


Other Plastics

Miscellaneous Plastic Products

PETG	10-2 to 10-4
PET Polyester Film	10-5
Corrugated Plastic Sheet	10-6 to 10-7
ABS Products	10-8 to 10-11
Boltaron®	10-12 to 10-17
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ACM Products	10-22
Alumalite	10-23
Tooling Board	10-24 to 10-27
Urethane/Rubber	10-28 to 10-31
Injection Molded	10-32

 **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.P65Warnings.ca.gov

PETG

Polyethylene Terephthalate-Glycol

PETG offers formability to complex shapes, precise details, deep draws, and compound curves with significant durability. PETG sheet has the impact strength and fabrication ease far superior to that of acrylic with the durability to significantly reduce your packaging and shipping costs. It gives you many advantages of polycarbonate without the high material costs.

Common Trade Names:

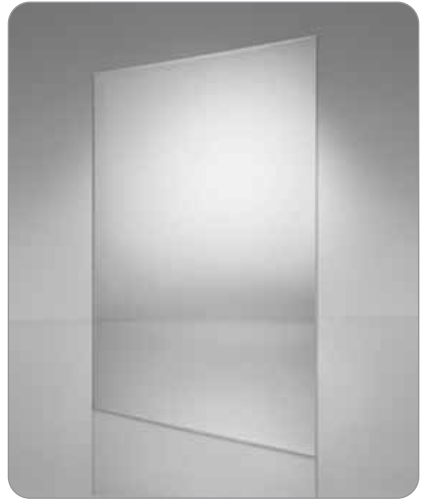
- Eastar™ (Eastman Chemical)
- Prime PETG 14471 (Primex)
- Spectar™ (PolyOne)
- Ultros™ (PolyOne)
- Vipet® (Mulford Plastics)
- VIVAK® (Plaskolite)

Typical Features:

- High impact strength
- Excellent clarity
- Extremely durable
- FDA approved
- Die-cuts and punches easily
- Virtually odorless
- Easily forms at low temperatures

Product Applications:

- Electronic packaging
- Food packaging
- Food handling trays
- Graphic devices
- Medical lab equipment
- Merchandise displays
- Interior signs



PETG Availability

Standard Thickness (inches) :	.020" up to .500" thick
Standard Sheet Size (inches) :	48" x 72" and 48" x 96"
Standard Color :	Clear (A00)

PETG

Typical Properties - VIVAK® PETG

PROPERTY TESTED	ASTM	UNITS	VIVAK® PETG
PHYSICAL PROPERTIES			
Specific Gravity	D792	---	1.27
Water Absorption 24 hrs, @73°F	D570	%	0.20
Light Transmission	D1003	%	86
Refractive Index	D542	---	1.57
Haze	D1003	%	1.0
MECHANICAL PROPERTIES			
Tensile Strength, Ultimate	D638	psi	7,700
Tensile Modulus	D638	psi	320,300
Flexural Strength	D790	psi	11,200
Flexural Modulus	D790	psi	310,000
Shear Strength	D732	psi	9,000
Compressive Strength	D895	psi	8,000
Izod Impact, Notched .125" @ 73°F	D256	ft. •lb./in.	1.70
Izod Impact, Notched .125" @ 32°F	D256	ft. •lb./in.	1.20
Drop Dart Impact .250"	D3763	ft. •lb./in.	22
Rockwell Hardness	D785	R scale	115
THERMAL PROPERTIES			
Heat Deflection Temp @ 264 psi	D648	°F	157
Heat Deflection Temp @ 66 psi	D648	°F	164
Coefficient of Thermal Expansion	D696	in./in./°F	3.8 x 10 ⁻⁵
Glass Transition Temperature	D3418	°F	178
ELECTRICAL PROPERTIES			
Dielectric Constant @ 1kHz	D150	---	2.60
Dielectric Constant @ 1mHz	D150	---	2.40
Dielectric Strength	D149	V/mil	410

Forming & Fabrication:

PETG sheet may be fabricated using conventional thermoforming equipment. It can be used under conditions similar to acrylic sheet for both forming and secondary operations such as cutting, routing, and drilling. The material is also compatible with conventional decorating and mechanical fastening systems.

SHEET TEMPERATURE		
TYPICAL	OPTIMUM	MOLD TEMP.
250°F - 320°F	260°F - 300°F	130°F - 140°F

PETG

VIVAK® PETG Sheet

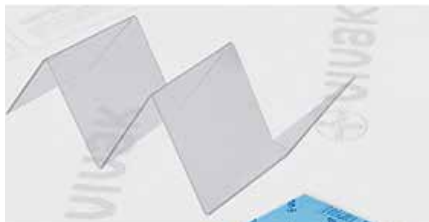
Plaskolite, Inc.'s Vivak® is a transparent, thermoplastic sheet used widely in the point of purchase industry. Vivak® is the brand and market leader for PETG products.

VIVAK® PETG sheet is a transparent co-polyester sheet product that offers a unique balance of physical properties and ease of fabrication. It is ideally suited for complex parts requiring fabrication, including deep thermoforming draws and precise molded-in details.

In addition, VIVAK® sheet is produced using resin that complies with FDA regulations for food contact applications. It is easily decorated by painting, silk screening, or hot stamping. Applications include shelving, greeting card displays, revolving merchandise racks, indoor signs, point of purchase displays, menu boards, photo frames, and slat wall fixtures. Heavy gauge VIVAK® sheet is also used in prosthetic applications.

Typical Features:

- Superior impact strength over Acrylic
- Cost effectiveness compared to Polycarbonate
- Deep draws, complex die-cuts and precise molded-in details
- Die-cuts and punches easily
- Can be bonded or fastened with adhesives
- Easy to fabricate, form, bond and decorate



Product Applications:

- Greeting card and P.O.P. displays
- Merchandise racks
- Store shelving
- Menu boards / Indoor signs
- Photo frames
- Slat wall fixtures

Vivak® PETG

Standard Thickness (inches) :	.020" up to .500" thick
Standard Sheet Size (inches) :	48" x 72" and 48" x 96"
Standard Color :	Clear (A00)

PET

Polyester Film

Polyester film is known for having outstanding mechanical strength, dimensional stability, and chemical resistance. Polyester films have a clear glossy appearance which offers crystal clear transparency. It is easily thermoformed and can be bent into different shapes for packaging applications. It is also available in print treated, slip treated and hard coated 1 side making it ideal for a wide variety of applications.

Common Trade Names:

- Mylar® (Dupont)
- Skyrol® (Monsanto Chemical Corp)
- Melinex® (Dupont)

Typical Features:

- Strong and stiff
- Dimensionally stable
- Transparent
- Good chemical resistance

Product Applications:

- Labels
- Control panels & touch pads
- Membrane switch overlays
- Face shields
- Flexible packaging
- Shims, spacers & gaskets



Other
Plastics

Polyester Film

Standard Thickness (inches) :	.001" up to .014" thick
Standard Sheet Size (inches) :	24" x 48" or in roll form
Standard Finish :	Gloss & high haze
Standard Color :	Clear, natural, white & hazy

PLASTICS GUIDE

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

Product Specifications

RESIN	Polypropylene and polyethylene are both available.
COLORS	White, Ivory, Yellow, Gray, Orange, Blue, Red, Green, Brown and Black.
PRINTABILITY	All corrugated polypropylene is corona treated to accept printing.
OUTDOOR DURABILITY ...	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.
FLAMMABILITY	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.
WATER RESISTANCE	Corrugated plastic sheet is not affected by water.
CHEMICAL RESISTANCE ..	Polypropylene and polyethylene are chemically inert and will not react with most chemicals.
SPECIAL ADDITIVES	Ultra violet stabilizers • Conductive and Anti-Static Static-Free (corona) • Non-Skid coating
FABRICATION	Corrugated plastic sheet can be fabricated using conventional fabrication techniques associated with corrugated fiberboard.

Corrugated Plastic Sheet

Standard Thickness (mm) : **2mm to 25mm thick**

Standard Sheet Size (inches) : **48" x 96"**



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

PROPERTY TESTED	ASTM	UNITS	UNFILLED	FR
PHYSICAL PROPERTIES				
Compressive Strength	D695	psi	---	7,650
Flexural Modulus	D790	psi	340,000	330,000
Flexural Strength at Yield	D790	psi	10,500	9,500
Hardness, Rockwell	D785	---	R105	R97
Izod Impact Strength, Notched @ -40°F	D256	ft•lbs/in	2.7	1.0
Izod Impact Strength, Notched @ 78°F	D256	ft•lbs/in	7.7	4.0
Tensile Modulus	D638	psi	310,000	320,000
Tensile Strength at Yield	D638	psi	6,100	5,500
THERMAL PROPERTIES				
Flammability Rating-UL94 at .058"	---	---	HB	V-0
Flammability Rating-UL94 at .108"	---	---	---	5V-A
Heat Deflection Temp at 66 psi	D648	°F	214°	190°
Heat Deflection Temp at 264 psi	D648	°F	203°	162°
ELECTRICAL PROPERTIES				
Dielectric Strength	D149	V/mil	400	400
MISC PROPERTIES				
Specific Gravity	D792	---	1.04	1.21

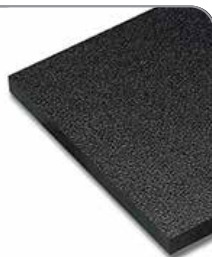


ABS

Product Availability

Extruded Sheet

Standard Thickness (inches) :	.062 .093 .125 .187 .250
Standard Sheet Size (inches) :	48" x 96"
Standard Sheet Color(s) :	Black or White
Standard Sheet Finish :	Haircell one side Smooth both sides



Special alloys, plateable grades, flame retardant and colors quoted on request

Compression Molded Sheet

Standard Thickness (inches) :	1/4" up to 6" thick
Standard Sheet Size (inches) :	24" x 48", 48" x 96" and 48" x 120"
Standard Sheet Color(s) :	Black or Natural (Tan)
Standard Sheet Finish :	Smooth both sides



Rod / Round Stock

Standard Diameters (inches) :	1/4" up to 10" diameter
Standard Rod Length (inches) :	48" and 96", varies by dia.
Standard Rod Color(s) :	Black or Natural (Tan)



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

Standard Thickness (inches) :	1/16" up to 4" thick
Standard Sheet Size (inches) :	24" x 48" and 48" x 96"
Standard Sheet Colors :	Black or Natural (Light Tan)
Thickness Tolerance(s) :	1/16" through 1-1/4" thick = +/- 10% 1-1/2 and over = + tolerance only

 **King Plastic Corporation**
Our Innovation. Your Imagination.®



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

Standard Thickness (inches) :	1/2" up to 3" thick
Standard Sheet Size (inches) :	48" x 96"
Standard Sheet Color(s) :	Black
Thickness Tolerance(s) :	1/2" through 1-1/4" thick = +/- 10% 1-1/2 and over = + tolerance only

King KPC ABS Comparison

PROPERTY TESTED	ASTM	UNITS	KPC ABS BLK/NAT	KPC ABS FR (BLK)
PHYSICAL PROPERTIES				
Density	D1505/D792	g/cc	1.03	1.19
Tensile Strength at Yield	D638	psi	>6,000	>6,400
Elongation at Break	D638	%	40	20
Flexural Modulus	D790	psi	300,000	377,000
Flexural Strength	D790	psi	10,700	---
Durometer	D785	R scale	102	97
Izod Impact	D256	ft.lbs./in. ²	7.70	5.51
Vicat Softening Temperature	D1525	°C (°F)	104°C (219°F)	83°C (181°F)
Heat Deflection Temperature, 66 psi	D648	°C (°F)	94°C (201°F)	87°C (189°F)
Flammability	UL94	Rating	HB	V-0

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
A **SIMONA** Group Company

Boltaron®

Cross Reference Chart - Boltaron®, KYDEX® and 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.

Boltaron® 1165	KYDEX® V	Royalite® R 559
Boltaron® 4205	KYDEX® 6185	n/a
Boltaron® 4330	KYDEX® 100	Royalite® DKE 400
Boltaron® 4330M	KYDEX® 110	n/a
Boltaron® 4335	KYDEX® T	Royalite® R 52
Boltaron® 4343/4353	KYDEX® 150/160	n/a
Boltaron® 4800	KYDEX® 6200	Royalite® R 61
Boltaron® 6530	KYDEX® 430	Royalite® R 59 / R 57 / R 86
Boltaron® 6540	KYDEX® 430	Royalite® R 59 / R 57 / R 86
Boltaron® 6800E	n/a	Royalite® R 60
Boltaron® 9200/9200C	KYDEX® 6185	n/a
Boltaron® 9230/9230C	KYDEX® 6185	n/a
Boltaron® 9250/9250C	KYDEX® 6185	n/a
Boltaron® 9815	KYDEX® 6565	n/a
Boltaron® 9815D	KYDEX® 6565D	n/a
Boltaron® 9815E	KYDEX® 6565	Royalite® R722
Boltaron® 9815M	KYDEX® 6565D	n/a
Boltaron® 9815P	KYDEX® 6565	n/a
Boltaron® 9915FSTH	KYDEX® FST	n/a



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:

PROPERTY TESTED	TEST METHOD*	TYPICAL VALUES	
Specific Gravity	ASTM D792	1.47	1.47
Tensile Strength	ASTM D638	5,200 psi	35.9 MPa
Flexural Strength	ASTM D790	8,800 psi	60.7 MPa
Flexural Modulus	ASTM D790	330,000 psi	2,275 MPa
Izod Impact, Notched at 73°F	ASTM D256	10 ft-lb/in.	534 J/m
Hardness Rockwell	ASTM D785	108 - 111	108 - 111
Heat Deflection (annealed)	ASTM D648	160°F @ 264 psi	71°C @ 1.8 MPa
Flammability - UL	UL 94	V-0 ¹	V-0 ¹
Forming Temperature	---	335 - 385°F	168 - 196°C

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

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 :	Full range of colors
Standard Sheet Finish :	Industry's widest range of textures

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 .65 ft-lb/in (34 J/m), significantly improving the durability of thermoformed components versus FR-ABS and other competitive sheet.

In addition, Boltaron® 4335 is non-hygroscopic, 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.

Typical Features:

- Provides superior durability in use
- Extremely cleanable
- Chemical and impact resistant
- Easy, consistent fabrication
- Won't craze when bent, not notch sensitive



Product Applications:

- Medical device enclosures
- Electronic equipment housings
- Kiosk housings
- Store fixtures and displays
- Kennel housings



Boltaron® 4335

Standard Thickness (inches) :	0.040 up to 0.472 (1 mm to 12 mm)
Standard Sheet Size (inches) :	Widths to 48" (1,220 mm) Lengths to 96" (2,440 mm)
Standard Sheet Color :	Clear with slight blue tint
Standard Sheet Finish :	Smooth

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

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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 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
- 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

Engraving Sheet

Rowmark LaserMark® Engraving Plastic

LaserMark® engraving sheets are a 2 ply acrylic sheet specially designed for a crisp, clean burn. The LaserMark® products give you the ability to create ultra-fine laser lettering, logos, and vector cutouts for sign making designs. These sheets are ideal for indoor use and are laserable, rotary and front engravable, and UV-LED printable. *Not recommended for harsh or high humidity indoor or outdoor applications.

LaserMark® has the capabilities of being beveled, drilled, hot stamped, bonded, heat bendable, laser vector cuts and screen printed.

Product Applications:

- Interior signage
- Industrial signage/tags
- Personal identification
- Safety signage
- Trophies, awards and plaques

Typical Features:

- Easy to create ultra-fine details
- Crisp, clean burn
- Great for indoor use



LaserMark®

Standard Thickness (inches) :	.052" thick
Standard Sheet Size (inches) :	24-1/8" x 48-3/4" (613 mm x 1238 mm)
Standard Sheet Finish :	Matte, non-glare, brushed metal, patterned & gloss
Engraving Depth :	.003" deep

Wide range of color combinations, see website for more information

Engraving Sheet

Rowmark DurMark Engraving Sheet

DurMark engraving sheets are a 2 ply sheet made with a tough 100% acrylic chemical resistant cap layer. These sheets can be easily laser or rotary engraved. The cap layer is a matte finish pressed to an acrylic core making it very durable. DurMark sheets are ideal for outdoor usage because of their ability to withstand increased wear and having great UV resistance. DurMark sheets are laserable, rotary and front engravable, UV-LED printable, UV stable and outdoor weatherable.

DurMark has the capabilities of being beveled, drilled, hot stamped, bonded, heat bendable, laser vector cuts and screen printed.

Typical Features:

- Excellent impact strength
- Chemical resistant
- UV stable

Product Applications:

- Control panels
- Exterior signage
- Industrial signage/tags
- Safety signage
- Recreational signage

DurMark

Standard Thickness (inches) :	1/16" and 1/8" thick
Standard Sheet Size (inches) :	24" x 48"
Standard Sheet Finish :	Matte, non-glare
Engraving Depth :	.005" deep

Colors: Blue/white, yellow/black, pine green/white, dark grey/white, white/red, white/blue

Polystyrene - HIPS

High Impact Polystyrene Sheet

High impact polystyrene (or styrene) is a thermoplastic resin widely used for its easy processing characteristics and low cost. The addition of copolymers may give this material enhanced physical and thermal properties. This thermoplastic is used in disposable items, automobiles, packaging, electronics, housewares and construction. Polystyrene can be extruded, thermoformed and injection molded, and holds its dimensions well under normal use, however should not be used outdoors on a continual basis. Most foods, drinks and typical household acids, alcohol, vinegar and oils have no effect on polystyrene, but most polystyrenes are attacked by citrus fruit, rind oil, turpentine, gasoline, cleaning solutions and nail polish/remover.

Advantages of High Impact Polystyrene :

- **Die Cuttable** - High impact polystyrene is easily die cut into a variety of shapes for many different applications. Typical applications for die cut polystyrene include point of purchase displays, counter cards and record dividers.
- **Thermoformability** - Thermoforming is one of the major consumers of high impact polystyrene. This diverse material can be formed into "popcorn" for packaging, fast-food containers, cups, meat trays and egg cartons. Other uses include building panels and insulation.
- **Offset Printable** - The surface texture and printability characteristics of high impact polystyrene make it an excellent product for many types of offset printing processes.
- **Screen Printable** - High impact polystyrene is a good material for screen printing due to its excellent ink adhesion properties, color quality, low cost and absence of size limitations. Some end uses for printing on high impact polystyrene include, display materials, posters, game boards and signs.

Typical Features:

- Die cut capabilities
- Excellent ink drying surface
- Excellent printing characteristics
- Good thermal & dimensional stability
- Thermoformable
- High degree of hardness
- Low moisture absorption
- Superior air cushioning and static inhibiting surface
- Good combination of surface tension and grain

Polystyrene Sheet

Standard Thickness (inches) :	.015" up to .220" thick
Standard Sheet Size (inches) :	48" x 72", 48" x 96" and 48" x 120"
Roll Stock Available (inches) :	.015 mil and .080 mil
Standard Color :	Black or white

Custom colors, impact modified grades, surface finishes and specialty grades quoted upon request. Please inquire with your Alro Plastics representative.

Polystyrene - HIPS

High Impact Polystyrene Typical Properties

PROPERTY TESTED	ASTM	UNITS	GEN PURPOSE	IMPACT MODIFIED
PHYSICAL PROPERTIES				
Tensile Strength	D638	psi	5,000-12,000	1,500-7,000
Elongation	D638	%	0.50 - 2.00	2.00 - 60.00
Tensile Modulus	D638	10 ⁵ psi	4.0 - 6.0	1.4 - 5.0
Flexural Strength	D790	psi	8,000 - 17,000	3,000 - 12,000
Flexural Modulus	D790	10 ⁵ psi	4.0 - 4.7	1.5 - 4.6
Izod Impact, Notched	D256	ft.·lb./in.	0.20 - 0.45	0.50 - 4.00
Hardness, Rockwell	D785	M	65 - 80	10 - 90
Specific Gravity	D792	---	1.04 - 1.09	1.03 - 1.10
Specific Volume	D792	in ³ /lb.	26.0 - 25.6	28.1 - 25.2
Water Absorption, 24 hrs, .125"	D570	ft.·lbs.	0.03 - 0.10	0.05 - 0.60
THERMAL PROPERTIES				
Thermal Conductivity	C177	---	2.40 - 3.30	1.00 - 3.00
Coefficient of Thermal Expansion	D696	---	3.30 - 4.40	1.90
Deflection Temperature at 264 psi	D648	°F	190° - 220°	160° - 200°
Deflection Temperature at 66 psi	D648	°F	180° - 230°	180° - 220°
Flammability, UL94 (1/8")	---	---	HB	HB
ELECTRICAL PROPERTIES				
Dielectric Strength, short term	D149	V/mil	500 - 700	300 - 600
Dielectric Constant @ 1kHz	D150	---	2.40 - 2.65	2.40 - 4.50
Dissipation Factor @ 1kHz	D150	---	0.0001 - 0.0003	0.0004 - 0.0020
Volume Resistivity, 50% RH	D257	ohm-cm	10 ¹⁷ - 10 ¹⁹	10 ¹⁶
Arc Resistance	D495	---	60 - 135	20 - 100
OPTICAL PROPERTIES				
Refractive Index	D542	---	1.60	---
Transmittance	D1003	%	87 - 92	35 - 57

*10-20% V-2, V-1, and V-0 grades are also available.

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.



ACM

Aluminum Composite Material

ACM is a flat, rigid 3-layer panel consisting of two aluminum sheets bonded to a polyethylene core. ACM is an excellent choice for indoor or outdoor applications that require dimensional stability and low weight.

Typical Features:

- Excellent rigidity and dimensionally stable
- Lightweight; half the weight of aluminum
- Remains flat; doesn't give ripple appearance
- Moisture, corrosion, and chemical resistant
- Available in multiple colors and metallic finishes; single or double-sided
- Can be cut, routed, v-grooved, folded and formed
- Alternative core options with corrugated polypropylene, plywood, or insulated foam core panels

Product Applications:

- Clean Rooms
- Agricultural Grow Rooms
- Industrial Packaging and Equipment
- Equipment Enclosures
- Partitions, Dividers, Kiosks and Barriers
- Exhibits & Displays
- Garage Doors
- Marine
- Recreation vehicles
- Motorsports
- Automotive Aftermarket



ACM Sheets

Standard Thickness (mm) :

3 mm and 6 mm thick

Standard Sheet Size (inches) :

48" x 96" and 60" x 120" Other sizes available by request, minimums apply

Note: Skin thicknesses of aluminum layers vary by application. Flat applications will use thinner skin sheet. If bending or fabricating, skin thickness should be .008 or .012.

Alumalite® Standard

Aluminum Composite Sheet Material

Alumalite® Standard is an aluminum composite sheet with a high density, corrugated polypropylene core. It features double sided aluminum for stability and strength. Alumalite® Standard sheets will not swell, corrode, rot, or delaminate even in prolonged water exposure. Alumalite® Standard sheets have been field tested through extensive freeze/thaw cycling tests with not significant structural panel failure.

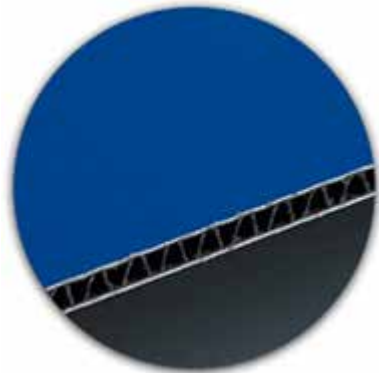
These sheets are a high-quality, low-cost choice for interior and exterior signage applications making them ideal for paints, digital inks(both UV and solvent cured), screen print inks and pressure-sensitive vinyl

Typical Features:

- Class A flame spread rating ASTM E84
- UL recognized component
- Strong and lightweight
- Routs and cuts easily with standard carpentry tools
- Bends around corners

Product Applications:

- Billboards
- Canopies
- Architectural signage
- Scoreboards
- POP/POS displays and signs
- Tradeshow exhibits



Alumalite® Standard

Standard Thickness (mm) :	6 mm and 10 mm thick
Standard Sheet Size (inches) :	48" x 96", 48" x 120", 60" x 96", 60" x 120"
Standard Colors :	White, red, blue, green, yellow, black, silver metallic, ivory, bronze & sand beige

Tooling Board

Alro Plastics offers a full line of Tool Chemical Composites CNC Tooling Planks for computer generated shapes such as models, fixtures, foundry patterns, core boxes, stretch-press dies, stamping dies and prototype tools. These materials are available in a wide range of densities to best fit the task at hand. Several shared characteristics of these planks are excellent dimensional stability, high wear resistance, ease of machining, no grain and low dust when machining.

M700 (Modeling Board)

Medium density, 44#, polyurethane tooling board. Easy to machine, seal and to varnish. It is very dimensionally stable and has low dust formation when milled. Ideal for use in data control models and cubings, master moulds and negatives, moulds for low pressure (RIM) casting and vacuum forming moulds for lower number of pieces.

- Thickness : 1.97", 2.95" and 3.94" thick
- Slab Size : 19.7" x 59.1"
- Color : Light Brown



PP-1052 (Pattern Plank)

The "Red Stuff" is a polyurethane board designed for machining extremely durable & wear resistant foundry patterns, core boxes and other tools that require high wear and impact resistance.

- Thickness : 1", 2", 3", 4", 5" & 6" thick
- Slab Size : 16" x 60", 24" x 60"
- Color : Red



Lab 850

This red pattern board is a proven material for medium-volume foundry patterns, core boxes, gating & risers. It is often used for metal forming, stamping and stretch press dies.

- Thickness : 2", 3" and 4" thick
- Slab Size : 24" x 60"
- Color : Red



Tooling Board

DP-1051 (Die Plank)

An aluminum filled polyurethane board designed for CNC machining of production fixtures capable of withstanding extended use and handling.

- Thickness : 2", 3" and 4" thick
- Slab Size : 16" x 60", 24" x 60"
- Color : Gray



Typical Properties Comparison

PRODUCT NAME	M700	PP-1052	Lab 850	DP-1051
Color	Lt Brown	Red	Red	Gray
Density	0.7 g/cm ³	71 lbs/ft ³	74 lbs/ft ³	52 lbs/ft ³
Hardness at 75°F	64 Shore D	80 Shore D	80 Shore D	75 Shore D
Heat Deflection Temp (264 psi)	172°F	192°F	n/a	188°F
CTE (in/in/°F)	---	3.55 x 10 ⁻⁵	5.30 x 10 ⁻⁵	2.75 x 10 ⁻⁵
Flexural Strength	25 MPa	12,800 psi	8,300 psi	7,180 psi
Flexural Modulus	1,100 MPa	331,000 psi	203,000 psi	317,000 psi
Tensile Strength	---	8,900 psi	5,100 psi	4,820 psi
Compressive Strength	---	10,700 psi	5,900 psi	7,420 psi
Machinability (Cardbide)	Excellent	Excellent	Excellent	Excellent

Tooling Board

Precision Board Plus High Density Urethane PBLT (Low Temp) and PBHT (High Temp)

Precision Board Plus High Density Urethane is a “closed cell” rigid polyurethane product made specifically for applications of up to 200°F continuous exposure. PBLT High Density Urethane is available in a wide range of standard sheet sizes and standard densities and can be cut or bonded into a variety of shapes for final machining or shaping.

The tighter cell structure of the new Precision Board Plus High Density Urethane has produced improved machining characteristics, resulting in more chips and less dust during cutting and machining, making for a better working environment. Higher machine feed rates are easily achieved compared to wood, epoxy or alloy substrates.

Typical Features:

- Less dust, more chips for a better working environment
- Last up to 10x longer than wood
- Closed cell structure, won't absorb anything
- Will not crack, rot or peel
- Easily cut or machined with standard HSS cutting tools
- Meets flammability burn test requirements of ASTM D-1692-74, Far 25.853, Mil-P-26514 and ASTM D635



Product Applications:

- Prototype machining
- Thermoforming
- Vacuum form tooling
- Pattern making
- Soft tooling, all types
- Prepreg composite layup tooling
- Tool proofing
- Master model making
- Indoor & Outdoor signage
- Sculptures & carvings

Precision Board Plus

Standard Thickness (inches) :	1/2" up to 24" thick
Standard Sheet Size (inches) :	20" x 60" 24" x 60" 30" x 80" 48" x 60" 48" x 96" 48" x 120" 60" x 96" 60" x 120"
Standard Densities* :	4 lb/ft ³ 6 lb/ft ³ 8 lb/ft ³ 10 lb/ft ³ 12 lb/ft ³ 15 lb/ft ³ 18 lb/ft ³ 20 lb/ft ³ 30 lb/ft ³ 34 lb/ft ³ 40 lb/ft ³ 48 lb/ft ³ 60 lb/ft ³ 70 lb/ft ³ 75 lb/ft ³

* Densities are in pounds per cubic foot. Custom densities are available upon request.

Tooling Board

Precision Board Material Selection Guide

- Precision Board Low Temperature - For 200° and below usages
- Precision Board High Temperature - For 200° and above usages

	Lower Densities						
	4 lb.	6 lb.	8 lb.	10 lb.	12 lb.	15 lb.	18 lb.
Dimensional Signage (indoor)	PBLT	PBLT	PBLT	PBLT	PBLT	PBLT	PBLT
Dimensional Signage (outdoor)		PBLT	PBLT	PBLT	PBLT	PBLT	PBLT
Landmark Signage				PBLT	PBLT	PBLT	PBLT
Sculpture / Carvings	PBLT	PBLT	PBLT	PBLT	PBLT	PBLT	PBLT
Theme Park Creations / Caricatures	PBLT	PBLT	PBLT	PBLT	PBLT	PBLT	PBLT
Topographical & Architectural Models				PBLT	PBLT	PBLT	PBLT
Composite Layup Tools				PBLT	PBLT	HT LT	HT LT
Aerospace Layup Tools				PBLT	PBLT	HT LT	HT LT
Automotive Layup Tools				PBLT	PBLT	HT LT	HT LT
Foundry Patterns						PBLT	PBLT
Prototype Patterns						PBLT	PBLT
Vacuum Form Models							
Autoclave Tools							

	Higher Densities						
	20 lb.	30 lb.	40 lb.	48 lb.	60 lb.	70 lb.	75 lb.
Dimensional Signage (indoor)	PBLT	PBLT					
Dimensional Signage (outdoor)	PBLT	PBLT					
Landmark Signage							
Sculpture / Carvings	PBLT	PBLT					
Theme Park Creations / Caricatures	PBLT	PBLT					
Topographical & Architectural Models	PBLT	PBLT	PBLT	PBLT	PBLT	PBLT	PBLT
Composite Layup Tools	HT LT	HT LT	HT LT	HT LT	HT LT	HT LT	HT LT
Aerospace Layup Tools	HT LT	HT LT	HT LT	HT LT	HT LT	HT LT	HT LT
Automotive Layup Tools	HT LT	HT LT	HT LT	HT LT	HT LT	HT LT	HT LT
Foundry Patterns	PBLT	PBLT	PBLT	PBLT	PBLT	PBLT	PBLT
Prototype Patterns	PBLT	PBLT	PBLT	PBLT	PBLT	PBLT	PBLT
Vacuum Form Models	PBHT	PBHT	PBHT	PBHT	PBHT	PBHT	PBHT
Autoclave Tools	HT LT	HT LT	HT LT	HT LT	HT LT	HT LT	HT LT

The information in the chart above represents PBLT and PBHT densities most commonly used for a particular application. Because performance requirements for each specific project vary based on considerations such as, the need for impact and abrasion resistance; compression, shear and tensile strength required; degree of edge detail needed; level of surface smoothness required; and weight (among others), Coastal Enterprises is providing this information to serve only as a general guide. Please contact us, our product experts will be happy to help you make the right product selection.

Other
Plastics

PLASTICS GUIDE



Urethane / Rubber

Polyurethane / Urethane

Polyurethane is a unique material that offers the elasticity of rubber combined with the toughness and durability of metal. Because urethane is available in a very broad hardness range (eraser-soft to bowling-ball-hard), it allows the engineer to replace rubber, plastic and metal with the ultimate in abrasion resistance and physical properties.

Polyurethane can reduce plant maintenance and OEM product cost. Many applications using this ultra-tough material have cut down-time, maintenance time and cost of parts to a fraction of the previous figures. Polyurethane can be cast to size or to print using a mold. It is available in a wide range of colors and hardnesses.

Typical Features:

- Superior cut and abrasion resistance
- Lightweight, ability to "self-heal"
- Can be formulated to possess specific properties (i.e. coefficient of friction, resiliency and compression set can be formulated high or low)
- Excellent resistance to ozone and aging
- Can be molded and bonded to a variety of substrates
- Resistant to many oils and solvents
- Outstanding low temperature properties

Product Applications:

- Bumper pads
- Chutes & hopper liners
- Cutting surfaces
- Drive belts
- Gaskets & gears
- Impact absorption
- Machinery mounts
- Metals forming pads
- Rollers & covers
- Sound-dampening pads
- Truck beds
- Wear pads



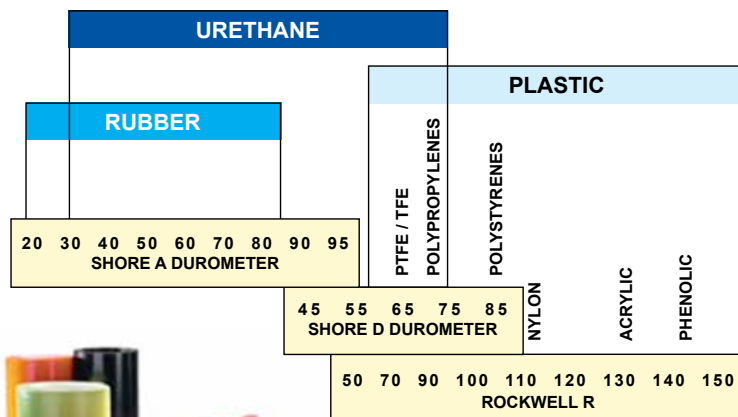
Urethane / Rubber

Polyurethane / Urethane

PROPERTY TESTED	ASTM	80A	90A	95A	60D	75D
Modulus, 100%, psi	D412	800	1,100	1,800	3,000	5,070
Modulus, 300%, psi	D412	1,500	2,200	4,300	6,100	---
Tensile, psi	D412	5,000	5,500	6,500	7,300	7,120
Elongation, %	D412	490	430	380	330	230
Tear, PLI	D470	75	90	130	120	117
Tear, Die, C, PLI	D624	530	600	700	800	---
Bashore Rebound, %	D2632	58	42	40	45	47
Compression Set: 22 hours/158°F, Method B, %	D395-B	25	30	36	40	---
Bell Brittle Point, °F	D2137	-80	-80	-80	-80	-64

Other
Plastics

Hardness Scales:



PLASTICS GUIDE

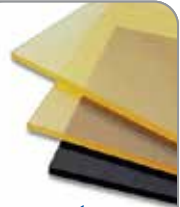
Urethane / Rubber

Open Cast Urethane Sheet and Slab

Our standard flat polyurethane sheet stock material is abrasion resistant, chemical resistant and can be custom made for specific applications. Urethane flat sheet stock material can easily be water-jet cut into custom parts as well. Polyurethane sheet stock has very consistent thicknesses throughout the entire sheet with square corners making water-jet setup and cutting easy. Open cast sheet and slabs can, in most cases, be produced to exact sizes, resulting in 0% scrap.

Urethane Sheet

Standard Thickness (inches) :	1/4" up to 8" thick
Standard Sheet Size (inches) :	24" x 48, 48" x 96", 48" x 120"
Standard Color(s) :	Natural (Amber) & Black, colors by request



Custom colors available upon request, minimums may apply, please inquire

Solid Cast Urethane Rod

Our polyurethane rod is cast in bored and honed molds to ensure the precise roundness and consistent diameter you need for rollers, bumpers, mount and other parts. Rod is available in hardnesses from 40A to 75D. We're happy to provide larger diameters and custom lengths.

Urethane Rod

Standard Diameter (inches) :	1/4" up to 6" dia.
Standard Rod Length (inches) :	36" (3 feet)
Standard Color(s) :	Natural (Amber) & Black



Custom colors available upon request, minimums may apply, please inquire

Urethane / Rubber

Precision Cast Urethane Tube

Our standard polyurethane tube is available in a variety of I.D./O.D. combinations and lengths. We also offer a wide range of hardnesses from 40A up to 75D. Polyurethane tubing is ideal for rollers, bumpers and impact sleeves. Please contact your Alro representative for specific sizes, colors and hardness.

Urethane Tube

Standard Outside Dia. (inches) : 1" O.D. up to 6-1/2" O.D.

Standard Inside Dia. (inches) : 3/8" I.D. up to 5" I.D.

Standard Tube Length(s) (inches) : 36" long (3 feet)

Standard Color(s) : Natural (Amber)



Custom colors available upon request, minimums may apply, please inquire

Custom Molded Urethane Parts

In addition to the standard sheet, rod and tube shapes, we can provide urethane in virtually any shape or size for engineering parts in grain, mining, sand and gravel, crushed stone, aggregate mixing, general bulk handling and other industrial applications. Also available is FDA urethane for food processing parts and the capabilities to make parts for the Aerospace industry. Simply provide Alro Plastics with your print and quantity and let Alro supply you with finished parts. Tooling or mold charges may apply as these are custom parts to print.



Injection Molding

Custom Parts per Print

We partner with injection molders that offer mold and tooling design allowing us to be a single source supplier. Depending on the run of parts injection molding can be a significant cost savings over time making it a short term investment for a long term savings.

Injection molded parts can be used in applications for the wastewater industry, food processing, packaging, forest products, agricultural, manufacturing, maintenance, and many others. Examples of some injection molded materials we can use are UHMW, HDPE, polypropylene, ABS, polyurethane, nylon, acetal, ultem and peek. Reach out for other materials to see if we have a solution for your application.

Other
Plastics



Please inquire with your Alro Plastics representative today!

