

LEXAN™ CLINIWALL™ FR POLYCARBONATE SHEET

Technical & Install Guide



Focused on the Customer Experience



Contents

Introduction	1
What is LEXAN™ CLINIWALL™ FR Polycarbonate Sheet	1
Features & Benefits	1
Physical Properties	2
Antibacterial Shield	2
Stain Resistance	2
Fire Safety	2
Chemical Resistance	2
LEXAN™ CLINIWALL™ Installation Guidelines	3
Before You Start	3
Adhesive Installation	3
Hot Line Bending	4
Cold Line Bending	5
Profile Options	6
Cutting & Sawing	7
Drilling	8
Fastening	9
Cleaning	11
Additional Information	12



About AmeriLux International

AmeriLux is a value-adding distributor of multiwall and corrugated polycarbonate sheets, PVC liner panels and wall forms, HDPE panels, acrylic sheet, and many other plastic sheet products. Our products are used in a variety of glazing, cladding, and daylighting applications in the industrial, agricultural, horticultural, residential, and architectural markets.

Headquartered in De Pere, Wisconsin, AmeriLux sources and distributes materials from and to companies around the world. It is by building and maintain strategic, win-win partnerships with vendors, customers, and employees that AmeriLux is able to profitably – and sustainably – grow its business.

What is LEXAN™ CLINIWALL™ FR Polycarbonate Sheet?

Designed to meet the challenges and expense of complying with sanitation standards and fire safety regulations, the LEXAN™ CLINIWALL™ polycarbonate sheet is an excellent choice for interior wall applications in public, hospitality, healthcare, and industrial facilities.

This solid opaque sheet is non-chlorinated and non-brominated. It offers excellent resistance to protein-based stains, including many bodily fluids as well as foods like dairy products and baby food. The sheet's anti-bacterial properties create a layer of protection against the potential spread of infections, making it a great choice for hygiene-sensitive operations.

The LEXAN™ CLINIWALL™ sheet is also highly resistant to most chemicals, like those found in hospital-grade cleaning products. This high-performance sheet is virtually unbreakable and can withstand repeated cleaning and disinfecting. In addition, LEXAN™ CLINIWALL™ features a pre-colored, textured, durable finish, eliminating the need for painting. An interior wall cladding option that can significantly save on maintenance and repair costs.



Features & Benefits

- **100% Recyclable, 'PVC Free' & Non-Chlorinated**
- **Lifetime Anti-Bacterial Properties**
- **Resistant to Chemicals & Protein Stains**
- **Withstands Frequent Cleaning & Disinfection**
- **Scratch Resistant, Suitable for Digital Printing**
- **High Impact Strength, Virtually Unbreakable**
- **Excellent Fire Safety & Smoke Performance**
- **10-Year Written Unlimited Warranty**

Physical Properties

LEXAN™ CLINIWALL™ FR sheet is a fire resistant, opaque sheet which delivers high impact and wear resistance. In addition to excellent stain, blood and urine resistance, it offers ease of processing and installation for internal wall cladding applications.

Antibacterial Shield

SABIC's LEXAN™ CLINIWALL™ FR sheet offers a specific grade with anti-bacterial additives, AC6206FR featuring a pioneering thermoplastics material technology for interior wall cladding applications for public facilities and hospitals that requires a high level of sanitation.

LEXAN™ CLINIWALL™ AC6206FR sheet was tested at independent test houses against ISO 22196 – “Measurement of Antimicrobial Activity on Plastics / Non-Porous Surfaces” – the industry standard for measuring Antimicrobial activity on Plastics. The silver-ion additive activity was confirmed by this testing and showed a significant reduction in the growth of microorganisms on the sheet surface.

Stain Resistance

LEXAN™ CLINIWALL™ FR sheet can be cleaned quickly and effectively, looking as good as new after cleaning, as seen in tests made on blood, iodine, rubber gasket marks and other usual stains that you can come across in hospitals and other public facilities.

LEXAN™ CLINIWALL™ FR sheet has been tested* for blood and urine stains. No obvious staining was observed with the naked eye on LEXAN™ CLINIWALL™ FR sheet with either blood or urine after 24 hours and 48 hours incubation at 98.6°F.

Additionally, LEXAN™ CLINIWALL™ FR sheet was subjected to iodine and black rubber gasket staining tests. Iodine stains were made with Betadine and the marks of black rubber gasket impacts were made with black rubber. Each sheet sample was marked with a different stain and then stored in an oven at 98.6°F for 24 hours and 48 hours. After the storage time, both stain spots on the sheets were cleaned by hand, using hot water and a paper towel. The test showed that no stains were observed with the naked eye on any of the sheet samples.

Fire Safety

LEXAN™ CLINIWALL™ FR sheet complies with the Fire safety and smoke release requirements, based on the American standard ASTM E84 fire regulations for building and construction materials classified as A.

Chemical Resistance

LEXAN™ CLINIWALL™ FR sheet has been independently tested* for chemical resistance against Isopropyl (rubbing alcohol) which is a common disinfectant. LEXAN™ CLINIWALL™ FR sheet samples of tensile bars were stored under 0 and 1.0% strain in contact with Isopropyl for 7 days at 73°F. After 7 days their appearance was checked and their tensile properties were measured.

The test samples that were observed with the naked eye, showed no visual defect on their surface after this 7 days exposure. SABIC's product was also tested* for its chemical resistance towards common

hospital cleaning agents. LEXAN™ CLINIWALL™ FR sheet test samples were evaluated under different strain levels at 73°F for one week. After 7 days the appearance was checked and tensile properties are measured. Test results showed that, except for acetone, nearly all substances (see Table 3 for the list of referred cleaning substances) are compatible with the LEXAN™ CLINIWALL™ FR sheet.

Note: Depending on the cleaning agent, repeated cleaning may have an effect on the mechanical performance of the sheet product. Please contact AmeriLux for additional information.

Product Details

Colors: White, Beige, Medium Grey*
Width: 4.25'
Length: 10'
Thickness: 1.5mm (0.059"), 1.7mm (0.067")
Warranty: 10-Year Written Limited

LEXAN™ CLINIWALL™ Installation Guidelines

LEXAN™ CLINIWALL™ FR sheet is easy to form and install, even in pre-existing buildings. Whether it is a sheet directly glued on the prefabricated wall or it is fixed on profiles anchored to the brick wall with mechanical fixing, installation is easy and economical.

LEXAN™ CLINIWALL™ Sheet can be thermoformed for corner elements, bumper rails and door frames. To reach optimal results, the sheet materials needs to be heated with sandwich type heating systems to reach uniform heat uptake. Pre-drying of this material is necessary. Pre dry LEXAN™ CLINIWALL™ FR sheet at 212°F for 2 hours /0.039" thickness.

Note: Improper installation of the material may have effects on aesthetic performance of the product.

Before You Start

- Before starting your project, inspect all sheets and components for damage. Confirm all pieces were received and quantities are correct.
- Even though sheets are durable, pick up and carry pieces to avoid unnecessary scratches.
- Store sheets in a room away from direct sunlight, and place them on a flat surface.
- Make the wall smooth by removing peaking spots and filling dents.
- Clean and dry the surface as it is recommended on page 11.
- Cut the panels and profiles to dimensions needed for the intended surface.

Adhesive Installation

- Select the proper adhesive type based on the wall construction according to the instructions of the glue manufacturer.
- Apply the adhesive on the back of the LEXAN™ CLINIWALL™ FR sheet around the perimeter of the panel and in the center of the sheet with beads each approx. 10" or apply the adhesive directly with a notched trowel on the wall. (Figure 1a)



LEXAN™ CLINIWALL™
FR Sheet Install Video

- Position and attach a trimmed U base or a profile to the wall. (Figure 1b)
- Attach the first LEXAN™ CLINIWALL™ FR sheet to the wall and profile. (Figure 1c)
- Remove trapped air and check good adhesion by applying pressure to the entire sheet. (Figure 1d)
- Place the H section base and give at least a 0.079" gap for expansion. Repeat steps a-d.

Figure 1a

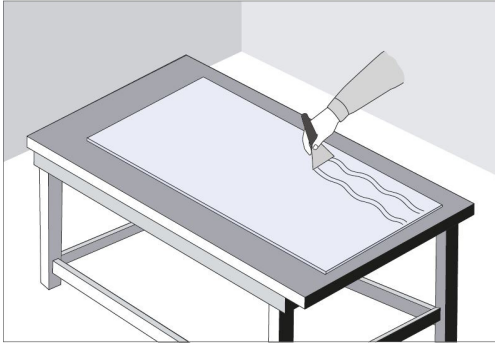


Figure 1b

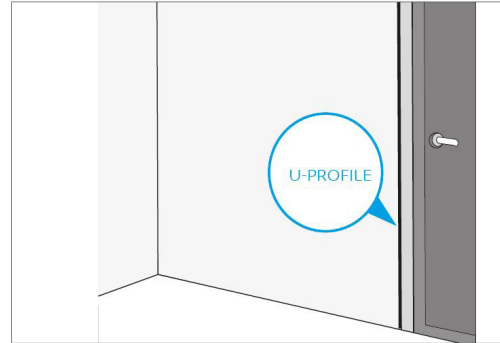


Figure 1c

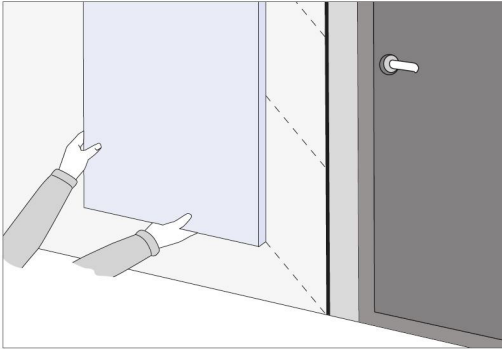
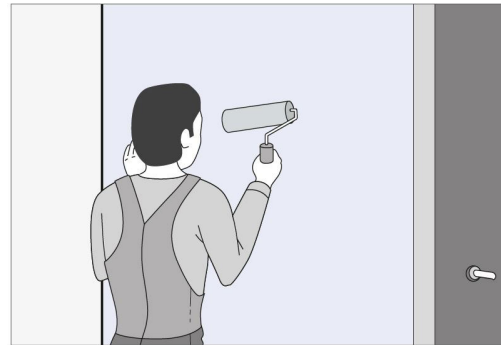


Figure 1d



Hot Line Bending

Wall Preparation

- Make sure your wall is smooth, dry and clean.
- Remove bumps and nails - fill any dents/holes.

Prepare your Heating Device (Figure 2a)

- Temperature maximum 194°F.
- Place the sheet on the heating device for 30-60 seconds.

Figure 2a

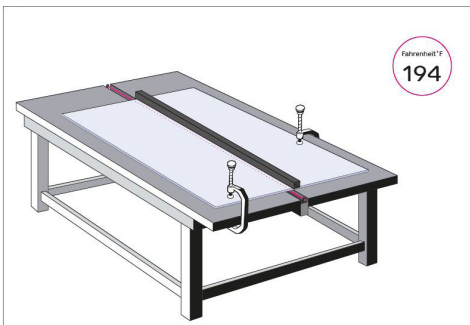


Figure 2b

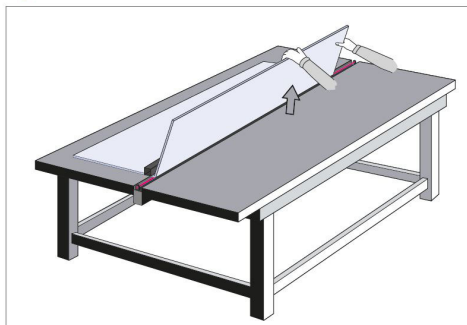
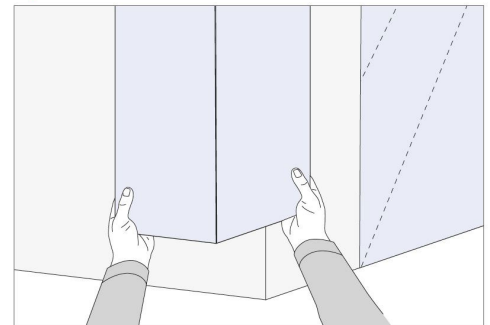


Figure 2c



Bending the Sheet (Figure 2b)

- Slowly heat and bend the sheet to the desired angle.

Wall fitting and Adhesives (Figure 2c)

- Fit the sheet on the corner wall.
- Apply glue to the sheet and let it dry for 10-30 minutes (the amount of glue and the dry time depends on the back wall structure).
- Place the sheet on the wall and press well to remove any air bubbles.



Hot Line Bending

Cold Line Bending

Wall Preparation

- Make sure your wall is smooth, dry and clean.
- Remove bumps and nails - fill any dents/holes.

Sheet Clamping (Figure 3a)

- Place the sheet on a working surface and make sure it's securely clamped.
- Then cut the sheet into the final size.

Milling the Sheet (Figure 3b)

- Mill a V-groove at the back of the sheet at maximum half of the thickness.

Bending the Sheet (Figure 3c)

- Bend the sheet to the desired angle.

Wall Fitting and Adhesives (Figure 2c)

- Fit the sheet on the corner wall.
- Apply glue to the sheet and let it dry for 10-30 minutes (the amount of glue and the dry time depends on the back wall structure).
- Place the sheet on the wall and press well to remove any air bubbles.



Cold Line Bending

Figure 3a

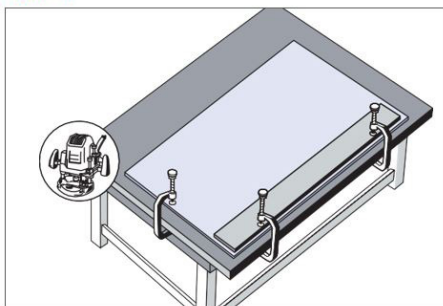


Figure 3b

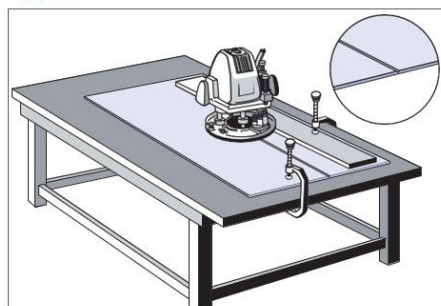
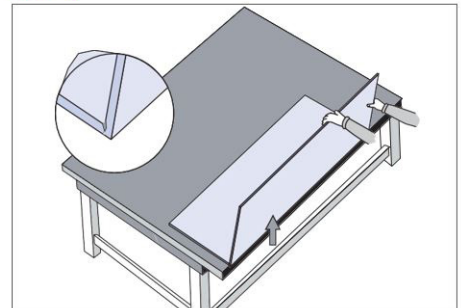


Figure 3c

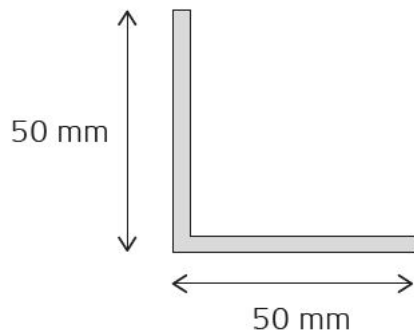


Profile Options

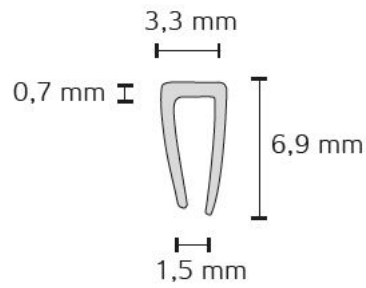
Standard Colors: White, Beige, Medium Grey*

Profile Lengths: 10'

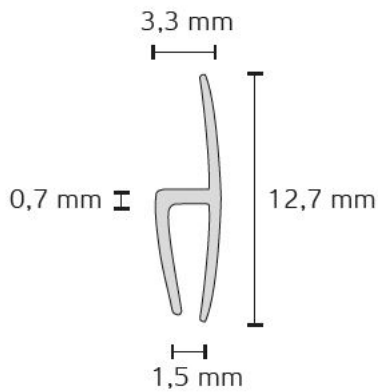
Note: Any other profile color will be on request. Please contact AmeriLux regarding lead-times and prices.



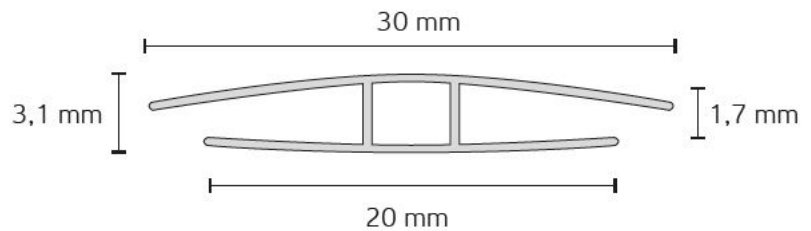
Corner Profile



Top U-Profile



Connection Profile



H-Profile

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.

Cutting & Sawing

LEXAN™ CLINIWALL™ FR sheet can be cut and sawn using standard workshop equipment. Circular saws, band saws, jig saws and common hacksaws can all be used. General guidelines are listed below with specific recommendations outlined in each cutting section.

- The sheet must always be securely clamped to avoid undesirable vibration and rough cut edges.
- All tools should be set for cutting plastics, with fine toothed panel blades.
- The protective masking should be left on the sheet to prevent scratching and other surface damage.
- When finishing the edges should be clean and free of notches.
- If possible swarf and dust build-up should be blown away with a compressed air supply.

Note: Caution should be taken and required safety equipment should be worn when cutting and sawing. When working with thermoplastics sheet, always consider safe and careful handling. Please keep in mind that plastics will lose heat more slowly than metals. Avoid localized overheating.

Circular Saws

- This type of cutting operation is the most common and, whilst cutting speeds and feeds are not so critical as with other thermoplastics, it is important to follow the recommended guidelines.
- Tungsten carbide tipped saw blades are preferred with alternative teeth beveled at 45° on both sides to improve cutting and reduce side pressure.
- Always use a low feed to get a clean cut.
- Always start cutting with the blade at full speed.
- For single sheets less than 0.118” thick, bandsaws or jig saws are preferred to circular saws.

Bandsaws

- These can be of the conventional vertical type or the specially developed horizontal type suitable for plastic sheet materials.
- It is vital that the sheet is adequately supported and clamped during the cutting operation.
- The saw guides should be as close to the sheet as possible to reduce blade twist and off-line cutting.

	Circular Saw	Bandsaw
Clearance Angle	20°-30°	20°-30°
Rake Angle	5-15°	0-5°
Rotation Speed	1969-2625 yd/min	656-1094 yd/min
Tooth Spacing	0.35-0.59”	0.059-0.157”

Jig Saws and Hacksaws

- The most important consideration with this type of cutting is support and clamping, particularly with the use of a jig saw.
- Blades with a tooth spacing of 0.079- 0.098” are ideal with the emphasis upon low cutting feeds.

Guillotine Saw

- Can be applied commonly on most types of polycarbonate sheets.

Drilling

Standard high speed steel twist drills or drills with an angular wedged bit can be used for drilling. Carbide-tipped drills can also be used since they retain their sharp cutting edge. The most important factor to consider when drilling LEXAN™ sheet products is the heat generated during the actual process. In order to produce a clean, well-finished hole that is stress-free, the heat generated must be kept to an absolute minimum. By following a few basic guidelines, clean, stress-free holes can easily be produced.

- The drill hole must be cleared frequently to prevent swarf build-up and excessive frictional heat.
- The drill must be raised from the hole frequently and cooled with compressed air.
- The sheet or product must be adequately clamped and supported to reduce vibration and ensure a correctly sized hole.
- Holes should not be drilled closer to the edge of the sheet than 1-1.5 times the diameter of the hole.
- All holes must be larger than the bolt, screw or fixing to allow for thermal expansion and contraction.
- For long production runs the use of carbide-tipped twist drills is recommended.

Hole Diameter	Speed (rev/min)	Feed (inch/min)
3	1750	4.92
6	1500	3.94
9	1000	2.95
12	650	1.97
18	350	0.98

Recommended Drill Angles:

Clearance Angle A 15°
 Rake Angle B 0°-5°
 Included Tip Angle C 120°-160°
 Helix Angle D 30°

Milling

LEXAN™ CLINIWALL™ sheet can be machined using conventional milling machines fitted with standard high speed knife cutting tools. Mechanical jigs and fixtures, or vacuum chucks provide a suitable clamping medium. Table 05 outlines appropriate cutting speeds and feeds with a typical cutting tool illustrated in Fig. 10. Forced air cooling enables higher cutting rates. However, care should be taken not to over-heat the material. The use of cutting fluids to lubricate or cool the sheet is not recommended.

Computerized trimming is a fully automatic milling process. It is extremely accurate and operates horizontally as well as vertically. The use of a vacuum operated jig avoids vibration of the part ensuring a smooth cut. Standard high speed, two-sided cutting routers with tungsten carbide tips are recommended, with a cutting speed of approximately 820ft/min at 25.000/30.000 RPM at a sheet thickness of 0.157".

Note: The importance of suitable clamping cannot be over-emphasized.

Clearance Angle	5°-10°
Rake Angle	0°-10°
Cutting Speed	328-1640ft/min
Cutting Feed	0.0039-0.0197"/rev.

Fastening

With a few exceptions, all mechanical assembly techniques involve some form of additional fastening device. The choice of device is often dependent upon the nature of the fastening required. Rivets tend to be permanent, screws and nuts can be made detachable and some of the spring clips types can be either permanent or separable.

Computerized trimming is a fully automatic milling process. It is extremely accurate and operates horizontally as well as vertically. The use of a vacuum operated jig avoids vibration of the part ensuring a smooth cut. Standard high speed, two-sided cutting routers with tungsten carbide tips are recommended, with a cutting speed of approximately 820ft/min at 25.000/30.000 RPM at a sheet thickness of 0.157”.

Note: Two important factors need to be considered with all these fastening systems:

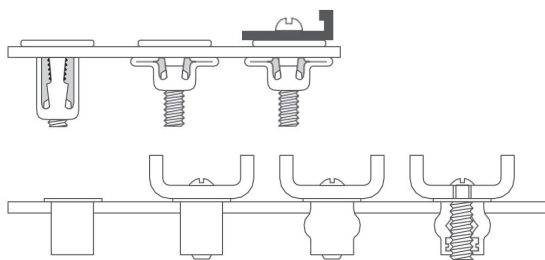
Firstly, allowance needs to be made for thermal expansion and contraction. All holes, slots and cut-outs must be machined over- size to allow for the dimensional changes as a result of temperature changes.

Secondly, the distribution of tightening torque should be equal. With the aid of compatible rubber washers and large screw and rivet heads, the tightening torque should be spread over as wide an area as possible and should not be excessive.

Machine Screws

The majority of these screws are made from steel, but other metals and alloys are used for specialized applications. Several examples of this type of fastening system are shown on this page. Figures 11 and 12 illustrate sheet fastening devices known as ‘blind screw’ and ‘blind nut’ anchors.

Figure 11: Blind Nut and Blind Screw Anchor



Self-Tapping Screws

Self-tapping screws are widely used within the plastics industry. Basically they produce their own thread as they are driven into a hole and may be considered whenever an assembly is likely to be dismantled and re-assembled.

Whilst the majority of these screws are designed for plastic moldings, with the aid of spring clips and washers they can be adapted for sheet applications. Fig. 13 shows a typical fastening system.

Figure 12: Other Typical Fastening Systems

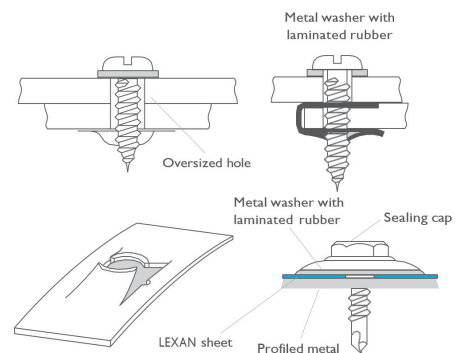
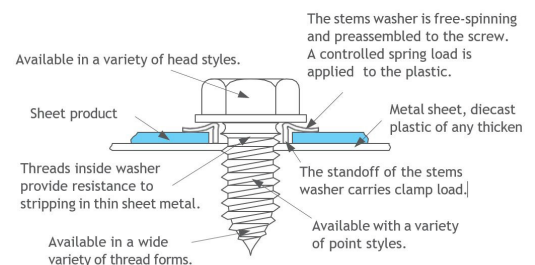


Figure 13: Hex Cap Screw Connection



Note: If the application calls for a screwed assembly, it is vitally important that the following recommendations are considered.

- Do not use countersunk head screws, as the ‘wedging’ action of the countersunk head cause excessive hoop stress on the sheet. This can lead to part failure.
- Be sure that all oil, grease and other coatings are removed from the screws before assembly certain oils and greases can cause environmental stress cracking.

Riveting Systems

Certain guidelines should always be followed when considering this type of assembly method. Riveting can induce both radial and compressive stresses in the plastic sheet and precautions should be taken to distribute these forces over as wide an area as possible.

- In a plastic-to-plastic assembly a metal back- up washer with laminated rubber is recommended to reduce the compressive stresses. If the diameter of the rivet with a rubber washer is slightly bigger than the hole diameter, then the hoop stresses will be transmitted to the washer rather than the plastic sheet.
- For plastic-to-metal joints, the head of the rivet with a rubber washer should be against the plastic, and the hole in the sheet should be large enough to allow for thermal movement.
- Hole size is 1.5 x expanded rivet diameter.
- Rivet diameters should be as large as possible and spacing should be between 5-10 times their diameter.
- AmeriLux recommends the use of aluminum, brass and copper rivets.
- There are several different types of riveting systems, the most popular for which is the ‘pop-rivet’. This type of rivet provides the means to assemble two components together with access restricted to one side only. Figures 14 and 15 illustrate typical rivet assemblies.

Figure 14: Rivet Assembly

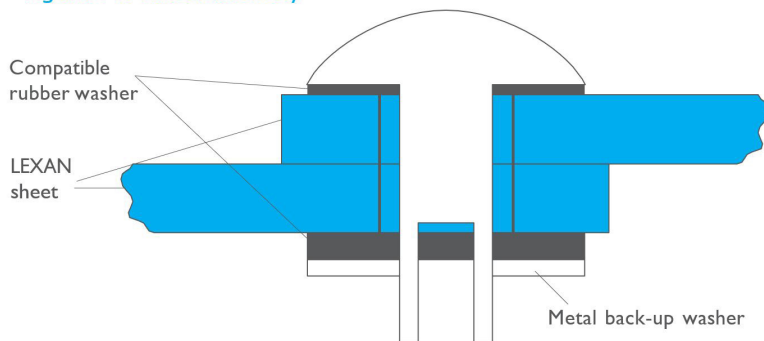
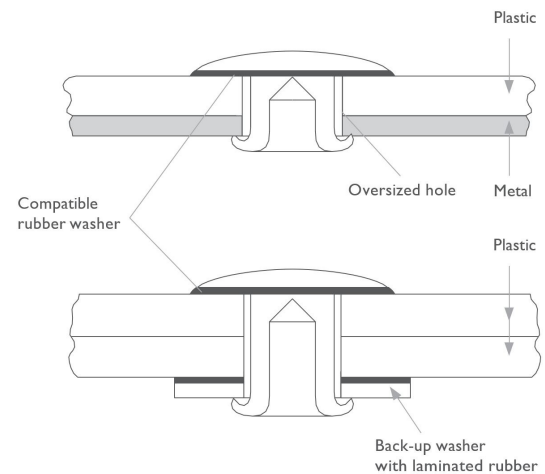


Figure 15: Typical Pop-Rivet Assembly



Miscellaneous Fabricating Techniques

Many different techniques are used to cut and fabricate LEXAN™ CLINIWALL™ sheets.

These techniques include:

- Shearing
- Punching
- Tapping
- Laser Cutting
- Water Jet Cutting

Note: If you plan to use one of the miscellaneous fabrication techniques above please contact 888.602.4441 or email info@amerilux.com before starting your project.

Cleaning

Periodic cleaning LEXAN™ CLINIWALL™ sheet can be accomplished easily and without the need for specialized cleaning agents. However precautions need to be taken to avoid any aggressive cleaning agents.

- The basic cleaning agent for LEXAN™ CLINIWALL™ sheet is a solution of lukewarm water with mild soap or household detergent, using a soft cloth or sponge to loosen any dirt and grime.
- All surfaces are then rinsed with cold water and dried with a soft cloth to prevent water spotting caused by lime-scales.

Note: In some cases certain solvent cleaners may be needed to remove stubborn stains, graffiti, etc. In these cases the following list of cleaning agents are approved for use at room temperature: Methyl alcohol, Ethyl alcohol, Butyl alcohol, Isopropyl alcohol, White spirit, Heptane, Hexane, Petroleum ether (BP 65°), Hydroxide peroxide (1% H2O2).

Cleaning Prior to Forming

It is necessary to clean LEXAN™ CLINIWALL™ sheet prior to forming. It is recommended that the dust is blown off with an ionizing air gun or the sheet is wiped with a soft cloth dipped in water or a mixture of isopropyl and water.

- Don't use abrasive or highly alkaline cleaners such as acetone and avoid contact with such substances.
- Never scrape the sheet with squeegees, razor blades or other sharp instruments. This may cause aesthetic damage on the surface of the product.
- Don't clean LEXAN™ CLINIWALL™ sheets in the hot sun or at elevated temperatures as this can lead to staining.

If you have any questions concerning cleaning solutions for LEXAN™ CLINIWALL™ FR Sheet, please contact AmeriLux International at 888.602.4441 or send an email to info@amerilux.com.

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.

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 AmeriLux International and are to be used solely as a representation of AmeriLux products. These designs may not be recreated or produced without the expressed, written consent of AmeriLux.

All information, recommendations, or advice given by AmeriLux International employees or partners, written or oral, is given in good faith and is thought to be accurate and current. It is the responsibility of each product user to ensure the product is used in compliance with current environmental and legal requirements specific to each product application. AmeriLux International and its partners will not be held liable for incorrect or improper use of its products.

AMERILUX HEREBY DISCLAIMS ANY WARRANTIES, EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTY OF MERCHANTABILITY AND/OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. AMERILUX SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, OR PUNITIVE DAMAGES.

