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Specialty Film & Sheet



# Lexan\* Corrugated sheet

Technical and installation guide

sharing our futures

# LEXAN® Corrugated Sheet – An Economical, High-Performance Glazing Material

LEXAN Corrugated sheet is the product of choice for cost-effective, high light-transmitting, long-lasting glazing applications.

LEXAN Corrugated sheet is inexpensive and easy to install with simple woodworking tools. Light-weight and tough, it can be cold-formed to gentle curves or rolled up for easy handling.

Made from LEXAN polycarbonate – a high-performance SABIC engineering thermoplastic – LEXAN Corrugated sheet offers the clarity of glass, transmitting up to 90% of visible light while filtering out harmful ultraviolet light. Its proprietary integral UV resistance is backed by a 10-year limited warranty\* against yellowing and loss of light transmission.

Its durability and high impact resistance reduce risk of breakage before, during, and after installation.

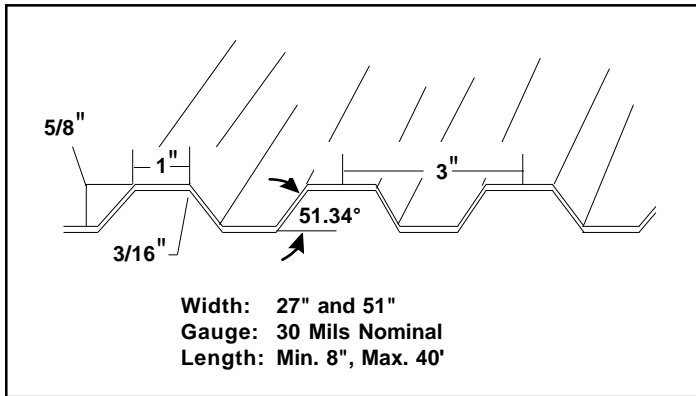


Fig. 1. LEXAN Corrugated Sheet Profile and Dimensions



LEXAN Corrugated sheet provides the crystal clarity you associate with glass – without the heavy weight, high cost and risk of breakage.

\*Details upon request.

## Excellent UV Resistance

LEXAN Corrugated sheet is exceptionally resistant to weathering, as shown in Figure 2. Using proprietary SABIC technology, LEXAN Corrugated sheet is manufactured with an integral layer protecting the sheet from the damaging effects of sunlight. It will remain clear and non-yellowing for many years with minimal deterioration. Light transmittance for clear LEXAN Corrugated sheet remains at 90% even through accelerated Q.U.V. tests.

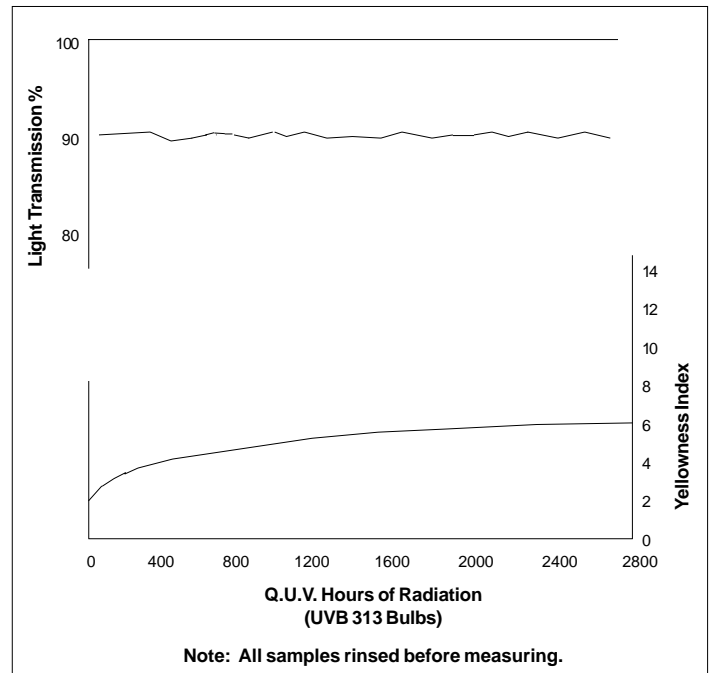


Fig. 2. LEXAN Corrugated Sheet Accelerated Weathering

## Reduced Ultraviolet Transmission

LEXAN Corrugated sheet transmits a high portion of visible light. It is essentially opaque to ultraviolet light at wavelengths below 385 nanometers. LEXAN Corrugated sheet blocks out the harmful UV light.

## High Light Transmission

Clear LEXAN Corrugated sheet transmits visible light as well as glass. Up to 90% of visible light (as measured by ASTM standards and demonstrated in Figure 3) is transmitted through clear LEXAN Corrugated sheet.

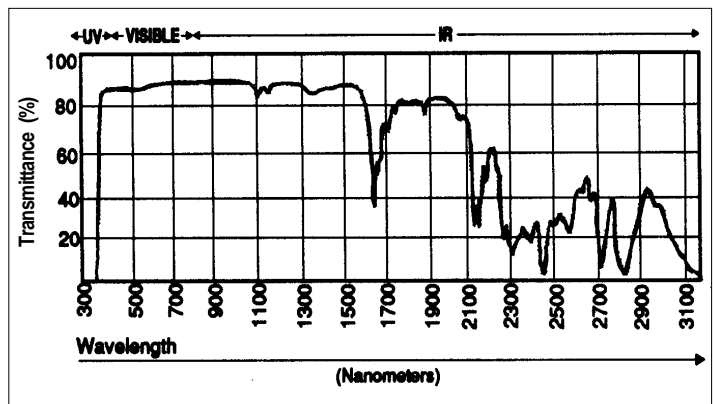


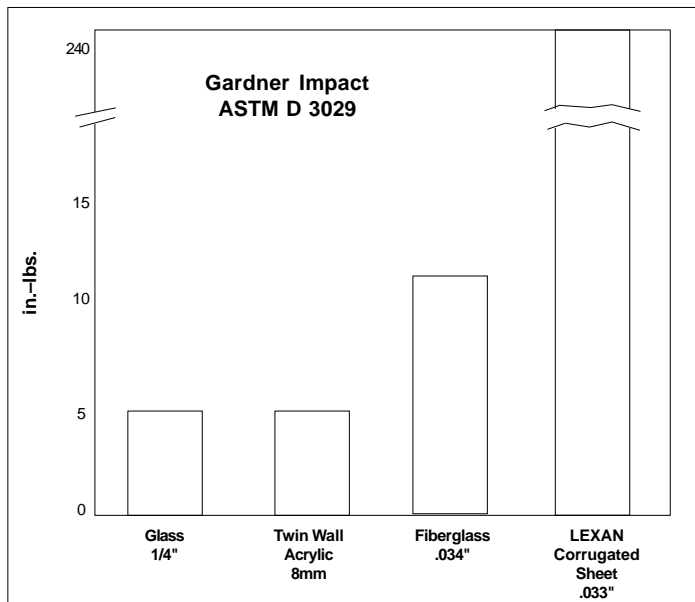
Fig. 3. LEXAN Corrugated Sheet Wavelength Transmission

Property	Eng. (SI) Units	Double-Layer Polyethylene	Fiberglass Panels	1/4" Single-Layer Glass	LEXAN Corrugated Sheet
Impact Strength		Good	Fair	Very Poor	Excellent
Heat Deflection Temperature per ASTM D648	°F (°C)	248 (120)	212 (100)	484 (240)	257 (125)
U Value	Btu/sq.ft./hr. (°F/in.)	.70	1.56	1.13	1.2 (.70 with curtain)
Visible Light Transmittance per ASTM D1003	%	77	86	90	90
Weathering (Light Transmission) After Aging		Fair	Poor	Excellent	Excellent
UV Transmission	%	<3%	20	80	<3%

**Table 1. Comparison of Glazing Materials**

### High Impact Strength

With 20 times the impact resistance of fiberglass and over 40 times the impact resistance of glass or acrylic (Figure 4), LEXAN Corrugated sheet resists hail, wind, and vandalism. At a thickness of .033", LEXAN Corrugated sheet can withstand over 240 inch-pounds of impact. This equates to a 3/4" hailstone falling at 96 miles per hour! LEXAN Corrugated sheet maintains this superior impact resistance at temperatures ranging from -40°F to 250°F.



**Fig. 4. Gardner Impact Comparison (ASTM D 3029)**

### Thermally Insulating

LEXAN Corrugated sheet can help save energy because of its thermal insulating capability. Compared to fiberglass, which has a U-value of 1.56, LEXAN Corrugated sheet insulates with a U-value of 1.2. As an example, this means that a greenhouse located in Denver, CO, would save an average of 300 gallons of oil annually for each 1000 sq.ft. of glazing with

LEXAN Corrugated sheet over fiberglass. Using an energy "curtain/blanket", the U value of LEXAN Corrugated sheet is .70 – equal to double polyethylene film.

	LEXAN Corrugated Sheet	Fiberglass Panels	1/8" Single Layer Glass	Double Layer Polyethylene
U-Value	1.14	1.56	1.13	0.70
U-Value with Energy Curtain	0.70	0.80	0.80	N/A

**Table 2. Calculated U-Value Comparison [Btu/(hr)(sqft)(°F)]**

### Chemically Stable

Although LEXAN Corrugated sheet is unharmed by many chemical substances, it is important to avoid contact with adhesives, paints or solvents which are incompatible with polycarbonate. Chemicals to avoid include benzene, gasoline, acetone, and carbon tetrachloride, among others. Only recommended cleaners should be used to clean LEXAN Corrugated sheet (see "Cleaning" on page 7).

### Low Flammability

LEXAN Corrugated sheet meets the requirements of an approved light-transmitting plastic as described by all three model building codes (ICBO, BOCA, and SBCCI). These include ASTM D635, D1929, and D2843. LEXAN Corrugated sheet exhibits superior flammability performance when compared to typical fiber reinforced polyester (FRP) and acrylic sheet materials.

### Light Weight

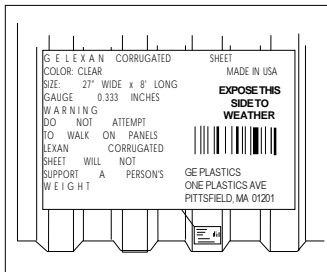
LEXAN Corrugated sheet reduces labor costs because its light weight simplifies handling, transportation, and installation – particularly of long spans in high places. LEXAN Corrugated sheet is only one-quarter the weight of glass on a square-foot basis.

**See cleaning, storage, and warranty information on page 7.**

# Installation Instructions

## Sheet Orientation

Install LEXAN Corrugated sheet with the UV-protected side facing OUT (exposed to the weather) as indicated by the sticker affixed to the UV-protected side of each sheet. To facilitate removal, remove sticker immediately after installation. Always position LEXAN Corrugated sheet so that the ribs run vertically.



## Bending/Burying

LEXAN Corrugated sheet is sufficiently flexible to allow longitudinal curves with a minimum radius of 158" (Figure 5). Flexing or installing a sheet to the point of buckling can cause rapid deterioration in highly-stressed areas.

## Overlaps

On horizontal overlaps, the upper sheet should overlap the lower sheet by 3" to 4" (see Figure 6). Vertical overlap (Figure 7) should be a single corrugation and should be overlapped in the direction of the prevailing wind. Since the finished width of LEXAN Corrugated sheet is 51", the yield from a sheet is 48".

## Cutting

LEXAN Corrugated sheet can be cut with a variety of common hand-held and table-mounted equipment. In general, sharp tooling with fine cutting teeth should be used to minimize vibration and chatter. Sheets should be properly supported along the trim line before cutting.



**CAUTION:** Use appropriate eye and ear protection and exercise caution when operating cutting equipment to protect against injury.

## Circular Saws

Use a fine-tooth, hollow ground panel blade with 10–12 teeth per inch.

## Saber Saws

Saber saws equipped with a fine-tooth blade can also be used, but proper support is recommended.

## Drilling



Drill with a high-speed steel- or carbide-tipped twist drill. Drill holes slightly larger than the fastener to allow for expansion and contraction (e.g., drill a 1/4" hole for a 3/16" screw). Place holes at twice the fastener diameter or 1/2" from the edge of the sheet, whichever is greater.

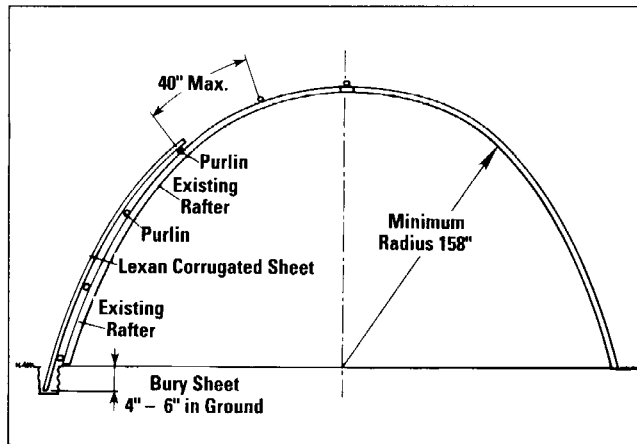


Fig. 5. Bending/Burying Lexan Corrugated Sheet

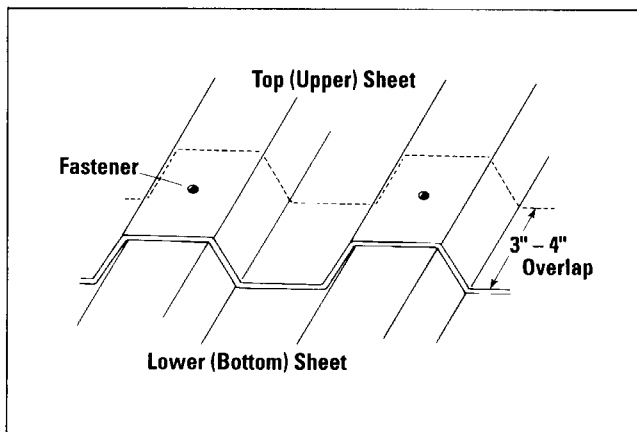


Fig. 6. Horizontal Overlapping Sheets

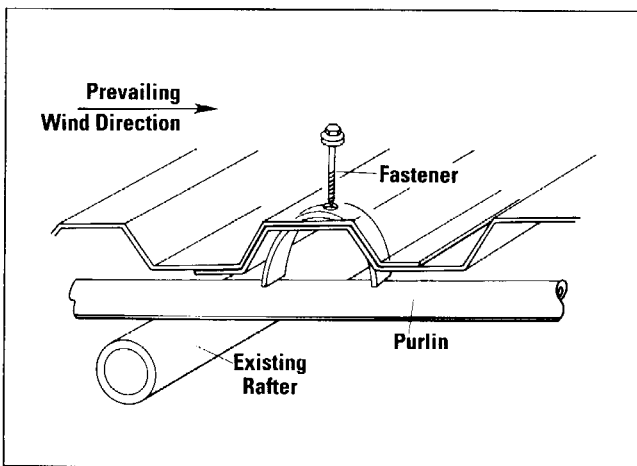


Fig. 7. Vertical Overlapping Sheets

## Accessories

A number of different accessories are available to simplify installation of LEXAN Corrugated sheet (see Figure 8). Self-drilling, self-tapping screws with neoprene washers are for aluminum or steel substructures; woodgrip screws are for wood substructures. Self-tapping screws with sharp points should be used with "no-drip" spacers. All-aluminum BulbTite™ rivets with EPDM washers and low clamp-up pressure (80 lbs. or less), such as those made by Olympic Fastening Systems, can be used to join the sheets.

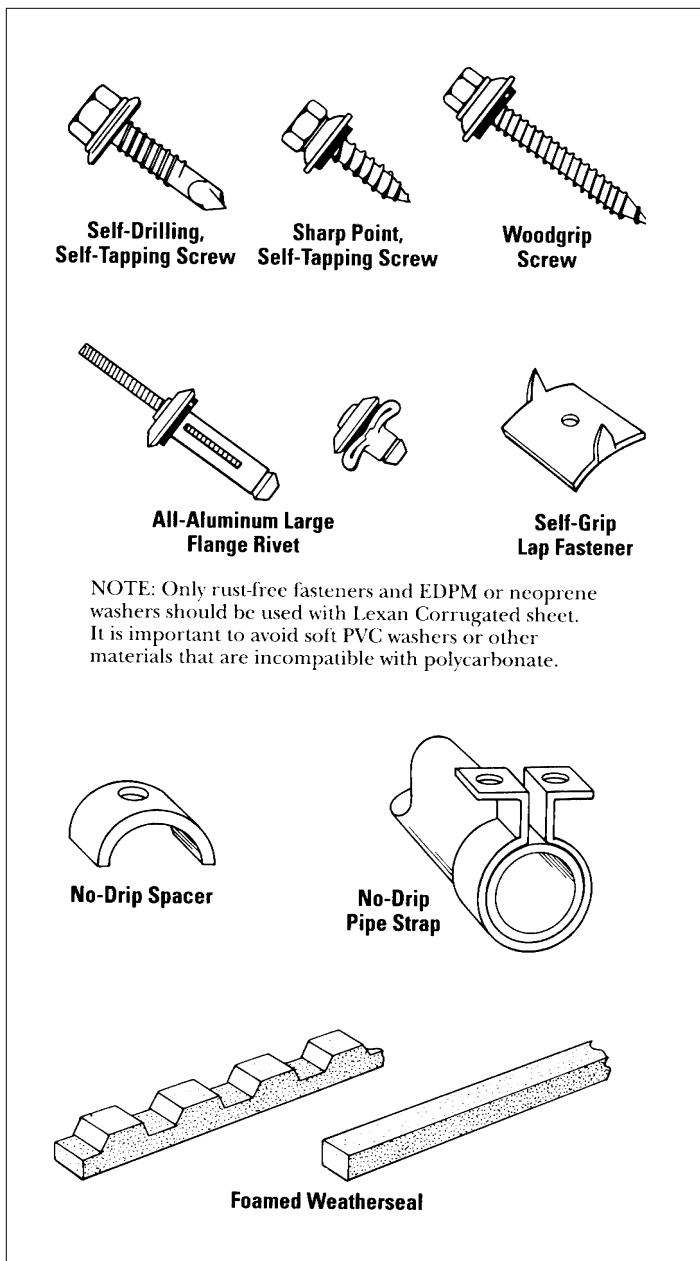


Fig. 8. Available Accessories

\*SABIC Innovative Plastics in no way recommends or warrants these products.

## Sealing

To seal the pitched-roof ridge from the elements, a ridge cap may be formed from aluminum or other suitable material (see Figure 9). The ridge cap should be sealed with foam weatherseal.

Foamed or wood closures may be used at the ridge peak and gutter to seal the glazing (see Figure 10). Closures should have a profile and be made of materials compatible with LEXAN Corrugated sheet. Use a high-quality, compatible sealant such as silicone rubber to seal holes or overlaps. Sources for closures/weatherseals are listed on Page 7.

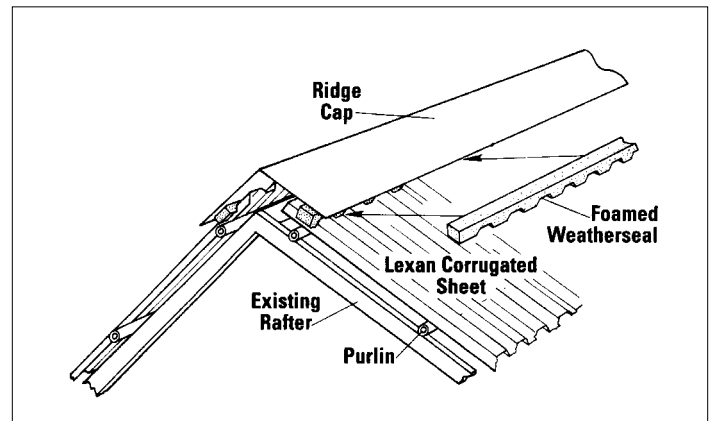


Fig. 9. Ridge Sealing

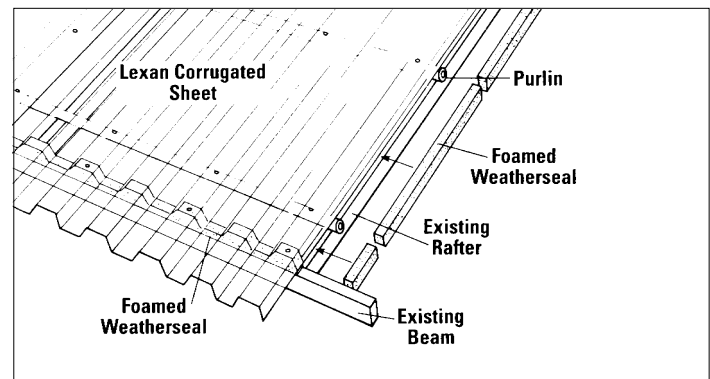


Fig. 10. Peak and Gutter Sealing

## Fastening

Depending on wind exposure, LEXAN Corrugated sheet should be fastened to the substructure at the bottom or top of every other corrugation. At the ridge and gutter, the edges of the sheet should be fastened at the bottom or top of every corrugation.

LEXAN Corrugated sheet can be fastened directly to a wooden or metal substructure. However, care must be taken to avoid contact with chemicals including stains and oils that are not compatible with polycarbonate. (See "Cleaning" on Page 7.)

The screws or rivets used to fasten LEXAN Corrugated sheet should have neoprene or EPDM washers (see Figure 8). If the attachment point is in the valley, another washer should be placed against the inside surface to separate the sheet from the wood or metal and prevent moisture/condensate droplets from developing, as shown in Figure 11. However, if the sheet is fastened through the top of a ridge corrugation, as in Figures 12 and 13, a "no-drip" pipe strap should be used.

Figure 14 suggests a method of fastening vertical overlapping sheets between purlins with all-aluminum large flange rivets. Rivets should be spaced every 8" to 12" along the overlapping joint.

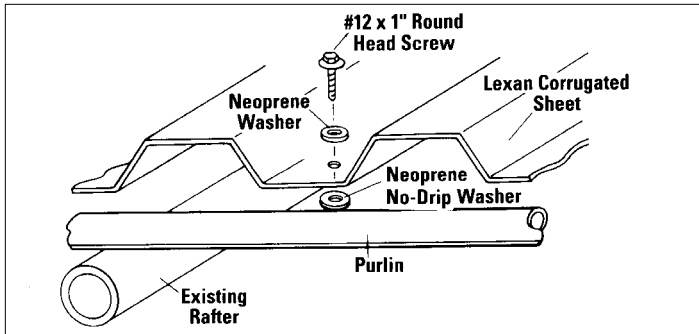


Fig. 11. Fastening to Purlin with "No Drip" Spacer

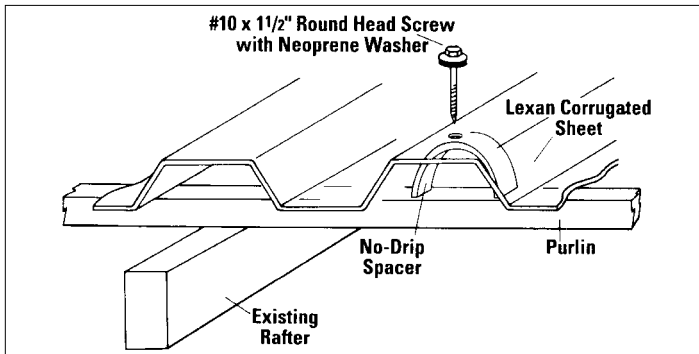


Fig. 12. Fastening to Purlin with Horseshoe "No-Drip" Spacer

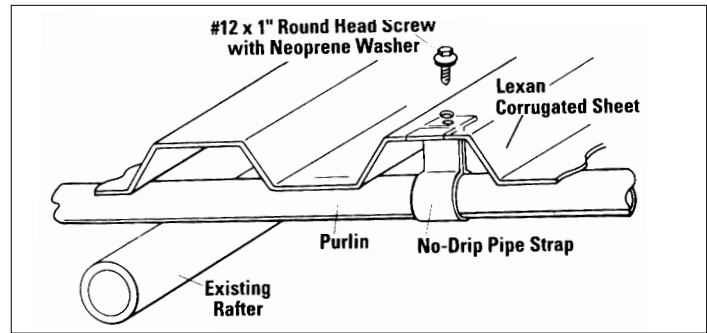


Fig. 13. Fastening to Purlin with "No-Drip" Pipe Strap

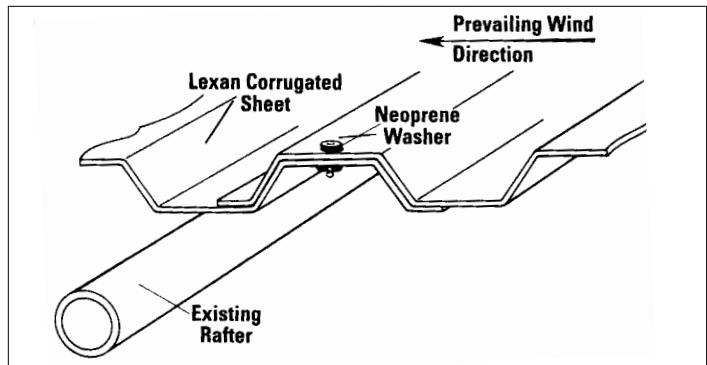


Fig. 14. Fastening Vertical Overlapping Sheet Between Purlins with All-Aluminum Large Flange Rivet

## Pitched-Roof Applications

### Rafter and Purlin Supports

A typical pitched roof application using LEXAN Corrugated sheet is illustrated in Figures 15 and 16. In most pitched roofs, existing rafter and purlin supports will accommodate installation of LEXAN Corrugated sheet.

Spacing of existing rafters is a function of greenhouse design. To obtain 40 lbs./sq.ft. loading, purlin spacing should not exceed 24". It is recommended that a minimum roof pitch of 3:12 be maintained.

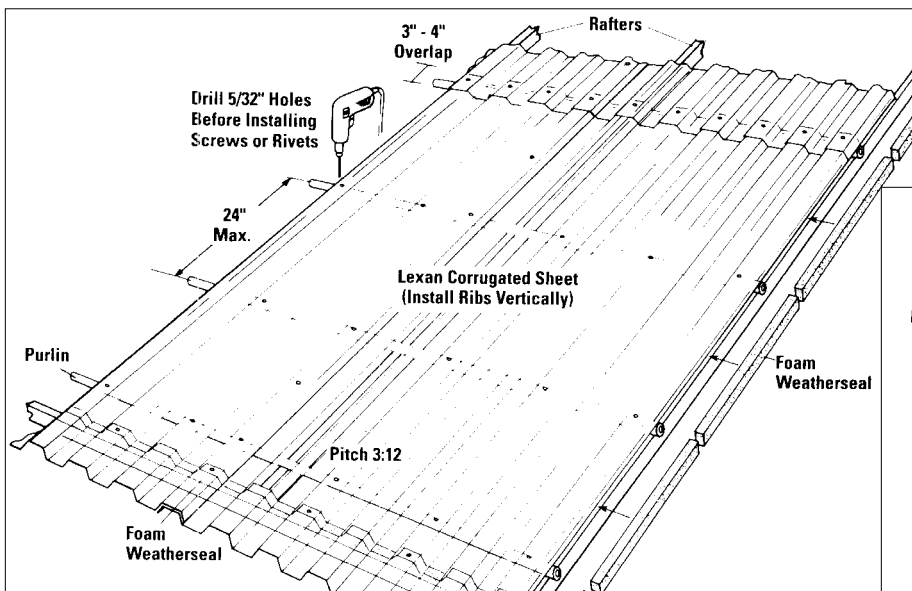


Fig. 15. Pitched-Roof Rafter and Purlin Supports

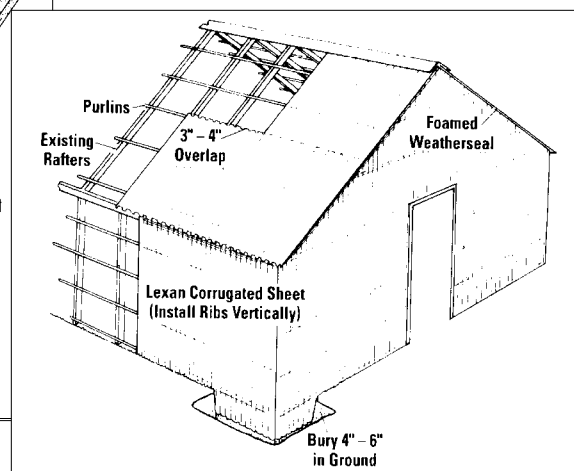


Fig. 16. Pitched-Roof Installation

## Cleaning

Clean LEXAN Corrugated sheet with any mild soap or detergent and warm water, using a soft cloth or sponge. Abrasive cleansers, brushes, or squeegees should not be used.

The following cleaning agents have been found compatible with LEXAN Corrugated sheet. The manufacturer's recommendations and instructions should be followed.

- Joy<sup>(1)</sup>
- Freon T.E.
- Palmolive Liquid<sup>(2)</sup>
- Top Job<sup>(1)</sup>
- VM&P grade Naphtha
- Windex with Ammonia D<sup>(3)</sup>

<sup>(1)</sup>Registered Trademark of Procter & Gamble

<sup>(2)</sup>Registered Trademark of Colgate Palmolive

<sup>(3)</sup>Registered Trademark of Drackett Products Company

## Storage

LEXAN Corrugated sheet should be stored on a flat surface out of direct sunlight. Do not stand or place heavy objects on the sheet.

## Warranted to Perform

Manufactured by SABIC, the inventor and polycarbonate technology leader for over a quarter-century, LEXAN Corrugated sheet is backed by a 10-year warranty\* against yellowing and loss of light transmission.

\*Details upon request.

<b>Fasteners and Closures Are Available From:**</b>	<b>Foamed Closures/Weatherseals Are Available From:**</b>
<p><b>Conley's Greenhouses</b> 4344 Mission Boulevard Montclair, CA 91763 Telephone: (800) 377-8441 Fax: (909) 628-3774</p> <p><b>Construction Fasteners, Inc.</b> Spring Street and Van Reed Road P.O. Box 6326 Wyomissing, PA 19610 Telephone: (800) 234-4533</p> <p><b>Cochran Industries, Inc.</b> 1450 Richardson Street San Bernardino, CA 92408 Telephone: (909) 799-5477 Fax: (909) 799-5481</p> <p><b>Atlas Bolt and Screw Company</b> 1628 Troy Road Ashland, OH 44805 Telephone: (800) 321-6846</p> <p><b>GESIPA Fasteners</b> Trenton, NY Telephone: (609) 396-5405</p>	<p><b>Closures, Inc.</b> P.O. Box 55392 Houston, TX 77055 Telephone: (800) 231-1752 Fax: (713) 451-7712</p> <p><b>Cochran Industries, Inc.</b> 1450 Richardson Street San Bernardino, CA 92408 Telephone: (909) 799-5477 Fax: (909) 799-5481</p>

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