



Coroplast® Overview & Product Details

Coroplast's main product is corrugated plastic sheet. This plastic sheet is the building material that will serve so many functions, only your imagination is the limit.

Coroplast comes in a variety of styles, all based upon the Coroplast high quality corrugated plastic sheet. Our standard sheet has been treated to allow for excellent adhesion quality to aid in printing for the graphics arts fields. It is also extremely durable because of its waterproof and resistance to stains and most chemicals.

The name Coroplast' applies to a wide range of extruded twinwall plastic sheet products produced from a high impact polypropylene copolymer. Coroplast uses a copolymer resin in order to increase impact and low temperature performance. Chemically, the sheet is inert, with a NIL pH factor. At regular temperatures most oils, solvents and water have no effect, allowing it to perform under adverse weather conditions or as a product component exposed to harsh chemicals.

All Coroplast twinwall profile sheets can be modified with additives, which are melt-blended into the sheet to meet the specific needs of the customer. Special products that require additives include: ultra violet protection, anti-stat, flame retardant, custom colors, corrosive inhibitors, static-dissipative, etc.

Coroplast products are offered in a wide range of standard and opaque colors. The sheet is extruded in widths across the corrugation up to 106" (corona treated to 102") with gauges ranging from 2mm to 10mm in thickness. We have co-extrusion capabilities for 3MM to 6MM on our 60" line in Dallas and 2MM to 10MM on our 104" line in Vanceburg.

We offer added value services for our customers such as Cad drawings and sample cutting, die cutting, screen-printing, sonic and hot air welding. These services require custom quotes.

Graphics

The Coroplast™ name is known throughout the Sign Industry for a Consistent High Quality Printable Surface. This reputation allows Coroplast™ the recognition of being the material supplied through the largest number of Plastics and Sign Supply Distributors in North America.

Packaging

As a Packaging Material, Coroplast™ is unmatched in durability, design versatility and reusability. No product offers the benefits of Coroplast™ for constructing custom plastic containers and packaging. Where parts protection is essential and cost reduction imperative, the durability Coroplast™ offers is



unequaled. When examining the cost of procuring and the consequent disposal associated with expendable packaging, Coroplast™ is the ideal solution for the environment and the cost conscious manager.

General Properties of Coroplast Plastic Sheets

Technical Bulletin - CSS-011-93

The name Coroplast™ applies to a wide range of extruded twin-wall plastic sheet products base on a high impact polypropylene copolymer.

Coroplast™ is a high-quality polypropylene twin-wall profile sheet formulated specifically for use in the screen printing, display and packaging markets.

Coroplast™ uses a copolymer resin in order to increase impact and low temperature performance. Copolymer resins are also used because they retain the ability to be flexed an unlimited number of times without breaking. We call this unique ability "a living hinge".

Chemically, the sheet is inert, with a NIL pH factor. At regular temperatures most oils, solvents and water have no effect, allowing it to perform under adverse weather conditions or as a product component exposed to harsh chemicals.

All Coroplast™ twin-wall profile sheets can be modified with additives, which are melt-blended into the sheet to meet the specific needs of the customer. Needs that require additives include: ultra violet protection, anti-static, flame retardancy, and color.

Coroplast™ products are offered in a wide range of standard, opaque and translucent colors.

Colors

We offer a wide variety of standard, non-standard and custom colors. Due to variations in display equipment the finished product may vary from the photograph shown. Please contact us for more information or to request color samples.



Recommended Die Cutting Rule

Lead Edge: 3-4 Perimeter
 Minimum Wood: 24x30
 All Dies: 1/2" Wood

2-4 Mil Material	5-7 Mil Material	8 & 10 Mil Material
4 pt. .937 Kleen Kut 13T	4 pt. .990 Kleen Kut 13T	5/8" Wood
4 pt. 910 Scope Across	4 pt. 910 Scope Across	3 pt. 1.250 Shallow Profile
4 pt. .890 Score Around	4 pt. .850 Score Around	4 pt. 1.250 Hard Edge or
		6 pt. 1.250 Kleen Kut
Must have Balance Scores		1/2 Gray Rubber Blocks

Resistance of Coroplast™ to Various Chemicals

Technical Bulletin - CSS-002

A. Organic

Regent	Temperature	
	20°C (68°F)	60°C (140°F)
Acetic Acid (10%)	Nil	Nil
Aceton	Nil	Nil
Ammonium Hydroxide (10%)	Nil	Nil
Benzene	Slight	Moderate
Carbon Tetrachloride	Moderate	Severe
Citric Acid (10%)	Nil	Nil
Cyclohexanol	Nil	Slight
Detergent (2% liquid)	Nil	Nil
Ethanol (96%)	Nil	Nil
Glycerine	Nil	Nil
Isopropyl Alcohol	Nil	Nil
Lactic Acid (20%)	Nil	Nil
Methanol	Nil	Nil
Methyl Ethyl Ketone	Nil	Slight
Nitrobenzene	Nil	Nil
Turpentine	Slight	Moderate
Xylene	Moderate	Severe

B. Inorganic

Regent	Temperature	
	20°C (68°F)	60°C (140°F)
Ammonium Hydroxide (10%)	Nil	Nil
Hydrochloric Acid	Nil	Nil
Hydrogen Peroxide (10%)	Nil	Slight
Nitric Acid (70%)	Nil	Nil
Phosphoric Acid (85%)	Nil	Nil
Potassium Hydroxide (50%)	Nil	Nil
Sodium Hydroxide (50%)	Nil	Nil
Sulphuric Acid (98%)	Nil	Moderate
Sulphuric Acid (10%)	Nil	Nil
Water	Nil	Nil

* Degree of attack after 90 days under test: Concentration of reagent 100% unless stated.

Nil -- Negligible effect

Slight -- Some attack but function of part unimpaired

Moderate -- Satisfactory for some applications

Severe -- Unacceptable

Information supplied by resin manufacturer -- Please **Test** for any questionable use.

General Conversion Information

Technical Bulletin - CSS-005-888

Coroplast Twin-wall Sheets

1. Size

When describing sheet sizes of Coroplast (an extrusion) we always give the across flutes dimension first, the length of the flute second. Note dimension guide.

2. Registration

As a result of the manufacturing process by Coroplast Inc. it is not possible to guarantee square cut sheets "off the line". THE two edges that run the length of the flutes are parallel, but the cross flute edges may be up to 3/8" out of square. For this reason it is important to guide the sheets into conversion equipment by means of the parallel edges. The diagram (Coming Soon) shows an exaggerated view.

Note: The full size of the sheet ordered should always come out after squaring.

3. **Surface treatment (corona discharge)**

Both surfaces are treated full width to accept certain types of inks and adhesives. Some care should be taken in storage and handling to protect this treatment. Handle the sheets as little as possible and keep them well covered to prevent dust and dirt from accumulating. Dirty or finger market sheets may result in adhesion problems.

4. **Temperature**

Coroplast sheets are easier to convert when at room temperature -- always allow sheets which have been at low temperatures to warm up.

Printing: Cold sheets may cause condensation if not allowed to warm up. This will cause adhesion problems.

Die Cutting: Cutting and creasing becomes easier as the temperature increases. At very low temperatures cutting and creasing properties are severely impaired.

5. **Screen Process Printing**

Coroplast is a polyolefin copolymer. This means that it is a nonabsorbent material which requires inks formulated for this type of product.

Printing suggestions and ink supplier information are available in Technical Bulletin CSS-006-786.

6. **Letterpress Printing**

Many converters have obtained good results on Coroplast using this process. Specially formulated oil-based inks are required. Printing speeds are much reduced from the speeds normally associated with corrugated cardboard and the sheets must be stacked vertically after printing until the inks cure in order to prevent offsetting.

We recommend that you discuss this type of ink with your supplier to locate a product compatible with your equipment.

7. **Flexographic Printing**

There have been dramatic developments in the area of Flexo printing of polyolefins. Please contact your suppliers of Flexo inks and explain your specific needs. The correct inks are also used for printing polyethylene bag film material. An additional air/ heat drying source may be required to achieve production speed drying of these inks. Regular rubber plates are appropriate.

8. **Guillotining and Die Cutting**

Coroplast can be die cut or guillotined on standard conversion equipment. Depending on the length of the cut on a guillotine (and flute direction) it may be necessary to reduce the hold down pressure to a very low setting or to block the travel to allow it to just hold. Ten to 15 sheets can be cut at a time on most equipment.

Flat bed die cutters have been very successful with Coroplast. Rotary dies may require experimentation with rule types and high durometer blankets. Unlike paperboard, twin-wall plastic sheets must be **cut** through. Sharp beveled rule requires less pressure for the same cut. A good make-ready that will allow even cutting at minimum pressure will extend die life noticeably. The primary cause of a dull rule on Coroplast dies is the application of excess pressure to a whole die to make a problem spot cut better. Coroplast is more resilient than paperboard and generally requires a wider than usual creasing rule for across flute creasing. The height differential between cutting and creasing rule should also be less than normally used for cardboard especially across the flutes. To "set" a crease, the two skins must crush to touch each other and then have additional pressure applied.

Many successful converters have suggested the following "rule" choices:

Cut -0.937" regular hard, long bevel or double bevel

Length crease-- .900" - 6pt.

Cross crease -- .912"-.918" 6pt. or 4pt. depending on required bend angle (Crease suggestions are for regular 4mm and should be adjusted for other thicknesses).

These discussions are intended as initial guidelines for the conversion of Coroplast. Individual machinery could require conditions or settings that vary from these suggestions. We recommend that customers should carry out their own trials to ascertain the best machine conditions and printing inks for their particular requirements.

Sterilization of Coroplast™

When used in archival, pharmaceutical and hospital applications it is often necessary to have the Coroplast act as a carrier through a sterilization system.

1. Coroplast may be wiped down with **alcohol** with no effect on the material.
2. There are many types of **autoclaves** on the market. Coroplast is being autoclaved (in excess of 3 years) in many situations. There are some extreme settings which will be damaging and we suggest a trial to determine performance in your equipment.
3. **Ethylene oxide gas** sterilization has no effect of any kind on Coroplast and may be repeated any number of times.
4. One of the most damaging forms of sterilization is by the use of **gamma radiation**. A single treatment is not critical; however 4-5 exposures to the Standard AECL-2.5 mega rad dose will be sufficient to make the polymer brittle and initiate breakdown.

General Specifications of Polypropylene co-polymer resin

Density, g/cc ASTM-D782A-2	90
Notched Izod Impact (FT-lbs/in.) ASTM-D256-A @ 70 degrees F	3.0
Tinsel Strength at Yield (psi units) ASTM-D638 2in/min.	4000
Elongation at yield (%)	10
Deflection Temp. degrees F 66psi	194
Water Absorption - 24 hrs, % ASTM-D570	0.02
Falling Weight Impact Strength @ -29degree F (ft.lbs.)	23

Coefficient of Linear Thermal Expansion	-30 degrees C to 0 degrees C	12
	0 degrees C to 30 degrees C	14
(MM/MM/C x [10 to the -5th])	30 degrees C to 60 degrees C	21

Normal temperature performance range	-17 degrees F to 160 degrees F
Melting point	162 degrees C, 324 degrees F

All information has been supplied by resin manufacturers -- Coroplast provides this data as a service and makes no warranty of information beyond our control.

General Specifications -- Explanation of Terms

1. **Density, g/cc, ASTM-D782A:** This test determines the material weight in grams per cubic centimeter, which means 1 cubic centimeter of our polypropylene resin would have an average weight of .9 grams.
2. **Notched Izod Impact, FT-lbs./in., ASTM-D256-A:** This test determines the force used to break a sample of our polypropylene using a pendulum type hammer which is dropped from a standardized distance. A notch is milled into the sample to concentrate stress to that point which promotes a brittle fracture. The tests are reported in terms of energy absorbed per unit of sample width.
3. **Tinsel Strength at Yield, lbs./sq.in., ASTM-D638:** This test determines force taken to break/ tear a polypropylene sample at a speed rat of 2 inches/minute and percentage of elongation at time of yield or break. It took 4000 lbs./sq.in. of force with 10% elongation at time of yield or break.
4. **Deflection Temperature, in Degrees, ASTM-D648:** This test determines at what temperature a polypropylene sample exhibits deformation with a specified force applied to the sample bridged across a test apparatus. The test uses a 66 psi load and a 264 psi load and determines deflection temperature at which point that the sample deforms .010 inch.

5. **Water Absorption, % in 24 hrs, ASTM-D570:** This test determines the relative rate of absorption of water by plastics when submersed for a 24 hour period. Samples are preconditioned (dried) before the test. The moisture content is very intimately related to such properties as electrical insulation resistance, dielectric losses, mechanical strength, appearance and dimensions.
6. **Coefficient of Linear Thermal Expansion, (10 to the -5th) in./in./ degrees F, ASTM-D696:** This test measures the change in length of a specimen under controlled conditions within a specified range of temperatures. The temp. ranges given were use and a calculation done to determine the coefficient linear thermal expansion by multiplying the coefficient times 10 to the -5th, times the length of the sample (in.), times the difference in temp. change in Celsius. **Example: A sample 144" long @ 54 degrees F differential would be calculated as follows: Coefficient = 6.9, thus: (10 to the -5th in./in./degree F) = (6.9 x [10 to the -5th] x 144" x 54 degrees F) = .000069 x 144" x 54 degrees F = .5365"/144"/54 degrees F, thus, a sheet will expand approximately 1/2' in 144' with 54 deg. F range, (32 deg.F to 86 deg.F).**

**Call Professional Plastics at (800) 966-7767 or
E-Mail sales@proplas.com
Order Online at www.professionalplastics.com**