AmeriLux
INTERNATIONAL, LLC

CORRUGATED POLYCARBONATE

Technical & Install Guide

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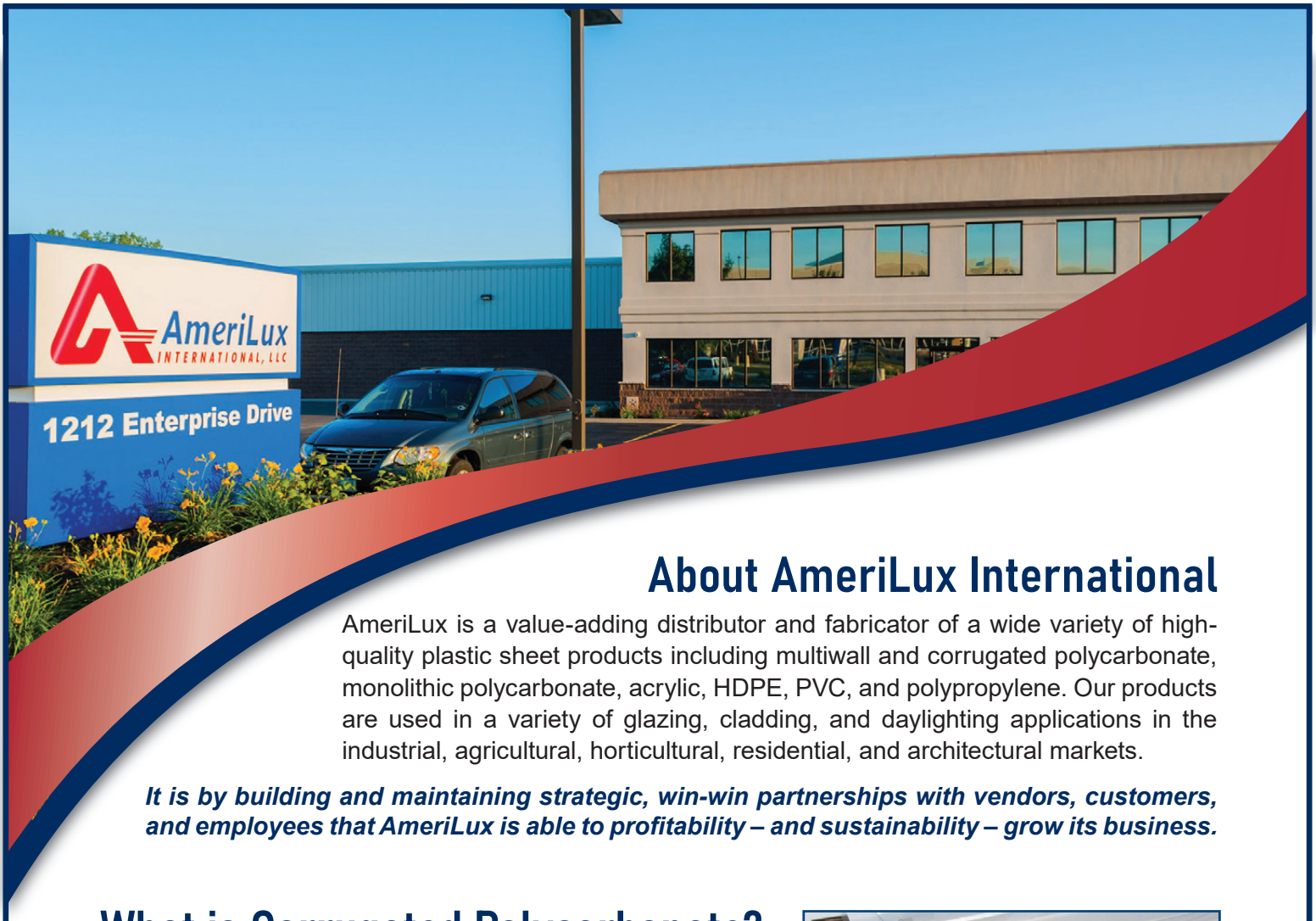
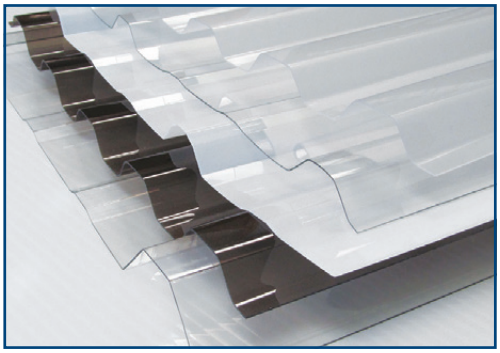


About AmeriLux International

AmeriLux is a value-adding distributor and fabricator of a wide variety of high-quality plastic sheet products including multiwall and corrugated polycarbonate, monolithic polycarbonate, acrylic, HDPE, PVC, and polypropylene. Our products are used in a variety of glazing, cladding, and daylighting applications in the industrial, agricultural, horticultural, residential, and architectural markets.

It is by building and maintaining strategic, win-win partnerships with vendors, customers, and employees that AmeriLux is able to profitability – and sustainability – grow its business.

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:

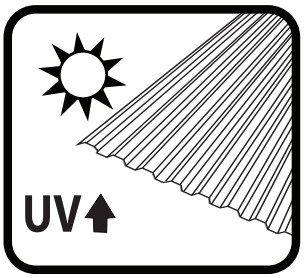
- ***High Light Transmission***
- ***UV-Protection***
- ***Virtually Unbreakable***
- ***Light in Weight***
- ***Highly Flexible***
- ***Easily Fabricated On-Site***
- ***Anti-Drip/Anti Fog Coating*** *(Greca Only)*
- ***Long-Term Weatherability***

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.

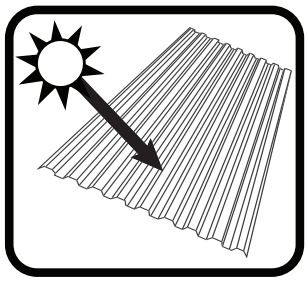
Performance of Corrugated Polycarbonate

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.**

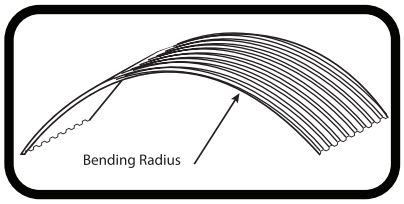
Note: *Exterior side of the panel should have the corrugations pointing down on the sides (like an m).*



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.

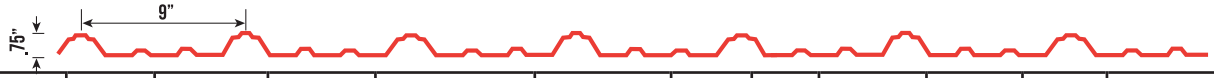
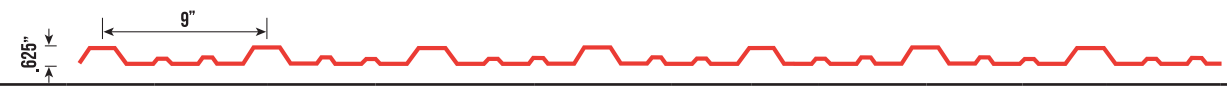
Impact Strength and Flexibility



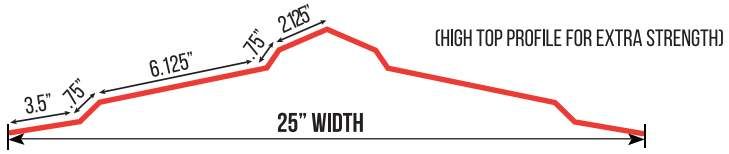
Virtually unbreakable, corrugated polycarbonate sheets are economical and light in weight. These highly flexible sheets can easily be cold-formed and will not crack or splinter when fabricated.

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.

PHYSICAL PROPERTIES						LIGHT TRANSMISSION					PURLIN SPACING	
PROFILE NAME	PANEL WIDTH	STANDARD LENGTH	NET COVERAGE	DIST. BETWEEN CORRUGATIONS	CORRUGATION DEPTH	CLEAR	OPAL	SOFTLITE	BRONZE	SMOKE	END SPAN	MID SPAN
MR 9"	38"	Up to 36'	36"	9"	.75"	90	55	85	35	-	36"	48"
												
MR 9" Flat	38"	Up to 36'	36"	9"	.625"	90	55	N/A	-	-	36"	48"
												

Physical properties chart continues onto next page.

PHYSICAL PROPERTIES						LIGHT TRANSMISSION					PURLIN SPACING	
PROFILE NAME	PANEL WIDTH	STANDARD LENGTH	NET COVERAGE	DIST. BETWEEN CORRUGATIONS	CORRUGATION DEPTH	CLEAR	OPAL	SOFTLITE	BRONZE	SMOKE	END SPAN	MID SPAN
MR 12”	38”	Up to 36’	36”	12”	1.25”	90	55	85	35	N/A	36”	48”
												
Greca	26”	8’ & 12’	24”	3”	.625”	90	N/A	-	-	28	24”	24”
												
Greca	50”	Up to 38’	48”	3”	.625”	90	52	85	25	-	24”	24”
												
Ridge Cap	25”	10’6”	60”	-	-	90	55	85	-	-	-	-
												
Corrugated Polycarbonate | An Economical, High-Performance Glazing Material												

Note: *Information provided is for ‘typical’ application and requirements should be verified.*

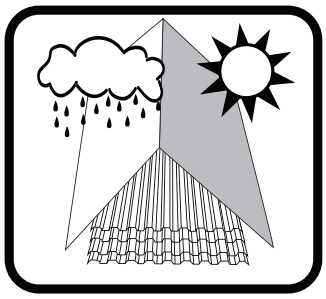
Chemical Resistance

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 aromatize 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.

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

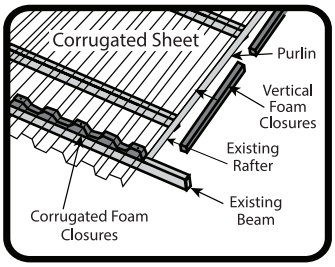
Lightweight and easy to handle, corrugated sheets can be fabricated on site and require no special tools to install. Common tools needed include: table or circular saw with a fine-tooth blade, tin snips, clamps, drill with a ¼" bit, tape measure, utility knife, straight edge, sawhorses, and a ladder.

Install Components

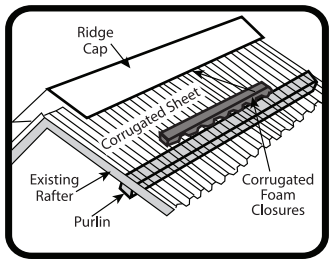
Before beginning your project, confirm you have all the necessary install components. Most projects will require one or more of the following:

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.



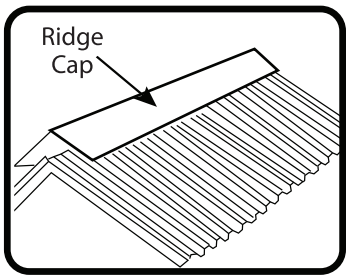
Always check the corrugated sheets and closure strips for proper fit. Closures may come with adhesive, should match sheet profile, and must be compatible with polycarbonate.

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 "AmeriLux Polycarbonate RIDGE CAP Installation Guide" or contact AmeriLux International at 888.602.4441.

***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.

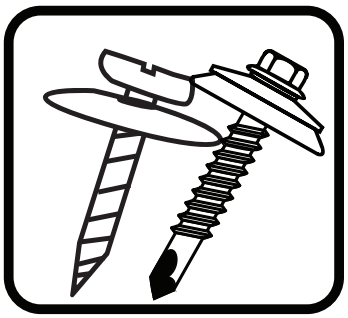
Below is a recommended fastener hardware guide for typical applications:

Wood Structure:
- #12 Woodgrip Screw
- ½" Neoprene Bonded Washer

Metal Structure:
- #12 Self-Drill/Self-Tap Screw
- ½" Neoprene Bonded Washer

Roof Application:
- 2" or 2 ½" Screw

Wall Application:
- 1" or 1 ½" Screw



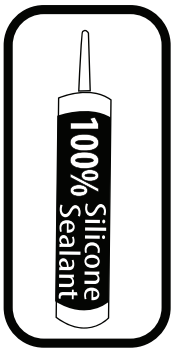
Fasteners should penetrate the roof or wall of the structure by at least one (1) inch. A 1/2" neoprene bonded washer is recommended for most applications. If aesthetic concerns arise, a smaller washer may be used if it provides a flat bearing surface and creates an effective seal.

For help with choosing the right fastener for your project, call 888.602.4441 to speak to a knowledgeable AmeriLux associate.

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.**



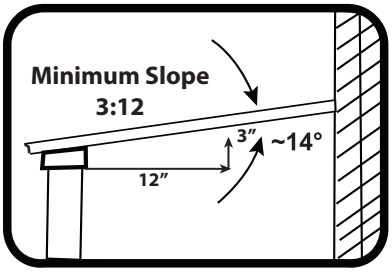
If you have any questions concerning the install components required for your project, please contact AmeriLux International at 888.602.4441 or send an email to info@amerilux.com.

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.

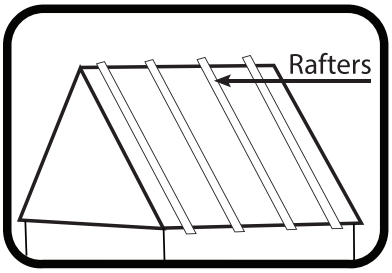
- The pitch of a roof is calculated by the number of inches it rises vertically for every 12 inches it extends horizontally.
- Snow, wind, and weather loads should always be considered when determining your roof pitch.
- A low roof pitch may require additional sealing to ensure weather resistance.
-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



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.

- Rafter are recommended where the sheets join or overlap.
- Rafters should be spaced the net width of the sheet.

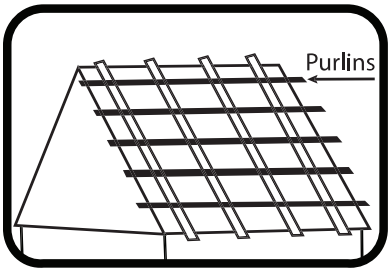


- Check with local building codes to determine how far to space rafters to effectively hold up the weight of the roof and the roof load.
- 'On center' is the measurement from the center of one rafter to the center of the next rafter.

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.
- In heavy snow areas, check with code authorities for specific loads and stresses.



Loading

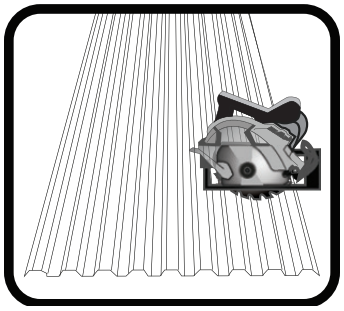
Wind speed is used to determine the actual loading upon the glazing sheet. To allow for local fluctuations of the wind, an appropriate pressure coefficient is included. Snow loading is considered equivalent to a vertically, uniformly distributed load.

PHYSICAL PROPERTIES							PURLIN SPACING (INCHES)	
PROFILE	CORRUGATION DEPTH	PANEL WIDTH	STANDARD LENGTH	NET COVERAGE	DIST. BETWEEN PRIMARY CORRUGATIONS	THICKNESS	END SPAN (RIDGE & GUTTER)	MID SPAN
MR 9"	.75"	38"	436"	36"	9"	0.033" / 0.8mm	36"	48"
MR9" Flat	.625"	38"	436"	36"	9"	0.033" / 0.8mm	36"	48"
MR 12"	1.25"	38"	436"	36"	12"	0.033" / 0.8mm	36"	48"
GRECA	.625"	26"	8' & 12'	24"	3"	0.033" / 0.8mm	24"	24"
GRECA	.325"	50"	464"	48"	3"	0.033" / 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.

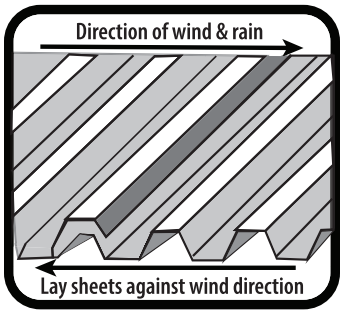


- Before cutting, clamp the sheet to the work surface to avoid vibration and ensure clean cuts.
- Three or four sheets may be cut at one time.
- A circular saw is recommended for straight, long cuts. To avoid melting the plastic, cut at a high speed but a low advance rate.
- A jigsaw or metal cutting 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.

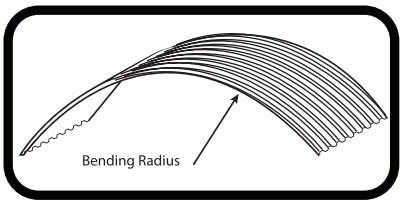


- Begin installation of sheets on the side away from the wind and rain direction.
- The exterior lap edges of the sheet should face away from prevailing winds.
- Sheets should be installed with the ribs running vertically.
- Work ‘left to right’ or ‘right to left’. Do not start from both sides and work 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 four (4) inches.
- 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.

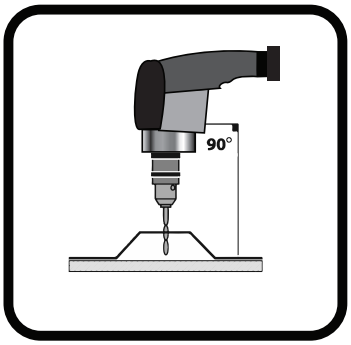


- Bend sheet longitudinally, never across sheet width.
- This maintains sheet strength and ensures ribs are sloped downward for proper drainage.
- Avoid over tensing the sheet. Do not flex or install sheets to the point of buckling.
- For added strength, bury sheets four (4) to six (6) inches into the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

Note: *Minimum bending radius for Greca corrugated sheets is 158". For MR9 and MR12, call 888.602.4441 to speak to a knowledgeable AmeriLux 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.
- Do not drill within 1.5" from the edge of the corrugated sheet.

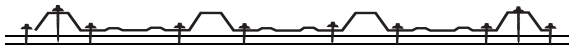
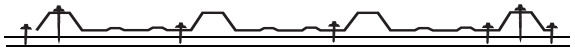
Note: *Before fastening, clean off the dust or debris from sheet surface with compressed air.*

Fastening

Attach sheets to the purlins using fasteners recommended for your specific application. For proper point fastening, 1/2" 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.

The chart below shows recommended fastener patterns for MR12” and MR9” corrugated sheets.

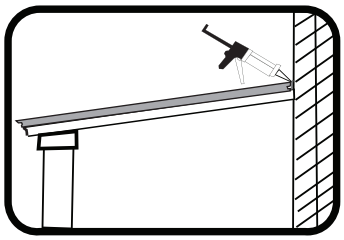
MR12” & MR9” FASTENING PATTERNS		
MR12”	Edge Purlins	
	Internal Purlins	
MR9”	Edge Purlins	
	Internal Purlins	
GRECA	Edge Purlins	
	Internal Purlins	

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

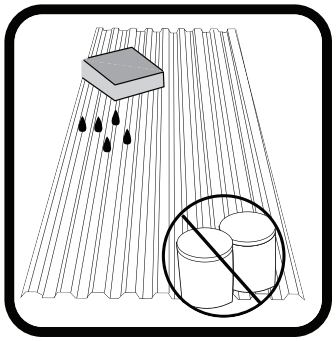
Sealant

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.*

Additional Information

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

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