

Corrugated Polycarbonate Install Guide

THE DURALIGHT ADVANTAGE

- Standard Order Ship in 24 Hours
- Value Added Fabrication Services
- No Minimum Order Requirement
- Technical Expertise

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We are committed to providing every customer with The Duralight Advantage

Duralight Plastics is an online distributor of high-quality plastic sheet products for any size project. We offer a wide variety of products ranging from multiwall and corrugated polycarbonate, acrylic, and HDPE sheets to PVC liner panels, interlocking panels, and commercial interior design elements. Most of our products ship from Wisconsin (USA). We regularly ship to all fifty states, as well as Canada.



Standard Orders
Ship in 24 Hours



Value Added
Fabrication Services



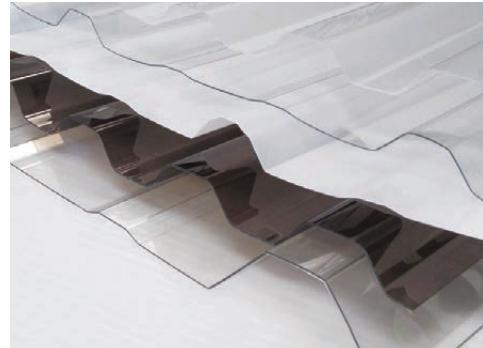
No Minimum Order
Requirement



Technical Expertise

What is Corrugated Polycarbonate?

Made from a high-performance thermoplastic polymer, corrugated polycarbonate (PC) is constructed of a single layer of polycarbonate with "peaks and valleys". Virtually unbreakable, corrugated polycarbonate sheets provide similar optical properties to glass in a much lighter, more durable, glazing product.



Corrugated polycarbonate sheets feature the latest in product technology, offering outstanding physical characteristics such as:

- High Light Transmission
- UV-Protection
- Virtually Unbreakable
- Light in Weight
- Highly Flexible
- Easily Fabricated On-Site
- Matches Metal Profiles
- Long-Term Weatherability

The handling and installation of corrugated polycarbonate sheets is simple and easy. Corrugated sheets are designed to match most standard metal roofing profiles and are available in a wide range of sizes, colors, and translucencies.

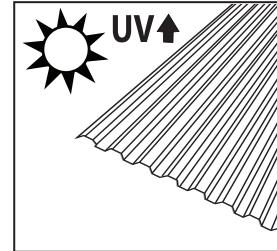
Corrugated polycarbonate is a cost effective daylighting solution for a wide variety of applications where high light transmission is needed in a lightweight sheet, including patio coverings, awnings, pool enclosures, greenhouses, covered walkways, skylights, pergolas, shelters, and sheds.



Performance

UV-Resistance

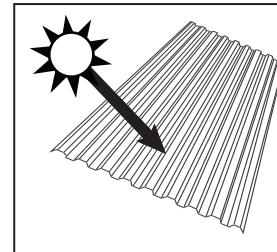
The light and radiant energy from the sun has a harmful effect on polycarbonate. Corrugated polycarbonate features a UV-protected surface that protects the sheet from the sun's damaging effect. This protection blocks out harmful ultraviolet rays and helps the sheet remain clear and non-yellowing for many years with minimal deterioration. When installing corrugated polycarbonate, it is important to have the UV-protected surface facing up or towards the sun.



Note: Exterior side of the panel should have the corrugations pointing down on the sides (like an m).

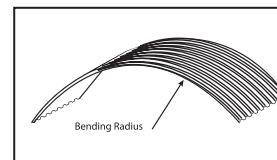
Light Transmission

Corrugated polycarbonate offers a high degree of light transmission due to the sheet's high optical properties with up to 90% light transmission.



Impact Strength and Flexibility

Virtually unbreakable, corrugated polycarbonate sheets are economical and light in weight. These highly flexible sheets can easily be cold-formed and will not crack or splinter when fabricated.



Chemical Resistance

Resistant to some chemicals and non-resistant to others, corrugated polycarbonate sheets are generally unaffected by acids, alcohols, glycols, mineral oil, animal and vegetable fats, kerosene, and non-abrasive cleaners. Check with the manufacturer prior to use or exposure.

Corrugated sheet is affected by benzene, petrol, ketones, acetone, phenols, chlorinated and aromatized hydrocarbons, petroleum-based paints, abrasive cleaners and solvents. Acetaldehyde, acetate acid, acetone, acrylonitrile, ammonia, hydrogen sulfide, benzene, benzoate acid, benzoate alcohol, calcium nitrate bromoxynil, phenol, carbon disulfide, carbon tetrachloride, 5% potassium hydroxide. Solutions, 5% hydroxide solutions or caustic soda, chlorobenzoate, chloroform, cresol, cyclohexanone, cyclohexene, dimethyl formamide, dioxathion, ethylamine, ethyl ether, 2-ethylene, chlorohydrin, gasoline, methyl methacrylate, nitrobenzene, benzoate methylglyoxal, trichloroacetic acid, xylene, ammonia hydroxide, methylethylketone, dichloromethane, polyvinyl chloride, potassium hydroxide, sodium hydroxide and nitric acid.



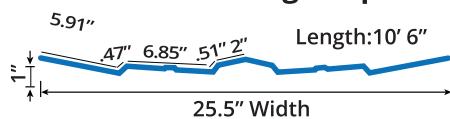
Physical Properties

The following chart provides an overview of the typical physical properties for corrugated polycarbonate sheet products. Actual values may vary depending on specific product and manufacturer.

PROFILE	RIB SPACING	WIDTH	LENGTH	NET COVERAGE	CORRUGATION DEPTH	THICKNESS	LIGHT TRANSMISSION
CoverLite® MR9"	9"	38"	Up to 36'	36"	.75"	0.8mm	Clear: 90% Softlite: 85% Opal: 55% Bronze: 35%
CoverLite® MR9" 1.6mm	9"	38"	Up to 36'	36"	.75"	1.6mm	Clear: 90%
CoverLite® MR9" FLAT	9"	38"	Up to 36'	36"	.625"	0.8mm	Clear: 90% Opal: 55%
CoverLite® MR9" FLAT 1.6mm	9"	38"	Up to 36'	36"	.625"	1.6mm	Clear: 90% Opal: 55%
CoverLite® MR12"	12"	38"	Up to 36'	36"	1.25"	0.8mm	Clear: 90% Softlite: 85% Opal: 55% Bronze: 35%
CoverLite® MR12" 1.6mm	12"	38"	Up to 36'	36"	1.265"	1.6mm	Clear: 90% Opal: 55% Bronze: 35%
CoverLite® Sine Wave 2.67"	2.67"	34"	Up to 20'	32.03"	.87"	0.8mm	Clear: 90%
CoverLite® Greca	3"	26"	8' & 12'	24"	.669"	0.8mm	Clear: 90% Diffused: 89% Smoke: 29%
CoverLite® Greca	3"	51"*	Up to 38'	48"	.5315"	0.8mm	Opal: 55% Bronze: 20%
LEXAN™ Greca	3"	51"*	Up to 38'	48"	.625"	0.8mm	Clear: 90% Softlite: 85% Opal: 52%

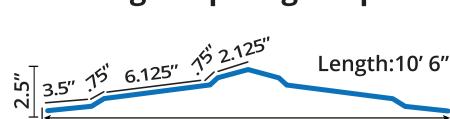
*Overall panel width may vary plus or minus 1/2 inch

Standard Ridge Cap



Clear: 90% | Opal: 55% | Softlite: 85% | Bronze: 35%

High Top Ridge Cap



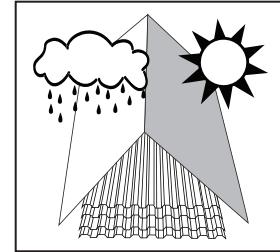
Clear: 90% | Opal: 55% | Softlite: 85%



Transportation, Handling, and Storage

Transportation

- Use a sturdy pallet (or wooden crate) that is as long as the longest sheet.
- Stack horizontally starting with longest sheet on the bottom and going from longest to shortest.
- If using a pallet, secure sheets to limit movement during transport.



Handling

- Even though polycarbonate is durable, protect sheets from abrasion while handling.
- Even though polycarbonate is flexible, do not fold sheets when handling.
- To avoid unnecessary scratches, pick up and carry instead of dragging sheets.
- Do not walk, jump, or drive on sheets!

Storage

- Store sheets on a flat raised surface preferably in a cool, dry place indoors.
- Lay sheets flat and straight, stack shorter sheets on top of longer sheets.
- If kept outdoors, store sheets in a cool and dry place out of direct sunlight.
- Cover sheets with an opaque material that does not absorb or conduct heat.
- Allow for good ventilation to minimize heat and condensation buildup.

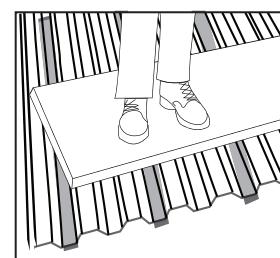
Note: Original crating is not sufficient protection from solar heat gain damage. Warning: If sheets are stored in direct sunlight the sheet's protective masking may be hard to remove.

While in transportation and storage, keep sheets out of direct contact with sunlight, cement, PVC, and paint. Cements and paints are extremely incompatible with polycarbonate. Thick wooden boards work well to isolate sheets while transporting or storing.

Before You Start

Safety Tips

For safe installation of sheets, use ladders, protective goggles, and other necessary safety equipment. If you must walk or kneel on sheets during installation, use a sturdy board long enough to span three structural supports. Never walk on installed sheets or leave unfastened sheets unattended.





Installation Tools

Lightweight and easy to handle, corrugated sheets can be fabricated on site and require no special tools to install. Common tools needed include: table or circular saw with a fine-tooth blade, tin snips, clamps, drill with a $\frac{1}{4}$ " bit, tape measure, utility knife, straight edge, sawhorses, and a ladder.

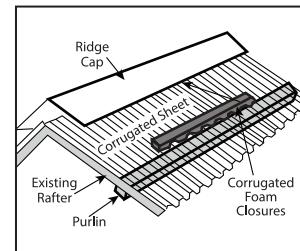
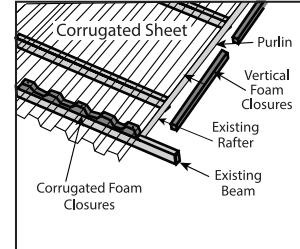
Install Components

Before beginning your project, confirm you have all the necessary install components. Most projects will require one or more of the following:

Foam Closure Strips

Used as fastener supports, foam closures are flexible and can be stretched slightly to align with corrugated polycarbonate sheets. Foam closure strips create a weather-tight seal and are recommended for sealing the opening created where the sheet meets flat surfaces at the flashing, curbs, girts, etc.

- Inside horizontal foam closure strips can be attached directly to the purlins.
- Vertical foam closure strips may be secured to the outside rafters and work well for finishing the outside edges along vertical attachments.
- If you are using a ridge cap, outside horizontal closures may be installed after the sheet is secured to the structure.
- Outside foam closures are used on top of the sheet and can also be used under flashing.



Always check the corrugated sheets and closure strips for proper fit. Closures may come with adhesive, should match sheet profile, and must be compatible with polycarbonate.

FOAM CLOSURE STRIPS		
PRODUCT	SIZE	COLOR
Vertical Foam Closure	1"H x 1"W x 36"L	Gray
Greca Foam Closure	1"H x 36"L	Gray
MR9" Outside / Inside Foam Closure	3/4"H x 36"L	Gray
MR12" Outside / Inside Foam Closure	1 1/4"H x 36"L	Gray

Note: MR9" and MR12" foam closure strips feature an interlocking dovetail end that eliminates gaps in flat, end-to-end joints. Dovetailing speeds installation while ensuring a snug fit with no closure sag out.



Ridge Cap:

A polycarbonate ridge cap is a corrugated flashing solution used to cover the peak where roofing sheets meet along the ridge of a roof. Extremely durable, polycarbonate ridge caps provide natural daylight, eliminate leaks, and are designed to withstand extreme weather conditions, lasting for many years.

- UV protected on the exterior side.
- Resistant to wind uplift, hail, and impact damage.
- Highly flexible, easily bends to match roof pitch.
- For additional install information, see "Polycarbonate RIDGE CAP Installation Guide" or contact Duralight Plastics at 765-560-3872.

Note: For a lean-to type structure with a roof sloping away from a vertical wall, a polycarbonate end wall flashing may be used to prevent leaks (available in Greca only).

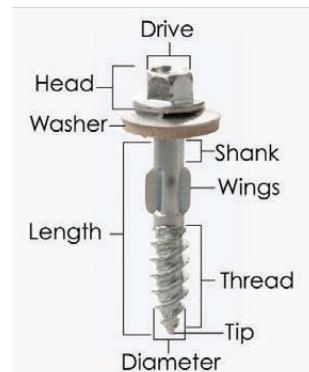
Fasteners:

Choosing the right fastener is essential to any building project. From the framing to sheet installation, it is important to choose the correct fastener for your specific application and material. When the wrong fastener is used, both the fastener and the sheet can fail.

The chart below is a recommended fastener hardware guide for polycarbonate applications.

FASTENERS								
Fasteners	Part No.	Description Thread/Size/Type	Head	Wing	Washer	Color	Structure	Recommended Use
	3330001	CoverLite® 2" #12 x 2" Sharp Tip	Hex	Yes	14mm EPDM	White	Wood	6mm-25mm Multiwall Polycarbonate Corrugated Polycarbonate
	3330002	CoverLite® 2" #12 x 2" Sharp Tip	Hex	Yes	14mm EPDM	Bronze	Wood	6mm-25mm Multiwall Polycarbonate Corrugated Polycarbonate
	3330003	CoverLite® 2" #12 x 2" Sharp Tip	Hex	Yes	14mm EPDM	Unpainted	Wood	6mm-25mm Multiwall Polycarbonate Corrugated Polycarbonate
	3330004	CoverLite® 2" #12 x 2" Self-Drilling/Self-Tapping	Hex	Yes	14mm EPDM	White	Metal	6mm-25mm Multiwall Polycarbonate Corrugated Polycarbonate
	3330005	CoverLite® 2" #12 x 2" Self-Drilling/Self-Tapping	Hex	Yes	14mm EPDM	Bronze	Metal	6mm-25mm Multiwall Polycarbonate Corrugated Polycarbonate
	3330006	CoverLite® 2" #12 x 2" Self-Drilling/Self-Tapping	Hex	Yes	14mm EPDM	Unpainted	Metal	6mm-25mm Multiwall Polycarbonate Corrugated Polycarbonate
	1594389	Multilite® 2" #10 x 2" Sharp Tip	Hex	Yes	Neoprene	Unpainted	Steel	6mm-25mm Multiwall Polycarbonate Corrugated Polycarbonate

Fastener Diagram



Fasteners should penetrate the roof or wall of the structure by at least one (1) inch. At least a 14mm (.551") neoprene bonded washer is recommended for most applications. If aesthetic concerns arise, a smaller washer may be used if it provides a flat bearing surface and creates an effective seal.

If you are uncertain about the type of screw to use for your particular application, please call 765-560-3872 or an email to info@duralightplastics.com.



Sealants:

After the installation is complete, a silicone sealant may be used to keep air, moisture, dirt, and debris from getting underneath the sheet.

- Silicone sealants provide outstanding durability and flexibility.
- It is important to use a quality sealant to mitigate shrinking and cracking.
- Only use a 100% silicone sealant. Other types of caulking or sealants may attack the sheet. Always check the product label to ensure sheet compatibility.

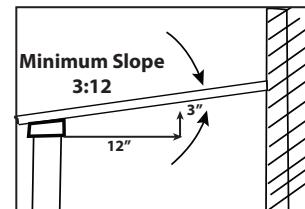
If you have questions concerning the install components required for your project, please call 765-560-3872 or an email to info@duralightplastics.com

Structural Design Guidelines

Pitch

Before building your structure, you will want to determine the pitch of your roof. The slope or angle of a roof is referred to as the pitch. Beyond aesthetics, the main purpose of a roof's pitch is to shed water, snow, and other debris from the roof.

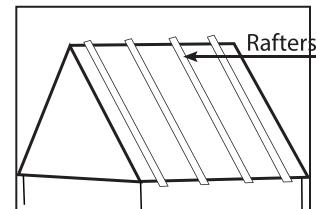
- The pitch of a roof is calculated by the number of inches it rises vertically for every 12 inches it extends horizontally.
- Snow, wind, and weather loads should always be considered when determining your roof pitch.
- A low roof pitch may require additional sealing to ensure weather resistance.
- To ensure proper drainage of roofing systems, a minimum slope of 3:12 is recommended.
- In most pitched roofs, existing rafter and purlin supports will accommodate installation of corrugated sheets.



Rafters

Rafters are sloping beam that make up the main framework of a roof. These framing members typically run from the roof peak to the eaves. Rafters support the weight of the roof and the roof load.

- Rafters are recommended where the sheets join or overlap.
- Rafters should be spaced the net width of the sheet.
- Spacing of existing rafters is a function of design. Check with local building codes to determine how far to space rafters to effectively hold up the weight of the roof and the roof load.



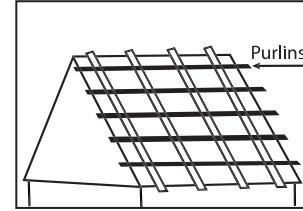
Note: 'On center' is the measurement from the center of one rafter to the center of the next rafter.



Purlins

Purlins are horizontal framing members that span between rafters, providing additional structural support for the roof. Purlins aid in supporting the weight of the roof deck. The roof deck is the 'sheeting' that covers the surface of the roof.

- Minimum recommended nominal size for purlins is 2" x 2" (two-by-two dimensional lumber).
- Always install purlins and space them according to local building codes.
- It is recommended to obtain 40 lbs./sq.ft. loading, purlin spacing should not exceed 24".
- It is important in heavy snow areas to check with code authorities for specific loads and stresses.



Loading

Wind speed is used to determine the actual loading upon the glazing sheet. To allow for local fluctuations of the wind, an appropriate pressure coefficient is included. Snow loading is considered equivalent to a vertically, uniformly distributed load.

PHYSICAL PROPERTIES							PURLIN SPACING	
PROFILE	CORRUGATION DEPTH	PANEL WIDTH	STANDARD LENGTH	NET COVERAGE	RIB SPACING	THICKNESS	END SPAN (RIDGE & GUTTER)	MID SPAN
CoverLite® MR 9"	.75"	38"	436"	36"	9"	0.8mm	24"	24"
CoverLite® MR 9" 1.6mm	.75"	38"	436"	36"	9"	1.6mm	24"	24"
CoverLite® MR9" Flat	.625"	38"	436"	36"	9"	0.8mm	24"	24"
CoverLite® MR 12"	1.25"	38"	436"	36"	12"	0.8mm	24"	24"
CoverLite® MR 12" 1.6mm	1.265"	38"	436"	36"	12"	1.6mm	24"	24"
CoverLite® Sine Wave	.87"	34"	240"	32.03"	2.67"	0.8mm	24"	24"
CoverLite® Greca	.669"	26"	8' & 12'	24"	3"	0.8mm	24"	24"
CoverLite® Greca	.5315"	51"	464"	48"	3"	0.8mm	24"	24"
LEXAN™ Greca	.625"	51"	464"	48"	3"	0.8mm	24"	24"
Always install purlins and space them according to your local building codes!								

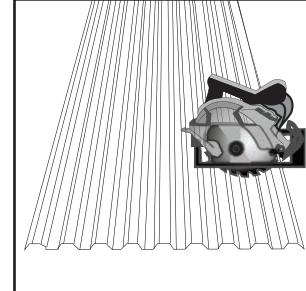


Installation

Cutting

Corrugated sheets can easily be cut with common power or manual tools depending on the type of cut. Generally, a saw blade with more teeth creates a smoother cut but does run hotter. A fine-tooth blade with at least 10 teeth per inch is recommended for a smooth cut. A plywood blade is a good choice.

- Before cutting, clamp the sheet to the work surface to avoid vibration and ensure clean cuts.
- Three or four sheets may be cut at one time.
- A circular saw is recommended for straight, long cuts. To avoid melting the plastic, cut at a high speed but a low advance rate.
- A jigsaw or metal cutting shears works well for cutting curves.
- Tin snips may be used for cutting individual sheets.
- When making pointed turns in the direction of the cut, drill a hole where the two cuts are to intersect, and then cut through the hole.
- Blow off the powder or debris with compressed air prior to installation.



Note: Always wear protective goggles and gloves when cutting corrugated polycarbonate sheets.

Sheet Orientation and Positioning

Install corrugated sheets with the UV protected side up or facing the sun. The masking strip or product label on the sheet indicates which side is protected. Make sure to install corrugated polycarbonate with the sheet edges pointing down – not up. If the sheets are not oriented correctly, the warranty may be voided.

- Begin installation of sheets on the side away from the wind and rain direction.
- The exterior lap edges of the sheet should face away from prevailing winds.
- Sheets should be installed with the ribs running vertically.
- Work 'left to right' or 'right to left'. Do not start from both sides and work to the middle.
- An overlap of at least one corrugation is recommended. Never force sheets to overlap. The upper sheet in the overlap should be in the up-wind direction.
- If necessary, cover longer spans by overlapping sheets a minimum of 3" and a maximum of 6" depending on slope, lower slopes require more overlap and steeper slopes less.
- Sheets should overhang the lowest purlin by at least one (1) inch but no more than three (3) inches.
- Remove masking strip or product label immediately following sheet installation.

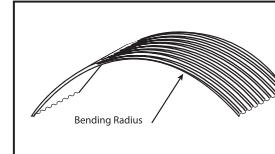
Note: Do not apply sealants between overlapping sheets. Silicone isn't required between overlaps and may cause sheet damage.



Cold Bending

Highly flexible, corrugated polycarbonate sheets may be bent to a variety of diameters. When cold-bending corrugated polycarbonate, the ribs should follow the curve of the sheet.

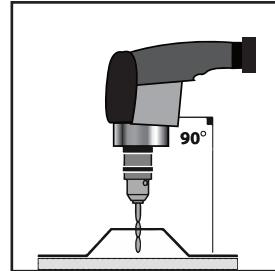
- Bend sheet longitudinally, never across sheet width.
- This maintains sheet strength and ensures ribs are sloped downward for proper drainage.
- Avoid over tensing the sheet. Do not flex or install sheets to the point of buckling.
- For added strength, bury sheets four (4) to six (6) inches into the ground.



Note: Minimum bending radius for Greca corrugated sheets is 158". For MR9 and MR12, call 765-560-3872 to speak to a knowledgeable Duralight associate.

Drilling

Temperature change causes sheets to expand and contract. Any resistance can cause sheet distortion. Always pre-drill holes to allow for thermal movement, providing enough space for seasonal temperature fluctuation.



- Sheets may be drilled using a common power drill intended for metal.
- Drill at a low speed. Support sheet underneath to avoid vibration.
- Pre-drill holes 1/16" times larger than the screw's diameter (not the wing diameter). See fastener diagram on page 7.
- Do not drill within 1.5" from the edge of the corrugated sheet.

Note: Before fastening, clean off the dust or debris from sheet surface with compressed air.

Fastening

Attach sheets to the purlins using fasteners recommended for your specific application. For proper point fastening, at least 14mm (.551") neoprene bonded washers should be used with screws.

- Start fastening the sheet at the bottom, moving toward the top.
- Do not fasten at both ends of the sheet and move towards the middle.
- For roof applications: Fasten sheet at the peak (crest) of every second or third corrugation.
- For wall applications: Fasten sheets in every other valley of the corrugation.
- At ridge and gutter: Fasten sheet edges at the bottom or top every other corrugation.
- Drive fasteners perpendicular to the corrugated sheet.



- Do not over tighten screws. Overtightening will cause sheet distortion, cracks, or fractures.
- A correctly installed fastener will sit flush against the sheet.
- Double check that all fasteners are properly secured.

Note: Avoid installing sheets when temperatures are below 40°F and above 80°F.

The chart below shows recommended fastening patterns for MR12", MR9", and Greca corrugated polycarbonate sheets.

FASTENING PATTERNS		
MR12"	Edge Purlins	
	Internal Purlins	
MR9"	Edge Purlins	
	Internal Purlins	
GRECA	Edge Purlins	
	Internal Purlins	

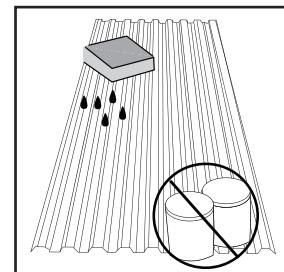
Sealant

After the sheets are installed, points where the sheet meets the building's exterior walls may be sealed with a thin bead of 100% silicone sealant. Always check the product label to ensure polycarbonate sheet compatibility.

Note: Painting polycarbonate sheets is not recommended. If painting is necessary, check with the manufacturer to ensure the paint is compatible with polycarbonate. Never use paint thinner to remove paint from a sheet. It is highly incompatible with polycarbonate.

Cleaning

Periodically cleaning in accordance with guidelines can help prolong the life of the sheets. Use of incompatible cleaning products can cause structural and/or surface damage. Normal dust and dirt accumulation is washed off by the rain. Regular rinsing of sheets with clean lukewarm water is sufficient in dry areas.



- Never use abrasive cleaner, corrosive chemicals, or gasoline.
- Never scrub sheets with brushes, steel wool, or other abrasive materials.
- Don't use squeegees, razorblades, or other sharp instruments to remove deposits or spots.
- Don't clean corrugated polycarbonate in direct sunlight or at high temperatures.



Manual Cleaning – Ideal for Small Areas

- Gently wash sheet with mild household detergent, lukewarm water, and a soft cloth or sponge.
- Thoroughly rinse sheet with clean water and dry with a soft cloth to prevent water spotting.

Automated Cleaning – Ideal for Large Areas

- Use a high-pressure water cleaner (max. 100bar or 1,450psi).
- Always test a small area of the sheet before using the pressure cleaner.
- Use of additives to the water should be avoided.

Note: A good grade of Fels-Napth or isopropyl alcohol may be used to remove fresh paint or grease. Rub lightly with a soft cloth. Afterwards, wash using mild soap and lukewarm water. Rinse thoroughly.

Removing 'Stuck-on Product Label' From Sheet

- First method: Try saturating the label with soapy lukewarm water to loosen the adhesive. The label should remove easily after about 15 minutes of soaking.
- Second method: Wet a soft cloth with rubbing alcohol (isopropyl alcohol). Place the cloth on the label face. Leave it sit until the rubbing alcohol has soaked through the label (approx. 15 minutes). Starting at one corner, carefully peel off label.

Note: For stubborn labels, spray Goo Gone on the face of the label and let it sit for roughly 15 minutes to completely penetrate the label. Begin at one corner of the label and slowly peel off. If you use Goo Gone, MAKE SURE to clean the area where the label was with soapy lukewarm water and rinse thoroughly to remove any oily residue.

Additional Information

If additional technical, loading, or system information is needed, please contact Duralight Plastics. If you have a specific question about requirements in your region, contact your local code office or building inspector.

Drawings and technical reports are provided for reference only. Drawings are not project-specific and are for product representation only. Actual products may vary. These drawings are the property of Duralight Plastics and are to be used solely as a representation of Duralight products. These designs may not be recreated or produced without the expressed, written consent of Duralight.

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