be machined, drilled and sawed like wood or soft metals.

- **Excellent Electrical Properties** - Acrylic has certain unmatched electrical properties which are affected slightly by weathering or moisture. Its surface resistivity is higher than most plastic materials and its power factor decreases with increased frequency.

- **Lightweight** - Acrylic is less than 50% as heavy as glass, is 43% as heavy as aluminum and 70% as heavy as magnesium.

- **Impact Resistant** - Although it weighs less than half as much as glass, Acrylic has from 6 to 17 times greater impact resistance than ordinary glass in thicknesses of .125” to .250”.

- **Weather Resistant** - Acrylic sheet withstands weather and sun exposure with almost no loss of light transmittance, clarity and strength in over a quarter century of usage.
Acrylic, Sheet
Light Transmission: Translucent & Transparent Colors

The light transmission of each white color decreases with an increase in the thickness of the material. Nominal thicknesses of a given translucent or transparent color have the same percentage of light transmission. This is apparent through the adjustment of the color concentration according to sheet thickness. If colors listed below are used for a sign application, check all samples under a reflective light for color clarity and light transmission. Some colors may appear analogous under reflected light but transmit light at different rates.

<table>
<thead>
<tr>
<th>COLOR NUMBER</th>
<th>COLOR NAME</th>
<th>% REFLECTED FOR THICKNESSES:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1/8”</td>
</tr>
<tr>
<td><strong>LIGHT TRANSMISSION OF WHITE TRANSLUCENT SHEET</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*2447</td>
<td>white</td>
<td>50</td>
</tr>
<tr>
<td>*7328</td>
<td>white</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COLOR NUMBER</th>
<th>COLOR NAME</th>
<th>% REFLECTED FOR THICKNESSES:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1/8”</td>
</tr>
<tr>
<td><strong>LIGHT TRANSMISSION OF COLORED TRANSLUCENT SHEET</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2146</td>
<td>ivory</td>
<td>33</td>
</tr>
<tr>
<td>2662-S</td>
<td>red</td>
<td>3</td>
</tr>
<tr>
<td>2157</td>
<td>red</td>
<td>2</td>
</tr>
<tr>
<td>2415</td>
<td>red</td>
<td>9</td>
</tr>
<tr>
<td>2283</td>
<td>red</td>
<td>12</td>
</tr>
<tr>
<td>2119</td>
<td>orange</td>
<td>6</td>
</tr>
<tr>
<td>2016</td>
<td>yellow</td>
<td>19</td>
</tr>
<tr>
<td>2037</td>
<td>yellow</td>
<td>26</td>
</tr>
<tr>
<td>2030</td>
<td>green</td>
<td>8</td>
</tr>
<tr>
<td>2108</td>
<td>green</td>
<td>2</td>
</tr>
<tr>
<td>2114</td>
<td>blue</td>
<td>2</td>
</tr>
<tr>
<td>2050</td>
<td>blue</td>
<td>1</td>
</tr>
<tr>
<td>2051</td>
<td>blue</td>
<td>19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COLOR NUMBER</th>
<th>COLOR NAME</th>
<th>% REFLECTED FOR THICKNESSES:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1/8”</td>
</tr>
<tr>
<td><strong>LIGHT TRANSMISSION OF COLORED TRANSPARENT SHEET</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*2064</td>
<td>grey</td>
<td>27</td>
</tr>
<tr>
<td>*2074</td>
<td>grey</td>
<td>13</td>
</tr>
<tr>
<td>*2404</td>
<td>bronze</td>
<td>49</td>
</tr>
<tr>
<td>*2412</td>
<td>bronze</td>
<td>27</td>
</tr>
<tr>
<td>2370</td>
<td>bronze</td>
<td>10</td>
</tr>
<tr>
<td>2208</td>
<td>yellow</td>
<td>79</td>
</tr>
<tr>
<td>2111</td>
<td>green</td>
<td>78</td>
</tr>
<tr>
<td>2092</td>
<td>green</td>
<td>26</td>
</tr>
<tr>
<td>2082</td>
<td>green</td>
<td>70</td>
</tr>
<tr>
<td>2069</td>
<td>blue</td>
<td>56</td>
</tr>
<tr>
<td>2424</td>
<td>blue</td>
<td>8</td>
</tr>
</tbody>
</table>

*Most readily available colors.*
Acrylic, Sheet
Acrylic Mirror Sheets

Half the weight of glass, Acrylic Mirror is shatter resistant with extensive design flexibility. It may be cut into intricate shapes, drilled, sanded, polished, machined, cold formed for curved shapes or strip heated for a sharp bend. Safer than glass during fabrication and installation, acrylic mirror at comparable thickness offers ten times the break resistance of plate glass. Acrylic Mirror is highly reflective and should not be used where precise image reflection is required. All sheets are protected on the front surface with clear polyethylene film.

Typical Features:
- Break resistant
- Easy to fabricate
- Economical
- Fire resistant
- Lightweight
- Optical image clarity
- Mar-resistant
- Shatter resistant

Acrylic Mirror Sheet

<table>
<thead>
<tr>
<th>Standard Thickness (inches)</th>
<th>.060</th>
<th>.080</th>
<th>.098</th>
<th>.118</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.177</td>
<td>.220</td>
<td>.236</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Sheet Sizes (inches)</th>
<th>48 x 96</th>
<th>60 x 96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Sheet Sizes (inches)</td>
<td>72 x 96</td>
<td>48 x 120</td>
</tr>
<tr>
<td></td>
<td>60 x 120</td>
<td>72 x 120</td>
</tr>
</tbody>
</table>

Special sheet sizes not available in every thickness, please inquire for specific sizes.

Acrylic Mirror is available in custom sizes and cut-to-size at your request. Circles, radius corners, routed shapes and rectangles are all available with prompt delivery. All colors available in .118" gauge and many in .236" gauge. Standard sheet size is 48" x 96". Available colors include: Red, Gray, Pink, Blue, Bronze, and Gold.

Polycarbonate Mirror is available for applications requiring high impact strength and fire rating considerations. The thickness gauges available in clear mirror are .060", .080", .093", .118", .117", and .236". Bronze color mirror is offered in gauges .118" and .236". Standard size for all polycarbonate is 48" x 96".

PETG offers ease and economy in die cutting and slitting as its primary feature. PETG Mirror is available in thickness gauges ranging from .030" through .118" in a standard sheet size of 48" x 96".
Acrylic, Sheet

Plexiglas® Acrylic - Specialty Sheet Grades

**Plexiglas® G Cell-Cast Acrylic Sheet**
Premium architectural-grade Plexiglas® G satisfies the requirements for all high performance acrylic sheet applications. Plexiglas® G is made by a cell-casting process which provides the following characteristics: best optical-quality, highest long-term design stress, superior weatherability, ease of fabrication, and the highest degree of chemical resistance available in an acrylic sheet.

**Plexiglas® G P95 Acrylic Sheet**
Plexiglas® G standard acrylic P95 is patterned on one side of the sheet; this is an added texture that provides decorative effects and diffuses annoying surface reflections. The matte finish is available on one side only. P-95 is manufactured via a cell-cast process that satisfies the requirements of nearly all high-performance applications. The matte finish is available in a number of colors.

**Plexiglas® MC Acrylic Sheet**
Plexiglas® MC is an economical sheet produced via a property process known as melt calendering. It offers many of the same high quality features as Plexiglas® G. In addition, it has exceptional thickness tolerance and can be thermoformed to greater detail.

**Plexiglas® MC Matte Finish**
An industry standard, Plexiglas® MC is a continuous process acrylic sheet that offers exceptional thickness tolerance. Now available in a Matte Finish, this versatile sheet offers more design possibilities. An alternative to P95, MC Matte Finish offers fabricators a wider range of sizes to improve yield and reduce costs. It is ideal for displays, point-of-purchase items, building applications and general fabricated parts.

**Plexiglas® Frosted Acrylic Sheet**
Designed for use in point-of-purchase displays, illuminated signage, and as a lighting diffuser, Plexiglas® Frosted sheet is made from an acrylic resin that incorporates a frosting mechanism that is integrated throughout the sheet structure. This mechanism provides a textured finish on all surfaces, requiring no secondary finishing. Unlike surface embossed textures, Plexiglas® Frosted sheet will retain its frosted look after thermoforming.

**Plexiglas® Frosted Acrylic Sheet**
Plexiglas® Clear-Edge Frosted was designed using the same resin technology as Plexiglas® Frosted sheet. An added benefit is the application of a new process technology featuring a frosted effect on both sheet surfaces, highlighting the clarity of the colorless or colored “clear” edge. Designed in response to the growing demand for “matte” finish looks, the sheet’s middle clear layer is sandwiched between thin top and bottom frosted layers. Clear-Edge Frosted is the ideal choice for designers looking to create attractive lighting, shelving, tabletop, backdrop and point of purchase displays.

**Plexiglas® EdgeFX™ Acrylic Sheet**
Plexiglas® EdgeFX™ acrylic sheet exhibits a stunning color changing effect that will catch the consumer’s eye. Dramatically blending dynamic colors into a subtle, uniform hue. Currently available in two striking color combinations, this unique acrylic sheet will attract attention to your display without detracting from your product.

**Plexiglas® Q Acrylic Sheet**
Plexiglas® Q acrylic sheet offers enhanced craze resistance and durability. Improved crazing performance combined with light-weight, optical clarity, excellent weatherability make Plexiglas® Q an excellent choice for retail, cosmetic counter top and point-of-purchase displays. Plexiglas® Q offers improved shape retention in high heat environments (e.g. lighted displays) and exhibits better machining properties than standard extruded sheet.
**Acrylic, Sheet**

**Plexiglas® Acrylic - Specialty Sheet Grades**

**Plexiglas® T Acrylic Sheet Impact Series**
Plexiglas® T high-clarity impact-resistant acrylic sheet is now available in three grades - T, T2 and T3. Each one offers outstanding aesthetics, rigidity and weatherability in POP and display environments. All grades provide designers with flexibility, surface hardness and versatile fabrication techniques. Aesthetic appeal is retained even with displays placed in high traffic areas.

- **Plexiglas® T** combines the beauty of Plexiglas® MC with added toughness. At the level of toughness afforded by Plexiglas® T, you no longer have to sacrifice clarity, design flexibility, or fabrication techniques to get additional toughness.

- **Plexiglas® T2**, the second level of impact resistance in the Plexiglas® T family, gives the designer the freedom to explore new designs that may not have been possible with a standard acrylic. It can be used for displays in environments where durability is needed.

- **Plexiglas® T3**. For your most highly demanding POP applications, we offer the greatest level of impact resistance available with Plexiglas® T3. All three levels offer excellent clarity, rigidity and resistance to the effects of HID lighting in POP and display environments.

**Plexiglas® SQ (Sign Quality Grade)**
Designed exclusively for use in the sign market, SQ sheet is made by the same proprietary continuous process used to make original Plexiglas® MC. This process ensures exceptional surface finish, optical quality and thickness uniformity in addition to enhanced solvent craze resistance.

**Plexiglas® Standard and Non-Glare Finishes for Picture Framing**
Altuglas International offers a complete line of Plexiglas® acrylic sheet products designed to meet the needs of picture framers, museums and galleries. Standard and non-glare finishes offer outstanding optical quality that is 17 times stronger and 50% lighter than an equivalent piece of glass.

**Plexiglas® SB Bullet Resistant Acrylic Sheet**
Plexiglas® SB sheet meets UL 752-Level 1 for use in bullet-resisting applications involving small arms. It carries US Patent No. 4,505,972. Plexiglas® SB offers a lightweight, crystal clear alternative vs. bullet-resisting glass or polycarbonate of the same UL class rating.

**Plexiglas® ELiT2 (Edge Lit Technology) Acrylic Sheet**
Plexiglas® ELiT2 (Edge-Lit Technology) acrylic sheet is designed for use in point-of-purchase displays, illuminated signage and light boxes. It offers the technological advantage where light focused on the edge of the sheet is transmitted and evenly diffused to both faces of the sheet. This allows the light box manufacturer to conceal the fluorescent tubes in the profile trim, rather than place them behind the sheet. It eliminates the need for bulky display boxes used for illuminated designs and replaces them with slimmer designs.
Acrylic, Sheet

Plaskolite Optix® Acrylic Sheet Grades

**Optix® (PMMA) Acrylic Sheet**
Optix® is continuously processed acrylic sheet offered in thicknesses of .040" to 1.0" (1mm-25mm), in clear, colors and widths up to 104". Optix® combines high optical clarity with superior impact and weather resistance. The high molecular weight of Optix® acrylic sheet allows for ease in thermoforming, bending and flame polishing.

**Optix® Frosted Acrylic Sheet**
Optix® Frost has a frosting additive incorporated throughout the sheet, providing an elegant textured surface on both sides. Optix® Frost is the ideal choice for POP and store fixtures as it resists fingerprints, scratches and is virtually maintenance free.

**Optix® DP Impact Modified Sheet**
Optix® DP is ideal for those applications calling for high optical clarity with enhanced impact strength and outstanding light transmission properties.

**Duraplex® Impact Modified Acrylic Sheet**
Duraplex® offers superior impact strength for many applications including signage, displays, skylights, windows, doors and any interior or exterior application where durability is a requirement. It’s an economical alternative to polycarbonate sheet providing superior weatherability and thermoforming capabilities.

**Sign Market Acrylic Sheet**
Plaskolite, Inc. offers Sign Grade Optix® Acrylic and Duraplex® impact modified acrylic in roll stock and oversized flat sheet sizes for the sign fabricating industry. Roll Stock provides unlimited lengths, reducing the number of seams and joints in a large sign face. It also provides efficient inventory space utilization and better total sheet usage. Plaskolite’s acrylic sheet is offered in a wide range of sheet sizes, including “oversized”, to best fit your production specifications.

**Fabback® Acrylic Mirror Sheet**
Fabback® acrylic mirror is made from Optix continuously processed acrylic sheet. Fabback® has the industry’s toughest protective back-coating, which protects against scratching during fabrication. Available in clear, textures and in over 17 vibrant colors, this durable acrylic mirror is ideal for slat-walls, point-of-purchase displays, casinos, children’s toys, cosmetic displays and for applications in the food service industry.

**Abrasion Resistant Acrylic Sheet**
The performance, durability and clarity of Plaskolite’s OPTIX® Abrasion Resistant Acrylic Sheets come shining through in everyday use—and even in the most rugged of conditions. Each sheet style offers maximum protection and resists wear and tear, maintaining its “like new” look that will hold up under all types of use, whether indoor or outdoor. The sheets are available with the OPTIX® AR coating on one or both sides. Plaskolite, Inc. is a leading supplier of acrylic sheets, and its products are known for their innovation and high quality.

**Lighting Panels**
Plaskolite, Inc. offers a variety of acrylic and styrene lighting panels for residential and commercial environments. Available in cracked ice, prismatic, prisma square, flat white mist and egg crate louver patterns.
Acrylic, Sheet

Plaskolite Optix® Acrylic Sheet Grades

Run-To-Size Acrylic Sheet
Optix® acrylic, Duraplex® impact-modified acrylic, Fabbback® acrylic mirror or polystyrene sheet can be ordered to meet the specific size requirements of each application, reducing waste, cost and prolonging the life of your equipment. Plaskolite, Inc. is the only acrylic sheet manufacturer offering the flexibility of buying acrylic sheet literally run-to-size.

Saw cut and slitter/hot knife edges available. Sheet edges may vary, please specify preferred edge cut at the time of order. The turnaround time for Plaskolite’s run-to-size program is the shortest in the industry.

Run-To-Size Minimum Sheet Widths & Lengths

<table>
<thead>
<tr>
<th>Acrylic Thickness</th>
<th>Minimum Width</th>
<th>Minimum Length</th>
</tr>
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<tbody>
<tr>
<td>.040&quot;</td>
<td>5&quot;</td>
<td>14&quot;</td>
</tr>
<tr>
<td>.060&quot;</td>
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<tr>
<td>.080&quot;</td>
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<td>.100&quot;</td>
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<td>.177&quot;</td>
<td>11&quot;</td>
<td>16&quot;</td>
</tr>
<tr>
<td>.187&quot;</td>
<td>11&quot;</td>
<td>16&quot;</td>
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<table>
<thead>
<tr>
<th>Acrylic Thickness</th>
<th>Minimum Width</th>
<th>Minimum Length</th>
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</thead>
<tbody>
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<td>.236&quot;</td>
<td>16&quot;</td>
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<td>.250&quot;</td>
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<tr>
<td>.375&quot;</td>
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<tr>
<td>.500&quot;</td>
<td>24&quot;</td>
<td>48&quot;</td>
</tr>
<tr>
<td>.750&quot;</td>
<td>48&quot;</td>
<td>96&quot;</td>
</tr>
<tr>
<td>1.00&quot;</td>
<td>48&quot;</td>
<td>96&quot;</td>
</tr>
</tbody>
</table>
Acrylic, Sheet

PolyOne™ Polycast® Acrylic Sheet

PolyOne™ Polycast® is the world's largest manufacturer of specialty cell cast acrylic sheet and a leading supplier of aircraft transparencies, marine doors, tanning bed shields, optical & biomedical components, furniture, aquariums and transparent ballistic enclosures. PolyOne™ Polycast® offers a variety of specialty acrylic products for specific applications. Listed below are some of the grades they offer.

General Purpose Acrylic Sheet

Polycast® general purpose acrylic sheet is a cost effective material used in the construction of a wide variety of products. These standard sheet products are used for constructing aquariums, P.O.P. displays, signs, furniture and more.

Super Abrasion Resistant Sheet

Polycast® SAR™ has a durable coating that provides 45 times the abrasion resistance of uncoated acrylic. Polycast® SAR™ is produced by applying a very hard, highly crosslinked polysilicate coating to an acrylic substrate. For more information on Polycast® SAR™ please refer to the following page.

Aerospace Products

PolyOne™ Polycast® is known, the world over, as a leading producer of cast acrylic sheet for aircraft cabin windows, fighter canopies, windscreens, wing-tip lenses, outer laminates and instrument panels for general aviation and military aircraft. Having been manufacturing cast acrylic sheet for over 30 years, PolyOne™ Polycast® is presently the principal supplier meeting U.S. Military Specifications MIL-P-5425, MIL-P-8184 and MIL-P-25690 to the United States aerospace industry.

Light Transmitting and Filtering Sheet

Polycast® manufactures a number of different specialty acrylic sheet products for transmitting and filtering UV light. Ultraviolet Transmitting Sheet (UVT) provides increased transmission of ultraviolet wavelengths between 280 and 360 nanometers.

- **Solacryl® SUVT** - A crystal clear acrylic sheet product that provides for the transmission of ultraviolet radiation needed in the construction of applications like suntanning beds and animal habitats.
- **Solacryl® Silk SUVT** - Designed specifically for the tanning bed industry, Solacryl Silk SUVT features a high UV transmission with exceptional hiding power.
- **Ultraviolet Filtering Acrylics** - Polycast offers a full line of UV filtering acrylics to help defend previous artwork and documents against the degradation caused by exposure to UV light.

Bullet Resistant Sheet

Despite all of the improvements in security technology, bullet resistant barriers have been proven to be the only measure that deters crime before it happens. Polycast® offers a solution to these problems when one considers the four most important characteristics in choosing bullet resistant sheet (adequate protection, weight, optical clarity and value) the choice is obvious. PolyOne™ Polycast® offers three grades of acrylic security glazing for banks, convenience stores and other high risk areas.

Specialty Acrylic Sheeting

Polycast® offers one of the largest selections of specialty cast acrylic sheeting in the industry. Their engineers are experienced in modifying acrylic sheet to change certain physical, chemical or optical properties to meet the specific requirement of their customers. If you have a unique application that requires something beyond standard acrylic offerings, give Alro Plastics and PolyOne™ Polycast a chance to help find a solution.
Acrylic, Sheet
PolyOne™ Polycast® SAR™ (Super Abrasion Resistant)

PolyOne™ Polycast® SAR™ (super abrasion resistant) acrylic sheet is produced by applying a very hard, highly crosslinked polysilicate (a silicon polymer or polysiloxane) coating to an acrylic substrate. This coating provides Polycast® SAR™ sheet with a surface that has 45 times the abrasion resistance of uncoated acrylic, making it an attractive material for applications requiring the safety, optical and aesthetic qualities of acrylic along with a highly abrasion resistant surface.

Lightweight and fabrication flexibility cut installation costs.
At half the weight of glass, Polycast® SAR™ makes handling easier and safer, and installation less costly and time consuming. It can be cut and fabricated at the installation site using power tools. In fact, Polycast® SAR™ is ideal for replacement installations; because it is readily fitted into existing frames.

Colors, Formulations and Finishes
Polycast® SAR™ is available in a wide variety of transparent, translucent and opaque colors including industry standards such as black, gray and bronze. Ultra-violet transmitting, ultra-violet filtering formulations (including Polycast UF96, UF3 and UF4) and coated one-side sheets are also available.

PolyOne™ Polycast® SAR™ is tough, lightweight, weatherable, cleanable and offers excellent thermal insulation. It has an impact resistance that is five times that of glass and half the weight.

Optical clarity outshines other materials
Polycast® SAR™ in 1.250” thickness transmits 93% white light, compared to 66% for an all polycarbonate sheet and 55% for bullet-resistant glass. Also, its edges are clear, avoiding the massive appearance of thick glass with its greenish tinted edge. That adds up to the sparkling clear, open look that is more appealing to customers. Tough coating endures years of cleaning without hazing.

Polycast® SAR Sheets

<table>
<thead>
<tr>
<th>Standard Thickness (inches)</th>
<th>0.060 to 2.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Sheet Sizes (inches)</td>
<td>48 x 72    72 x 120</td>
</tr>
</tbody>
</table>

Special thicknesses and sizes quoted upon request
Acrylic, Rod / Round
Polycast® Clear Acrylic Rod

Cast Acrylic rod has uncommon optical clarity, outstanding light transmission and excellent weatherability. It is not affected by sunlight, resists aging and keeps good stability under variable conditions of cold, heat, moisture and exposure, it will not warp, crack, craze or corrode. Cast Acrylic rod may be preferred for some industrial and commercial applications because it is more optically perfect than molded or extruded types of Acrylic products. It provides good tensile strength and excellent resistance to heat distortion.

This clear rod can be used for machining or cementing and will fabricate like wood, metal or other plastics with standard equipment. Cast Acrylic rod is half the weight of comparable glass and has good shatter resistance and durability.

Product Applications:
- P.O.P. Displays
- Electrical/Electronic parts
- Furniture components
- Lenses
- Models

Clear Acrylic Rod

<table>
<thead>
<tr>
<th>Standard Diameter (inches)</th>
<th>.250</th>
<th>.312</th>
<th>.375</th>
<th>.50</th>
<th>.625</th>
<th>.75</th>
<th>.875</th>
<th>1.00</th>
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<tbody>
<tr>
<td></td>
<td>1.125</td>
<td>1.25</td>
<td>1.375</td>
<td>1.50</td>
<td>1.625</td>
<td>1.75</td>
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<td>2.00</td>
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<td>11.00</td>
<td>11.50</td>
<td>12.00</td>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Standard Rod Length (feet)</th>
<th>.250 through 2.00</th>
<th>8 feet</th>
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<tbody>
<tr>
<td></td>
<td>2.125 through 3.00</td>
<td>6 feet</td>
</tr>
<tr>
<td></td>
<td>3.25 through 6.00</td>
<td>4 feet</td>
</tr>
<tr>
<td></td>
<td>6.50 through 12.00</td>
<td>2 to 4 feet</td>
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</table>

<table>
<thead>
<tr>
<th>Standard Rod Tolerance(s)</th>
<th>.250 through .500</th>
<th>+/- .005</th>
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<tr>
<td></td>
<td>.625 through 1.00</td>
<td>+/- .010</td>
</tr>
<tr>
<td></td>
<td>1.125 through 2.00</td>
<td>+/- .015</td>
</tr>
<tr>
<td></td>
<td>2.125 through 3.00</td>
<td>+/- .030</td>
</tr>
<tr>
<td></td>
<td>3.25 through 6.00</td>
<td>+/- .045</td>
</tr>
<tr>
<td></td>
<td>6.50 through 9.00</td>
<td>+/- .050</td>
</tr>
<tr>
<td></td>
<td>9.50 through 12.00</td>
<td>+/- .060</td>
</tr>
</tbody>
</table>
PolyOne cast acrylic clear rods and tubes are highly polished, crystal clear and can be manufactured to the most exact specifications. The standard material is a clear, ultraviolet absorbing acrylic with a maximum continuous service temperature of 150°F. Custom sizing and thickness are available to meet your exact specs. Acrylic tubing is manufactured in standard 6 foot lengths. Machining, drilling, milling, routing as well as many other operations are available upon request.

**Typical Features:**
- Crystal clarity
- Easily bonded
- Easily machined
- Transparent
- Very strong
- Weather resistant

### Clear Acrylic Tube

**Standard Outside Dia. (inches):**
- 1.25
- 1.50
- 1.625
- 1.75
- 1.875
- 2.00
- 2.25
- 2.375
- 2.50
- 2.625
- 2.75
- 2.875
- 3.00
- 3.125
- 3.25
- 3.375
- 3.50
- 3.625
- 3.75
- 3.875
- 4.00
- 4.125
- 4.25
- 4.375
- 4.50
- 4.625
- 4.75
- 4.875
- 5.00
- 5.25
- 5.50
- 5.625
- 5.75
- 6.00
- 6.093
- 6.25
- 6.50
- 6.75
- 7.00
- 7.25
- 7.50
- 7.625
- 8.00
- 8.25
- 8.50
- 8.75
- 9.00
- 9.125
- 9.25
- 9.50
- 10.00
- 10.50
- 10.625
- 11.00
- 11.50
- 11.75
- 12.00
- 13.625
- 14.00
- 15.00
- 16.00
- 18.00
- 24.00
- 27.625

**Standard Wall Thickness (inches):**
- .125
- .187
- .250
- .375
- .500

**Standard Tube Length (feet):**
- 6 foot lengths

**O.D. & Wall Tolerances (inches):**
- 1.25 to 3.00 ........... +/-0.020 ...... 1/8 wall ...... +/-0.018
- 3.125 to 3.875 ...... +/-0.025 ...... 3/16 wall ... +/-0.019
- 4.00 to 6.75 .......... +/-0.030 ...... 1/4 wall ..... +/-0.025
- 7.00 to 8.75 .......... +/-0.080 ...... 3/8 wall ..... +/-0.035
- 9.00 to 12.00 ........ +/-0.090 ...... 1/2 wall ..... +/-0.045

Acrylic Rod and Tube also offered in colors, please inquire about availability
Armor-X™ (Polymer Composite)

Armor-X™ and Armor-X™ with ProKnob™

Protect equipment and surfaces with Armor-X™. Armor-X’s™ non-marring, cushioned surface shields critical surfaces and heavy, expensive parts and equipment, including stainless steel, from gouges and scratches. From work surfaces to flooring, Armor-X™ helps protect your investment.

Armor-X™ with ProKnob™ has a knobbled, anti-skid surface designed to keep valuable parts from moving and shifting around.

Typical Features:

- Resists oils, cutting fluids & chemicals
- Excellent impact & wear resistance
- More flexible than other polymers
- Available in two finishes, including anti-skid

Target Industries:

- Machine shops
- Material handling
- Metals finishing
- Outdoor recreation
- Marine applications
- Steel mills

Product Applications:

- Bench tops
- Bumper pads
- Machine shop flooring
- Storage bins

Armor-X™ Sheet

<table>
<thead>
<tr>
<th>Standard Thickness (inches)</th>
<th>1/4</th>
<th>3/8</th>
<th>1/2</th>
<th>3/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Sheet Size (inches)</td>
<td>48 x 96</td>
<td>48 x 120</td>
<td>60 x 120</td>
<td></td>
</tr>
</tbody>
</table>

Armor-X™ w/ProKnob™

<table>
<thead>
<tr>
<th>Standard Thickness* (inches)</th>
<th>3/8</th>
<th>1/2</th>
<th>3/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Sheet Size (inches)</td>
<td>48 x 96 (3/8 to 1-1/2 thick)</td>
<td>48 x 120 (5/8 to 1 thick only)</td>
<td></td>
</tr>
</tbody>
</table>

* Thickness refers to base and does not include the height of the knobs.
## Armor-X™ (Polymer Composite)

### Typical Properties

<table>
<thead>
<tr>
<th>PROPERTY TESTED</th>
<th>ASTM</th>
<th>UNITS</th>
<th>ARMOR-X™</th>
</tr>
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<tbody>
<tr>
<td><strong>PHYSICAL PROPERTIES</strong></td>
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<td></td>
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<tr>
<td>Specific Gravity</td>
<td>D792</td>
<td>g/cc</td>
<td>1.00</td>
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<tr>
<td><strong>MECHANICAL PROPERTIES</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Hardness, Shore D</td>
<td>D2240</td>
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<td>50</td>
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<tr>
<td>Tensile Strength</td>
<td>D638</td>
<td>psi</td>
<td>3,200</td>
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<tr>
<td>Tensile Strength at 65°C (150°F)</td>
<td>D638</td>
<td>psi</td>
<td>400</td>
</tr>
<tr>
<td>Elongation at Break</td>
<td>D638</td>
<td>%</td>
<td>100%</td>
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<tr>
<td>Tensile Modulus</td>
<td>D638</td>
<td>psi</td>
<td>51,500</td>
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<tr>
<td>Flexural Strength</td>
<td>D790</td>
<td>psi</td>
<td>2,200</td>
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<tr>
<td>Flexural Modulus</td>
<td>D790</td>
<td>psi</td>
<td>44,000</td>
</tr>
<tr>
<td>Compressive Strength</td>
<td>10% Def.; D695</td>
<td>psi</td>
<td>3,900</td>
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<tr>
<td>Compressive Modulus</td>
<td>D695</td>
<td>psi</td>
<td>34,000</td>
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<tr>
<td>Izod Impact, Notched</td>
<td>D256, Type A</td>
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<td>No Break</td>
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<tr>
<td>Coefficient of Friction</td>
<td>Dry vs Steel; QTM 55007</td>
<td>---</td>
<td>0.20</td>
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<tr>
<td>Limiting Pressure Velocity</td>
<td>4:1 Safety; QTM 55007</td>
<td>psi-ft./min.</td>
<td>2,000</td>
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<tr>
<td><strong>ELECTRICAL PROPERTIES</strong></td>
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<tr>
<td>Surface Resistivity per Square</td>
<td>D257</td>
<td>ohm</td>
<td>&gt;= 1.00e + 15 ohm</td>
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<tr>
<td><strong>THERMAL PROPERTIES</strong></td>
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<tr>
<td>Melting Point</td>
<td>Crystalline, Peak; D3418</td>
<td>°F</td>
<td>275°</td>
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<td>Maximum Service Temp, Air</td>
<td>Long Term</td>
<td>°F</td>
<td>180°</td>
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<tr>
<td>Deflection Temp at 1.8 MPa (264 psi)</td>
<td>D648</td>
<td>°F</td>
<td>116°</td>
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<tr>
<td>Flammability, UL 94</td>
<td>1/8&quot; (Est Rating)</td>
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<td>HB</td>
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<td><strong>COMPLIANCE PROPERTIES</strong></td>
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<td>3A-Dairy</td>
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<td>Canada AG</td>
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<td>FDA</td>
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<tr>
<td>NSF</td>
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<td>---</td>
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<tr>
<td>USDA</td>
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<td>---</td>
<td>No</td>
</tr>
<tr>
<td>USP Class VI</td>
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<td>No</td>
</tr>
</tbody>
</table>

*Armor-X™ with ProKnob™ Anti-Skid surface*
Boltaron®

Specialized PVC, PVC-alloy and CPVC performance sheet

Boltaron® is a specialized PVC, PVC-alloy and CPVC performance sheet for thermoforming, fabricating and membrane pressing of Aircraft interior components, Rail/Mass Transit interior components and Commercial/Industrial components. Over 50 specialized grades offer a combination of fire ratings, durability, colors, textures and gauges unavailable from any other film and sheet producer.

Product Features:

- PVC, PVC/Acrylic alloy and CPVC film and sheet, extruded, calendered and press-laminated in gauges from .003 to 3.00 inch
- FAR 25.853 (a) and (d), MVSS Docket 90 and 90A, UL 94 V-0 and 5V, Class 1-A, ASTM E-84 and FM 4910 fire ratings
- Clear, white and unlimited integral colors with low minimums
- Scratch-resistant metallics in unlimited colors with low minimums
- 16 standard surface textures, and custom textures with low minimums
- Impact resistance to 20 ft-lbs/in
- Extreme formability with uniform wall thickness

This combination of advantages is unique to Boltaron because no other producer in the USA offers calendering, extrusion and press laminating under one roof. Each of these processes produces a range of film and sheet products having distinct qualities. As importantly, sheet produced using more than one of these processes can be fused in-line or off-line (with low minimums) to create an unlimited selection of ultra-high performance composite sheet products impossible to achieve using any single production process.
Boltaron®
Cross Reference Chart (Boltaron-Kydex-Royalite)

For customers using similar products from KYDEX® and Royalite® we have a handy cross reference chart that shows which Boltaron® products are equivalent to their competitors products. Please use the chart below when trying to determine which Boltaron® product will replace your current product.

<table>
<thead>
<tr>
<th>Boltaron® 1165</th>
<th>KYDEX® V</th>
<th>Royalite® R 559</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boltaron® 4205</td>
<td>KYDEX® 6185</td>
<td>n/a</td>
</tr>
<tr>
<td>Boltaron® 4330</td>
<td>KYDEX® 100</td>
<td>Royalite® DKE 400</td>
</tr>
<tr>
<td>Boltaron® 4330M</td>
<td>KYDEX® 110</td>
<td>n/a</td>
</tr>
<tr>
<td>Boltaron® 4335</td>
<td>KYDEX® T</td>
<td>Royalite® R 52</td>
</tr>
<tr>
<td>Boltaron® 4343/4353</td>
<td>KYDEX® 150/160</td>
<td>n/a</td>
</tr>
<tr>
<td>Boltaron® 4800</td>
<td>KYDEX® 6200</td>
<td>Royalite® R 61</td>
</tr>
<tr>
<td>Boltaron® 6530</td>
<td>KYDEX® 430</td>
<td>Royalite® R 59 / R 57 / R 86</td>
</tr>
<tr>
<td>Boltaron® 6540</td>
<td>KYDEX® 430</td>
<td>Royalite® R 59 / R 57 / R 86</td>
</tr>
<tr>
<td>Boltaron® 6800E</td>
<td>n/a</td>
<td>Royalite® R 60</td>
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<tr>
<td>Boltaron® 9200/9200C</td>
<td>KYDEX® 6185</td>
<td>n/a</td>
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<tr>
<td>Boltaron® 9230/9230C</td>
<td>KYDEX® 6185</td>
<td>n/a</td>
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<td>Boltaron® 9250/9250C</td>
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<tr>
<td>Boltaron® 9915FSTH</td>
<td>KYDEX® FST</td>
<td>n/a</td>
</tr>
</tbody>
</table>
Boltaron® 1165
Economical Recycled Grade

Boltaron® 1165 sheet, extruded from select aircraft and electrical grade recycled trim and resin, provides an exceptional combination of UL 94 V-0 compliance, physical properties, consistent thermoforming and low cost compared with other flame rated sheet products.

Intended for general-purpose housings and interior components, this proprietary thermoplastic alloy sheet material is available in black, in custom textures and widths to 60 inches.

Typical Features:
- High impact strength
- Meets UL 94 V-0
- Low cost; uses recycled aircraft grade trim
- Thermoforms consistently

Product Applications:
- Electrical equipment housings
- Internal insulating panels
- Vending machine components
- Parts requiring painting

Typical Properties:

<table>
<thead>
<tr>
<th>PROPERTY TESTED</th>
<th>TEST METHOD*</th>
<th>TYPICAL VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Gravity</td>
<td>ASTM D792</td>
<td>1.47</td>
</tr>
<tr>
<td>Tensile Strength</td>
<td>ASTM D638</td>
<td>5,200 psi</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>ASTM D790</td>
<td>8,800 psi</td>
</tr>
<tr>
<td>Flexural Modulus</td>
<td>ASTM D790</td>
<td>330,000 psi</td>
</tr>
<tr>
<td>Izod Impact, Notched at 73°F</td>
<td>ASTM D256</td>
<td>10 ft-lb/in.</td>
</tr>
<tr>
<td>Hardness Rockwell</td>
<td>ASTM D785</td>
<td>108 - 111</td>
</tr>
<tr>
<td>Heat Deflection (annealed)</td>
<td>ASTM D648</td>
<td>160°F @ 264 psi</td>
</tr>
<tr>
<td>Flammability - UL</td>
<td>UL 94</td>
<td>V-0¹</td>
</tr>
<tr>
<td>Forming Temperature</td>
<td>---</td>
<td>335 - 385°F</td>
</tr>
</tbody>
</table>

¹ Values based on minimum thickness of 0.040 in. (1.1 mm), UL File #E54688
* Independent lab tests. All tests at 73°F (22.8°C) in dry conditions unless otherwise noted.

Boltaron® 1165

Standard Thickness (inches) : 0.028 up to 0.250 (0.71 to 6.35 mm)
Standard Sheet Size (inches) : Widths to 60" (1,524 mm)
Lengths to 120" (3,048 mm)
Standard Sheet Color : Black
Standard Sheet Finish : Industry's widest range of textures

Custom sizes, gauges available upon request, minimums may apply please inquire
Boltaron® 4330
FAR- and UL-Rated Ultra-High Impact Sheet

Compared to other FAR 25.853(a) rated thermoplastic alloy sheet products, Boltaron® 4330 offers an exceptionally high Izod impact strength of 18 ft-lb/in. (953 J/m) for longer service life in aircraft interior components.

This proprietary extruded thermoplastic alloy sheet also expands design freedom with a full range of colors and the widest range of textures in thermoplastic alloy materials. Boltaron's unique custom production capabilities also include the ability to manufacture cost-effective low minimums with fast turnaround.

Boltaron® 4330 also features consistently uniform surface quality, and maintains its wall thickness during thermoforming even in deep draws and sharp corners.

Overall, it offers an unequalled combination of performance and design freedom coupled with both FAR 25.853(a) and UL 94 V0 flammability ratings. Its versatility makes it ideal for applications from aircraft interiors to electrical enclosures, especially in damage-prone environments.

Typical Features:
- Izod Impact 18 ft-lb/in. (953 J/m)
- FAR 25.853 (a) Compliance
- Uniform high quality appearance
- Wall thickness integrity in deep draw forming
- Full range of colors, widest range of textures
- Lot-to-lot color consistency

Product Applications (Aircraft interiors):
- Instrument panel housings
- Class dividers, bulkhead laminates
- Gally and lavatory components
- Bull noses, gap covers, moldings
- Sidewall and kick panels
- Window reveals
- Seat parts, backs, tray tables
- Passenger Service Units (PSU’s)
- Light housings, air ducts
- Video monitor shrouds
- Life vest shrouds

Product Applications (Electrical):
- Equipment enclosures, housings
- Medical, analytical equipment
- Insulating panels

Boltaron® 4330

<table>
<thead>
<tr>
<th>Standard Thickness (inches)</th>
<th>0.028 up to 0.250 (0.71 to 6.35 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Sheet Size (inches)</td>
<td>Widths to 60&quot; (1,524 mm)</td>
</tr>
<tr>
<td></td>
<td>Lengths to 120&quot; (3,048 mm)</td>
</tr>
<tr>
<td>Standard Sheet Color</td>
<td>Full range of colors</td>
</tr>
<tr>
<td>Standard Sheet Finish</td>
<td>Industry's widest range of textures</td>
</tr>
</tbody>
</table>

Custom sizes, gauges available upon request, minimums may apply please inquire
Boltaron® 4335
Fire Rated Sheet for Thermoforming, Fabricating

Boltaron® 4335 is a proprietary, fire retardant, extruded thermoplastic alloy offering extreme durability, chemical resistance, and a UL 94 V-0 rating while exhibiting exceptional physical properties. It offers Izod Impact resistance of 18 ft lbs/in (953 J/m), significantly improving the durability of thermoformed components versus FR-ABS and other competitive sheet.

In addition, Boltaron® 4335 is non-hygrosopic, eliminating the time and costs associated with pre-drying other thermoplastics.

It also offers other exceptional physical properties, extreme formability and consistent surface quality, and is available in unlimited custom colors with low minimums and fast turnarounds.

As a result, leading thermoformers and original equipment manufacturers seeking an uncompromising combination of formability, durability, chemical resistance, and regulatory compliance specify Boltaron® 4335 for thermoformed and fabricated housings, enclosures, and displays.

**Typical Features:**
- Izod impact resistance of 18 ft-lbs/in.
- Inclusion-free surface quality
- FAR 25.853 (a) Compliance
- Unlimited colors with low minimums, no premiums and fast turnaround
- Lot-to-lot color consistency
- Extreme formability; allows sheet to draw readily to the mold, even into deep recesses and sharp corners, maintaining uniform wall thickness
- Unlimited surface textures with low minimums, no premiums and fast turnaround

**Product Applications:**
- Medical device enclosures
- Electronic equipment housings
- Kiosk housings
- Store fixtures and displays
- Kennel housings

**Boltaron® 4335**

<table>
<thead>
<tr>
<th>Standard Thickness (inches)</th>
<th>0.028 up to 0.250 (0.71 to 6.35 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Sheet Size (inches)</td>
<td>Widths to 60&quot; (1,524 mm)</td>
</tr>
<tr>
<td></td>
<td>Lengths to 120&quot; (3,048 mm)</td>
</tr>
<tr>
<td>Standard Sheet Color</td>
<td>Full range of colors</td>
</tr>
<tr>
<td>Standard Sheet Finish</td>
<td>Full range of textures</td>
</tr>
</tbody>
</table>

*Custom sizes, gauges available upon request, minimums may apply please inquire*
Boltaron® 9815E
FAR-Rated High Impact Resistant Sheet for Aircraft Interiors

Boltaron® 9815E meets FAR 25.853(a) and FAR 25.853(d) for smoke density and heat release required for aircraft interior components. It offers far higher notched Izod impact strength of 5.0 ft-lb/in. (265 J/m) vs. other 65/65 rated thermoplastic products that measure 3.0 ft-lb/in. (159 J/m). The result: more durability and longer service life for panels, window reveals, seat backs and other thermoformed components.

This proprietary extruded thermoplastic alloy sheet also expands design freedom with a full range of colors and the widest range of texture options in thermoplastic alloy materials. Boltaron's unique custom production capabilities also include the ability to manufacture cost-effective low minimums with fast turnaround.

In thermoformed parts, Boltaron® 9815E maintains wall thickness integrity even in deep draws and sharp corners. The consistently uniform quality of the extruded sheet also ensures optimum appearance in flat surfaces and complex formed parts.

Typical Features:
- 66% greater impact resistance than other 65/65 thermoplastic alloy sheet
- FAR 25.853 (a)(d) Compliance
- Uniform high quality appearance
- Wall thickness integrity in deep draw forming
- Full range of colors, widest range of textures
- Lot-to-lot color consistency

Product Applications (Aircraft interiors):
- Instrument panel housings
- Class dividers, bulkhead laminates
- Gally and lavatory components
- Bull nosed, gap covers, moldings
- Sidewall and kick panels
- Window reveals
- Seat parts, backs, tray tables
- Passenger Service Units (PSU’s)
- Light housings, air ducts
- Video monitor shrouds
- Life vest shrouds
- Air ducts

Boltaron® 9815E
Standard Thickness (inches) : 0.040 up to 0.250 (1.02 to 6.35 mm)
Standard Sheet Size (inches) : Widths to 60" (1,524 mm)
                          : Lengths to 120" (3,048 mm)
Standard Sheet Color : Full range of colors
Standard Sheet Finish : Industry’s widest range of textures

Custom sizes, gauges available upon request, minimums may apply please inquire
Corrugated Plastic Sheet

Corrugated Plastic Sheet is the material of choice for today's market. This twin-wall sheet plastic is opening fresh horizons of features and benefits. Corrugated Plastic Sheet explores new directions of advantages with its strength, durability, light weight and low cost. It enhances profitability and is a superior alternative to other materials such as cardboard, plywood, metal and rigid plastic.

Typical Features:

- Available in solid or translucent colors
- Can be made to FDA requirements
- Can be made flame retardant
- Can be made anti-static or conductive
- Can be made with U.V. inhibitors
- Easy to print on
- Easily fabricated - can be die cut, sewn, sawed, scored, folded, drilled, stapled, nailed and spot or heat-welded
- More durable than cardboard
- Stronger than cardboard
- Lightweight
- Low cost
- Reusable
- Resists water, tear and punctures
- Unaffected by most chemicals

Typical Applications:

- **Tote Bins** - Corrugated plastic sheet can be fabricated into custom totes and bins for your special demands.
- **Protective Packaging** - It can be manufactured to a wide range of specialty packaging assemblies for all types of industries. Configurations can be met to your exact specifications.
- **Agricultural** - All types of produce are collected and shipped in custom corrugated plastic sheet containers. It's lightweight, mildew resistant, waterproof and long lasting.
- **Graphic Arts** - Corrugated plastic sheet is the ideal substrate for outdoor and indoor printing and display requirements. It is weatherproof, durable, lightweight and does not absorb water.
- **ESD Packaging (Electro Static Discharge)** - Electronic components require special packaging to protect against rough handling and damage from static electricity. Corrugated plastic sheet is available with "anti-static" and "conductive" properties for these types of applications.
- **Consumer Products** - Corrugated plastic sheet can be die cut, assembled and printed into products that are attractive and easy to sell. There is unlimited potential in new product applications.
- **Construction and Home Use** - Corrugated plastic sheet is ideal for covering a broken window and for making general repairs around the house. In general construction it is used for window protection, temporary enclosures and as a moisture barrier.

**Corrugated Plastic Sheet**

<table>
<thead>
<tr>
<th>Standard Thickness (mm)</th>
<th>2mm to 10mm thick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Sheet Size (inches)</td>
<td>Widths (across corrugation) up to 80&quot; Length is unlimited</td>
</tr>
</tbody>
</table>
# Corrugated Plastic Sheet

## Product Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RESIN</strong></td>
<td>Polypropylene and polyethylene are both available.</td>
</tr>
<tr>
<td><strong>COLORS</strong></td>
<td>White, Ivory, Yellow, Gray, Orange, Blue, Red, Green, Brown and Black.</td>
</tr>
<tr>
<td><strong>PRINTABILITY</strong></td>
<td>All corrugated polypropylene is corona treated to accept printing.</td>
</tr>
<tr>
<td><strong>OUTDOOR DURABILITY</strong></td>
<td>All U.V. enhanced sheet is guaranteed for three years against breakdown. Corrugated plastic sheet is not affected by normal extremes of heat or cold.</td>
</tr>
<tr>
<td><strong>FLAMMABILITY</strong></td>
<td>Corrugated plastic sheet is a combustible material which can be easily extinguished with conventional types of fire extinguishers. Flame retardant additives can be added to the sheet to give it a V-2 rating.</td>
</tr>
<tr>
<td><strong>WATER RESISTANCE</strong></td>
<td>Corrugated plastic sheet is not affected by water.</td>
</tr>
<tr>
<td><strong>CHEMICAL RESISTANCE</strong></td>
<td>Polypropylene and polyethylene are chemically inert and will not react with most chemicals.</td>
</tr>
<tr>
<td><strong>SPECIAL ADDITIVES</strong></td>
<td>Ultra violet stabilizers • Conductive and Anti-Static Static-Free (corona) • Non-Skid coating</td>
</tr>
<tr>
<td><strong>FABRICATION</strong></td>
<td>Corrugated plastic sheet can be fabricated using conventional fabrication techniques associated with corrugated fiberboard.</td>
</tr>
</tbody>
</table>
**CPVC**

**Chlorinated Polyvinyl Chloride**

Although CPVC is based on PVC, and shares a few of the same characteristics, it is still a unique polymer. CPVC is a high temperature grade chlorinated polyvinyl chloride that provides excellent corrosion resistance, high heat resistance, chemical resistance, inherent flame resistivity, good tensile strength, weatherability and is easily fabricated. These characteristics make CPVC a useful material in a wide range of markets including the chemical processing and metal finishing industries. It can easily be machined with standard wood-working tools. In addition CPVC can be fiberglass backed, hot gas welded with rod, cemented, (solvent bonded) riveted and threaded.

**Typical Features:**

- Excellent corrosion resistance
- Good chemical resistance
- High heat resistance
- Easy to machine and fabricate

**Product Applications:**

- Chemical processing
- Fume scrubbing
- Metal anodizing
- Metal Finishing
- Pickling and Waste treatment

**Typical Properties:**

<table>
<thead>
<tr>
<th>PROPERTY TESTED</th>
<th>ASTM</th>
<th>UNITS</th>
<th>CPVC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHYSICAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>D792</td>
<td>1 = water</td>
<td>1.51</td>
</tr>
<tr>
<td>Tensile Strength</td>
<td>D638</td>
<td>psi</td>
<td>7,600</td>
</tr>
<tr>
<td>Elongation, ultimate</td>
<td>D638</td>
<td>%</td>
<td>37M</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>D790</td>
<td>psi</td>
<td>11,000</td>
</tr>
<tr>
<td>Flexural Modulus</td>
<td>D790</td>
<td>psi x 10^6</td>
<td>3.5</td>
</tr>
<tr>
<td>Impact Strength, Izod</td>
<td>D256</td>
<td>ft lbs/in notch</td>
<td>1.65</td>
</tr>
<tr>
<td>Hardness, Rockwell R</td>
<td>D785</td>
<td>R</td>
<td>118</td>
</tr>
<tr>
<td>Hardness, Durometer, Shore D</td>
<td>D2240</td>
<td>D</td>
<td>82</td>
</tr>
<tr>
<td>Compression Strength</td>
<td>D695</td>
<td>psi</td>
<td>11,400</td>
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<tr>
<td>Shear Strength</td>
<td>D732</td>
<td>psi</td>
<td>9.220</td>
</tr>
<tr>
<td>Weld Gas Recommended</td>
<td>---</td>
<td>---</td>
<td>Nitrogen</td>
</tr>
<tr>
<td>Water Absorption (24 hrs)</td>
<td>D570</td>
<td>%</td>
<td>.035</td>
</tr>
<tr>
<td><strong>THERMAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal Expansion</td>
<td>D696</td>
<td>in/in/°C</td>
<td>7.97 x 10^-5</td>
</tr>
<tr>
<td>Heat Distortion*</td>
<td>D648</td>
<td>°F @ 264 psi</td>
<td>212</td>
</tr>
<tr>
<td>Thermal Conductivity</td>
<td>C177</td>
<td>BTU/hr/ft/^°F/in</td>
<td>0.641</td>
</tr>
<tr>
<td>Specific Heat</td>
<td>C351</td>
<td>Cal/gm/°C</td>
<td>0.220</td>
</tr>
<tr>
<td>Flammability**</td>
<td>---</td>
<td>1/8&quot; an over</td>
<td>94 V-0</td>
</tr>
<tr>
<td>Thermoformability</td>
<td>---</td>
<td>---</td>
<td>Fair</td>
</tr>
</tbody>
</table>

*Annealed sample. **Flammability ratings for PVC in accordance with UL94V.

The numbers supplied for the testing of this product came directly from the manufacturer of this material. These numbers should be used as a reference only, they are not to replace the actual testing of the material in your specific application. Test results may vary from application to application.
CPVC

Product Availability

**CPVC Sheet**

|-----------------------------|------|------|------|-----|------|-----|-----|-----|-----|-----|---|-------|-------|-------|---|

<table>
<thead>
<tr>
<th>Standard Sheet Size (inches)</th>
<th>48 x 96</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Standard Sheet Color</th>
<th>Gray</th>
</tr>
</thead>
</table>

**CPVC Solid Rod**

<table>
<thead>
<tr>
<th>Standard Diameter (inches)</th>
<th>1/4</th>
<th>3/8</th>
<th>7/16</th>
<th>1/2</th>
<th>5/8</th>
<th>3/4</th>
<th>1</th>
<th>1-1/8</th>
<th>1-1/4</th>
<th>1-3/8</th>
<th>1-1/2</th>
<th>1-5/8</th>
<th>2</th>
<th>2-3/8</th>
<th>2-1/2</th>
<th>3</th>
<th>3-1/2</th>
<th>4</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Standard Rod Length (feet)</th>
<th>1/4 to 2 Dia</th>
<th>10 foot</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Standard Rod Color</th>
<th>Gray</th>
</tr>
</thead>
</table>

**CPVC Hollow Bar**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.625</td>
<td>.562</td>
<td>3.563</td>
<td>1.500</td>
</tr>
<tr>
<td>2.125</td>
<td>.750</td>
<td>4.000</td>
<td>2.500</td>
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<tr>
<td>2.250</td>
<td>1.125</td>
<td>4.250</td>
<td>1.750</td>
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<tr>
<td>2.375</td>
<td>1.000</td>
<td>4.750</td>
<td>3.000</td>
</tr>
<tr>
<td>2.625</td>
<td>1.500</td>
<td>5.000</td>
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<tr>
<td>2.750</td>
<td>1.000</td>
<td>6.625</td>
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<tr>
<td>2.875</td>
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<td>3.000</td>
<td>1.125</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Tube Length</th>
<th>Please inquire with Sales Dept</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Standard Tube Color</th>
<th>Gray</th>
</tr>
</thead>
</table>

The heavy-wall hollows effect considerable savings in material when bored parts are required. In addition, some sizes are IPS O.D., and thus can be used as bushing stock or very heavy wall pipe which is not commercially available.

For a listing of current tolerance information please contact Alro Plastics.

NSF approved compounds are used in the manufacture of CPVC solid, round, hex, hollow, square and rectangular bar. CPVC round bar and CPVC hollow bar meet L-P 1036(1).
Cutting Board
Sanalite® Cutting Board

Sanalite® is a premium cutting board material with a surface that is easy on cutting blades. Sanalite is used in a wide array of applications — from home use to commercial food preparation and some of the largest packing plants in the United States.

Sanalite® is available in two formulations — high density polyethylene (HDPE) and polypropylene — both in a "natural" color. Sanalite® HDPE can be ordered in three different sheet sizes: 48" x 96" and 48" x 120" sheets with gauge sizes ranging from 1/4" to 1"; 60" x 120" sheets with four gauge sizes ranging from 1/2" to 1". Sanalite® polypropylene is a harder surface, and comes in 48" x 96" sheets with three gauge sizes ranging from 1/2" to 1".

Typical Features:
- NSF certified under Standard 02 and Standard 51
- Meets FDA Regulation 21CFR 177.1520 Item 2.1
- USDA compliant & Ag Canada approved
- Chemical & Corrosion resistant
- No moisture absorption
- Pebble surface resists acids
- Easily cleaned
- Lightweight

Product Applications:
- Deli counter tops
- Dough boards
- Drip trays
- Proof boards
- Splash shields

Sanalite® Cutting Board

<table>
<thead>
<tr>
<th>HDPE Thickness (inches) :</th>
<th>1/4 through 1&quot; thick</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDPE Sheet Size (inches) :</td>
<td>48 x 96 and 48 x 120. 60 x 120 (1/2&quot; and up)</td>
</tr>
<tr>
<td>HDPE Sheet Color :</td>
<td>Natural</td>
</tr>
<tr>
<td>Polypropylene Thickness :</td>
<td>1/2, 3/4 and 1&quot; thick</td>
</tr>
<tr>
<td>Polypropylene Sheet Size :</td>
<td>48 x 96</td>
</tr>
<tr>
<td>Polypropylene Sheet Color :</td>
<td>Natural</td>
</tr>
</tbody>
</table>
Cutting Board
Sanalite® Cutting Board

<table>
<thead>
<tr>
<th>PROPERTY TESTED</th>
<th>ASTM</th>
<th>UNITS</th>
<th>HDPE</th>
<th>POLYPROPYLENE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHYSICAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>D792</td>
<td>g/cc</td>
<td>0.960</td>
<td>0.920</td>
</tr>
<tr>
<td>Water Absorption (24 hrs)</td>
<td>D570(2)</td>
<td>%</td>
<td>&lt;= 0.010</td>
<td>&lt;= 0.010</td>
</tr>
<tr>
<td>Water Absorption at Saturation</td>
<td>D570(2)</td>
<td>%</td>
<td>&lt;= 0.010</td>
<td>&lt;= 0.010</td>
</tr>
<tr>
<td><strong>MECHANICAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardness, Shore D</td>
<td>D2240</td>
<td>---</td>
<td>70</td>
<td>78</td>
</tr>
<tr>
<td>Tensile Strength</td>
<td>D638</td>
<td>psi</td>
<td>4,600</td>
<td>5,100</td>
</tr>
<tr>
<td>Tensile Strength at 65°C (150°F)</td>
<td>D638</td>
<td>psi</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Elongation at Break</td>
<td>D638</td>
<td>%</td>
<td>400%</td>
<td>11%</td>
</tr>
<tr>
<td>Tensile Modulus</td>
<td>D638</td>
<td>psi</td>
<td>200,000</td>
<td>190,000</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>D790</td>
<td>psi</td>
<td>4,600</td>
<td>5,100</td>
</tr>
<tr>
<td>Flexural Modulus</td>
<td>D790</td>
<td>psi</td>
<td>174,000</td>
<td>200,000</td>
</tr>
<tr>
<td>Compressive Strength (10% Def)</td>
<td>D695</td>
<td>psi</td>
<td>4,600</td>
<td>5,500</td>
</tr>
<tr>
<td>Compressive Modulus</td>
<td>D695</td>
<td>psi</td>
<td>100,000</td>
<td>200,000</td>
</tr>
<tr>
<td>Izod Impact, Notched</td>
<td>D256 Type A</td>
<td>ft.-lb./in.</td>
<td>1.30</td>
<td>1.20</td>
</tr>
<tr>
<td>Coefficient of Friction, Dynamic</td>
<td>QTM55007</td>
<td>---</td>
<td>0.20</td>
<td>0.25</td>
</tr>
<tr>
<td><strong>ELECTRICAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface Resistivity per Square</td>
<td>D257</td>
<td>ohm</td>
<td>&gt;= 1.00e + 15 ohm</td>
<td>&gt;= 1.00e + 15 ohm</td>
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<tr>
<td><strong>THERMAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CTE, Linear</td>
<td>E831</td>
<td>µin/in-°F</td>
<td>61.0</td>
<td>---</td>
</tr>
<tr>
<td>Melting Point (Crystalline, Peak)</td>
<td>D3418</td>
<td>°F</td>
<td>260°</td>
<td>327°</td>
</tr>
<tr>
<td>Maximum Service Temp., Air</td>
<td>Long Term</td>
<td>°F</td>
<td>180°</td>
<td>180°</td>
</tr>
<tr>
<td>Deflection Temp. at 1.8 MPa (264 psi)</td>
<td>D648</td>
<td>°F</td>
<td>176°</td>
<td>210°</td>
</tr>
<tr>
<td>Flammability, UL94 (1/8&quot;)</td>
<td>Est Rating</td>
<td>---</td>
<td>HB</td>
<td>HB</td>
</tr>
<tr>
<td><strong>COMPLIANCE PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3A-Dairy</td>
<td>---</td>
<td>---</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Canada AG</td>
<td>---</td>
<td>---</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>FDA</td>
<td>---</td>
<td>---</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>NSF</td>
<td>STD 2 &amp; 51</td>
<td>---</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>USDA</td>
<td>---</td>
<td>---</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>USP Class VI</td>
<td>---</td>
<td>---</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note: Values listed are typical and are meant only as a guide to aid in design only. As always we highly recommend testing any new material in the application first before converting over to new material based on guide data information alone. Applications and usage vary and Alro does not guarantee any results as this data is for information only.
Cutting Board
King CuttingBoard®

King CuttingBoard® is an exceptionally white natural polyethylene color, creating the bright, clean sanitary look that commercial food processing operations require. Bacteria, odors and cleaning fluids wash completely off. King CuttingBoard® won't dull knives like wood. It is made to last in the most demanding commercial environments. It is easy to clean, easy to maintain and will not rot or splinter and complies with FDA and NSF guidelines for sanitary work surfaces.

King CuttingBoard® XL is an exceptionally white natural polyethylene color, creating the bright, clean, sanitary look that commercial food processing operations require. The sheets are approximately one-third lighter in weight than standard King CuttingBoard®, allowing for easy handling and cleanup. Bacteria, odors and cleaning fluids wash completely off. King CuttingBoard® XL won't dull knives like wood. King CuttingBoard XL is tested and certified by the NSF and the material is FDA approved. It is made to last in the most demanding commercial environments. It is easy to clean, easy to maintain, and will not rot or splinter.

Typical Features:
- FDA and NSF certified for food contact
- Will not rot, swell, splinter or delaminate when exposed to water
- Durable matte-textured surface on both sides
- Extremely flat and consistent sheets
- Easy to fabricate with standard woodworking tools

Product Applications:
- Cutting boards
- Restaurants
- Kitchens

CuttingBoard® and XL

<table>
<thead>
<tr>
<th>Standard Thickness (inches)</th>
<th>1/4”</th>
<th>1/2”</th>
<th>3/4”</th>
<th>1”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Sheet Size (inches)</td>
<td>48 x 96 and 60 x 120</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Standard Sheet Color</td>
<td>White (Polyethylene)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How to clean: Scrub the material with a strong bristle brush and professional-strength detergent to remove any detritus or stains. Rinse with hot water. Sanitize with a ten percent bleach solution. Rinse thoroughly with cold water.

King CuttingBoard® materials are dishwasher safe. Remove from the dishwasher before the drying cycle for the best result. Allow to air dry.
## Cutting Board
### King CuttingBoard®

<table>
<thead>
<tr>
<th>PROPERTY TESTED</th>
<th>ASTM</th>
<th>UNITS</th>
<th>CUTTINGBOARD®</th>
<th>CUTTINGBOARD® XL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHYSICAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>D1505</td>
<td>g/cc</td>
<td>0.955</td>
<td>0.77 &amp; 0.7187</td>
</tr>
<tr>
<td>Tensile Strength at Yield</td>
<td>D638</td>
<td>psi</td>
<td>&gt;4,100</td>
<td>&gt;3,300</td>
</tr>
<tr>
<td>Tensile Modulus</td>
<td>D638</td>
<td>psi</td>
<td>255,000</td>
<td>165,000</td>
</tr>
<tr>
<td>Elongation at Yield</td>
<td>D638</td>
<td>%</td>
<td>9.8</td>
<td>9.6</td>
</tr>
<tr>
<td>Elongation at Break</td>
<td>D638</td>
<td>%</td>
<td>&gt;600</td>
<td>---</td>
</tr>
<tr>
<td>Flexural Modulus</td>
<td>D790</td>
<td>psi</td>
<td>185,000</td>
<td>130,000</td>
</tr>
<tr>
<td>Flexural Modulus at 5% Strain</td>
<td>D790</td>
<td>psi</td>
<td>3,810</td>
<td>2,990</td>
</tr>
<tr>
<td>Compressive Properties 10% Strain</td>
<td>D695</td>
<td>psi</td>
<td>4,950</td>
<td>2,910</td>
</tr>
<tr>
<td>Hardness, Durometer</td>
<td>D2240</td>
<td>Shore D</td>
<td>68</td>
<td>64.9</td>
</tr>
<tr>
<td>Tensile Impact</td>
<td>D1822</td>
<td>ft. lbs./in.²</td>
<td>115</td>
<td>---</td>
</tr>
<tr>
<td>Izod Impact</td>
<td>D256</td>
<td>ft. lbs./in.²</td>
<td>1.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Brittleness Temperature</td>
<td>D746</td>
<td>°C (°F)</td>
<td>&lt; -76° (&lt; -105°)</td>
<td>---</td>
</tr>
<tr>
<td>Vicat Softening</td>
<td>D1525</td>
<td>°C (°F)</td>
<td>123° (253°)</td>
<td>---</td>
</tr>
<tr>
<td>Heat Deflection Temp., at 66 psi</td>
<td>D648</td>
<td>°C (°F)</td>
<td>75° (167°)</td>
<td>87° (188°)</td>
</tr>
<tr>
<td>Screw and Nail Withdraw</td>
<td>D1761</td>
<td>lbs</td>
<td>657 &amp; 63</td>
<td>325 &amp; ---</td>
</tr>
<tr>
<td>Flammability</td>
<td>UL94</td>
<td>Rating</td>
<td>HB</td>
<td>---</td>
</tr>
</tbody>
</table>

*All values are determined on specimens prepared according to ASTM standards. Nominal values should not be interpreted as specifications.

King CuttingBoard® is made entirely from FDA and USDA approved materials
King CuttingBoard® meets ASTM D4976 PE235
King CuttingBoard® is NFS approved for Standards 2 & 51

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*King CuttingBoard and King CuttingBoard XL have both been tested and certified by the NSF and the materials are both FDA approved for food contact.*
Cutting Board
King CuttingColors®

King CuttingColors® is a NSF-certified family of color-coded cutting board sheets in five different industry-standard colors to help combat cross contamination. A textured matte finish and solid surface provide a stable and sanitary work area. It is available in large sheets that can be cut to fit most counter tops. Bacteria, odors and cleaning fluids wash completely off. King CuttingColors® won’t dull knives like wood. It is produced with the same FDA and NSF certification as King CuttingBoard®.

How to clean: Scrub the material with a strong bristle brush and professional strength detergent to remove any detritus or stains. Rinse with hot water. Sanitize with a ten percent bleach solution. Rinse thoroughly with cold water. King CuttingColors® materials are dishwasher safe. Remove from the dishwasher before the drying cycle for the best result. Allow to air dry.

Typical Features:
- Five different colors to help combat cross-contamination
- FDA and NSF certified for food contact
- Will not rot, swell, splinter or delaminate when exposed to water
- Durable matte-textured surface on both sides
- Extremely flat and consistent sheets
- Easy to fabricate with standard woodworking tools

King CuttingColors®

Standard Thickness (inches) : 1/2" and 3/4" thick
Standard Sheet Size (inches) : 48" x 96"
Standard Sheet Color : Red (meat), Green (vegetables), Blue (seafood), Yellow (poultry) and Tan (cooked meats)
## Cutting Board

**King CuttingColors®**

<table>
<thead>
<tr>
<th>PROPERTY TESTED</th>
<th>ASTM</th>
<th>UNITS</th>
<th>CUTTINGCOLORS®</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHYSICAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>D1505</td>
<td>g/cc</td>
<td>0.955</td>
</tr>
<tr>
<td>Tensile Strength at Yield</td>
<td>D638</td>
<td>psi</td>
<td>&gt;4,100</td>
</tr>
<tr>
<td>Tensile Modulus</td>
<td>D638</td>
<td>psi</td>
<td>255,000</td>
</tr>
<tr>
<td>Elongation at Yield</td>
<td>D638</td>
<td>%</td>
<td>9.8</td>
</tr>
<tr>
<td>Flexural Modulus</td>
<td>D790</td>
<td>psi</td>
<td>185,000</td>
</tr>
<tr>
<td>Flexural Modulus at 5% Strain</td>
<td>D790</td>
<td>psi</td>
<td>3,810</td>
</tr>
<tr>
<td>Compressive Properties, 10% Strain</td>
<td>D695</td>
<td>psi</td>
<td>4,950</td>
</tr>
<tr>
<td>Hardness, Durometer</td>
<td>D2240</td>
<td>Shore D</td>
<td>68</td>
</tr>
<tr>
<td>Izod Impact Resistance</td>
<td>D256</td>
<td>ft. lbs./in.²</td>
<td>1.1</td>
</tr>
<tr>
<td>Vicat Softening</td>
<td>D1525</td>
<td>°C (°F)</td>
<td>123° (253°)</td>
</tr>
<tr>
<td>Heat Deflection Temperature, at 66 psi</td>
<td>D648</td>
<td>°C (°F)</td>
<td>75° (167°)</td>
</tr>
<tr>
<td>Screw and Nail Withdrawl</td>
<td>D1761</td>
<td>lbs</td>
<td>657 &amp; 63</td>
</tr>
<tr>
<td>Flammability</td>
<td>UL94</td>
<td>Rating</td>
<td>HB</td>
</tr>
</tbody>
</table>

*All values are determined on specimens prepared according to ASTM standards. Nominal values should not be interpreted as specifications.

This product meets all requirements for the FDA for olefin polymers to be used as articles or components of articles for contact with food as set forth in 21 CFR 177.1520.

King CuttingColors® also meets NSF guidelines.

King CuttingColors comes in five standard colors to help combat cross-contamination. Green (vegetables), Red (meat), Tan (cooked meats), Yellow (poultry) and Blue (seafood).
Densetec® HDPE Cutting Board

Traditional wooden cutting boards are no match for boards fabricated with Densetec® Cutting Board from Polymer Industries. Wood and other materials absorb bacteria, splinter, chip, swell, peel, rot, warp, bend and crack. Densetec® Cutting Board eliminates those problems, substantially outlasting cutting boards made from other materials.

Densetec® Cutting Board is engineered for durability, low maintenance and safety. Its textured, matte surface safely holds food in place without slipping. The “natural” bright white color is favored for its sanitary look.

Knives stay sharp when cutting on Densetec® Cutting Board. Instead of striking a rigid surface that dulls the blade, Densetec® Cutting Board gives on contact. Because of its unique molecular structure, cuts seal and become indiscernible. Over time, using Densetec® Cutting Board can lead to significant savings when compared with other materials.

Densetec® colored cutting board is the perfect choice to help prevent cross contamination of food borne pathogens such as salmonella and E-coli. By color coding the food to the color of the cutting board such as blue for fish, red for red meat, yellow for poultry, etc., the risk of spreading these dangerous microorganisms is greatly diminished.

Typical Features:

- USDA and FDA approved for food applications
- NSF Standard 51 certified
- Easy to clean and fabricate, RoHS and REACH compliant
- Will not rot, swell, splinter, crack, chip or delaminate
- Durable matte-textured surface on both sides
- Will not dull knife blades
- Will not absorb bacteria
- Mildew and moisture resistant
- Chemical and acid resistant
- Stain and odor resistant

Product Applications:

- Buffets
- Salad bars
- Industrial cutting surfaces
- Residential cutting boards
- Commercial cutting boards
- Shelving
- Food stations
- Butcher blocks
- Food preparation area
- Food processing equipment
# Cutting Board

**Densetec® HDPE Cutting Board - Typical Properties**

<table>
<thead>
<tr>
<th>PROPERTY TESTED</th>
<th>ASTM</th>
<th>UNITS</th>
<th>CUTTING BOARD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHYSICAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>D1505</td>
<td>g/cc</td>
<td>0.955</td>
</tr>
<tr>
<td>Melt Index, condition 190°C / 2.16kg</td>
<td>D1238</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Polyethylene Classification</td>
<td>D4976</td>
<td>---</td>
<td>Group 2, Class 3, Grade 5</td>
</tr>
<tr>
<td><strong>MECHANICAL PROPERTIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tensile Strength at Yield</td>
<td>D638</td>
<td>psi</td>
<td>4,000</td>
</tr>
<tr>
<td>Ultimate Elongation</td>
<td>D638</td>
<td>%</td>
<td>&gt; 600%</td>
</tr>
<tr>
<td>Tensile Impact Strength</td>
<td>D1822</td>
<td>ft-lbf/in2</td>
<td>70</td>
</tr>
<tr>
<td>Notched Izod Impact Strength</td>
<td>D256</td>
<td>ft-lbf/in</td>
<td>2.99</td>
</tr>
<tr>
<td>Compressive Stress at Yield</td>
<td>D695</td>
<td>psi</td>
<td>1,500</td>
</tr>
<tr>
<td>ESCR, Condition A (10% Igepal), F50</td>
<td>D1693</td>
<td>hours</td>
<td>45</td>
</tr>
<tr>
<td>ESCR, Condition B (100% Igepal), F50</td>
<td>D1693</td>
<td>hours</td>
<td>35</td>
</tr>
<tr>
<td>Hardness, Durometer</td>
<td>D2240</td>
<td>shore D</td>
<td>64</td>
</tr>
<tr>
<td>Flexural Modulus</td>
<td>D790</td>
<td>psi</td>
<td>200,000</td>
</tr>
<tr>
<td>Coefficient of Friction, Static</td>
<td>D1894</td>
<td>---</td>
<td>0.31</td>
</tr>
<tr>
<td>Coefficient of Friction, Kinetic</td>
<td>D1894</td>
<td>---</td>
<td>0.22</td>
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<tr>
<td><strong>THERMAL PROPERTIES</strong></td>
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<tr>
<td>Coefficient of Linear Therm Expansion</td>
<td>E831</td>
<td>in/in-°F</td>
<td>7.0 x 10^-5</td>
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<tr>
<td>Decomposition Temperature</td>
<td>Union Carbide</td>
<td>°F (°C)</td>
<td>~ 650° (~ 345°)</td>
</tr>
<tr>
<td>Vicat Softening Temperature</td>
<td>D1525</td>
<td>°F (°C)</td>
<td>257° (125°)</td>
</tr>
<tr>
<td>Heat Deflection Temp. at 66 psi</td>
<td>D648</td>
<td>°F (°C)</td>
<td>171° (77°)</td>
</tr>
<tr>
<td>Brittleness Temperature</td>
<td>D746</td>
<td>°F (°C)</td>
<td>&lt; -120° (&lt; -84°)</td>
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<tr>
<td>Glass Transition Temperature</td>
<td>Union Carbide</td>
<td>°F (°C)</td>
<td>-193° (-125°)</td>
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<tr>
<td>Continuous Use Temperature</td>
<td></td>
<td>°F</td>
<td>100° to 180°</td>
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<tr>
<td>Thermal Conductivity</td>
<td>Private Test</td>
<td>BTU-in/h-ft²-°F</td>
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<tr>
<td>Burn Rate</td>
<td>D635</td>
<td>in/min</td>
<td>1</td>
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<tr>
<td>Ignition Temp., Flash Conditions</td>
<td>D1929</td>
<td>°F (°C)</td>
<td>645° (341°)</td>
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<tr>
<td>Ignition Temp., Self Ignition Conditions</td>
<td>D1929</td>
<td>°F (°C)</td>
<td>660° (349°)</td>
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<td>Flame Spread</td>
<td>E84 Tunnel Test</td>
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<tr>
<td>Smoke Developed</td>
<td>E84 Tunnel Test</td>
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<td>350</td>
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<td>Fire Rating</td>
<td>Underwriters Lab</td>
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<td>HB</td>
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<tr>
<td><strong>ELECTRICAL PROPERTIES</strong></td>
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<td></td>
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<tr>
<td>Dielectric Strength</td>
<td>D149</td>
<td>V/mil</td>
<td>510</td>
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<td>Dielectric Constant</td>
<td>D150</td>
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<td>2.35</td>
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<tr>
<td>Volume Resistivity</td>
<td>D257</td>
<td>ohm-in</td>
<td>&gt; 2.3 x 10^15</td>
</tr>
</tbody>
</table>

**Note:** Values listed are typical and are meant only as a guide to aid in design only. As always we highly recommend testing any new material in the application first before converting over to new material based on guide data information alone. Applications and usage vary and Alro does not guarantee any results as this data is for information only.
Cutting Board
Densetec® HDPE Cutting Board

Densetec® Cutting Board

Standard Thickness (inches) : 1/4” up to 1-1/4” thick
Standard Sheet Size (inches) : 48 x 96  48 x 120  60 x 120
Standard Sheet Color : Natural, Red, Yellow, Blue, Green, Beige & Black

Densetec HDPE Cutting Board - Available Surface Finishes

Orange Peel  NSF Logo  Smooth