



Welcome to the LuciteLux® Continuous Cast Acrylic Sheet [Mini Fabrication Guide](#)

## **Introduction**

Acrylics have a unique combination of properties including weather resistance, brilliant clarity, easy cleanability and exceptional lighting qualities. LuciteLux® acrylic excels when compared to other thermoplastics and is widely acclaimed for its dynamic optics, light stability, weather resistance and decorative/aesthetic qualities.

LuciteLux® can be easily made into simple shapes by thermoforming. Good formability is one of the most important and useful properties of LuciteLux® acrylic sheet. Since acrylic is a thermoplastic, it becomes soft and pliable when sufficiently heated. In this state, it can be formed into almost any desired shape. On cooling, LuciteLux® acrylic sheet becomes rigid and retains the shape to which it has been formed. Components created from LuciteLux® can be machined, drilled, threaded, routed and even cemented.

## **Properties**

The LuciteLux® physical properties data sheet charts the optical, mechanical, thermal and combustibility of the product. This data is readily available online at <http://lucitelux.com/fabrication-guide/> for aid in design completion.

## **Design Considerations**

When using LuciteLux® acrylic proper design is essential as it influences the appearance and performance of the product. It is best to avoid perfectly flat surfaces - a slight degree of curve is necessary. Curvature prevents aberrations and increases the rigidity of the part. LuciteLux® and most acrylic sheet generally have a high gloss but texture and matte finishes can be obtained by modifying the mold surface or embossing the sheet.

The assembly method should minimize the use of force or pressure on the sheet. LuciteLux® acrylic sheet needs the ability to expand and contract without distortion. The strength of any material is determined by properties, compositions, fabrication methods and even end-use. Keep in mind that the physical properties are typical values for which deviations should be expected.

Designs should strive to avoid localized high stress on the sheet since un-modified acrylics yield very little before failure. Avoiding or limiting the use of holes, which allow the LuciteLux® part to retain maximum strength, is ideal if it can be adapted to the preferred application. A prototype is a good and practical check on any design. Aesthetics are important but some mechanical and structural considerations are necessary.

## **Handling and Storage**

LuciteLux® continuous cast acrylic sheet is sometimes covered with a tough, adhesive secured, paper or film masking to provide protection during shipping, handling and storage.

LuciteLux® may be stored flat or stacked vertically in racks. Horizontal stacking should be avoided. Acrylic, by nature, is hygroscopic and thus will absorb moisture from the air. This may create a wavy appearance that can be alleviated by storing properly to allow full acclimation. If the sheet is stored improperly and bowing occurs, it can be straightened by heating the sheet to just below forming temperatures, (275 – 290°F).

Abrasive cleaners and some window cleaning compounds will scratch LuciteLux®. In order to remove dirt and dust, dampen a soft, grit-free non-linting cloth with water; do not use solvents like acetone or chlorine. A soapy solution will also work well as a cleaning agent.

## **Fabricating**

Safety is essential in all areas of design and fabrication. Proper PPE such as goggles, gloves and other protective clothing should be worn while cutting, routing, drilling, threading, tapping, blanking or punching LuciteLux® acrylic sheet when appropriate. Tools must be sharp, free of nicks and burrs and clean with no sawdust or dirt accumulations. Machining tools should also be hard, water-resistant and non-shearing.

### **1. Layout**

Cutting lines may be penciled onto the LuciteLux® masking or the surface of the unmasked acrylic sheet with a China-marking pencil. Patterns can be traced directly onto the sheet with a pencil and carbon paper.

### **2. Cutting**

This equipment depends on the work to be done. The saws may range from circular, band, or jigsaws. A router, score-cutting device, hole-cutter or laser may also be useful. Ideally, the CO<sub>2</sub> laser system provides an idyllic non-contact method for cutting and engraving LuciteLux® acrylic sheet. It is sometimes necessary to remove the masking from the top of the sheet prior to cutting, leaving the bottom masking intact for protection. Laser engraving should be addressed the same as laser cutting. A 2” focal length lens is suitable for most laser applications. See “**Laser Processing Guide**” located in the Learning Zone area on our website.

Note that acrylic materials like LuciteLux® are flammable. Laser systems should not be left unattended during processing. Drilling, threading, tapping, blanking and punching are all unique forms of processing and require specific recommendations. Complete information on these applications can be found in the LuciteLux® Continuous Cast Fabrication Guide, available online at <http://lucitelux.com/fabrication-guide/> when needed.

### **3. Cementing**

Acrylic panels or flat sheet can be fastened together with various materials by mechanical means or with cements or adhesives. Heat may also be used to weld acrylic parts which have geometry limitations. Acrylic can be bonded together with strong transparent joints. It is possible to bond acrylic to acrylic, acrylic to metals, woods, rubber and even other plastics. This may be accomplished by using several types of commercial cements or adhesives such as solvent-type, polymer-solvent type or polymerizable-type cements. Always test the joints to evaluate the feasibility of using a preferred cement or adhesive. Take special precautions when using cements as some are toxic, flammable and may cause skin irritations.

Annealing increases the strength of cemented joints. This will improve stress and solvent craze resistance. Annealing temperatures will normally range from 140 – 200°F.

#### **4. Painting/ Decorating & Finishing**

LuciteLux<sup>®</sup> continuous cast acrylic sheet can be painted and lacquered by conventional brushing or spraying techniques. Recommendations for the type, preparation and viscosity of paints best suited for acrylic are available from paint suppliers. Special wet and dry paints have been formulated for acrylic sheet by several paint suppliers, which supply the sign industry.

Flat sheet can often be pre-decorated prior to forming. Silk-screening, pre-printing, carving, hot-stamping or engraving on the sheet surface is also possible. Finishing may involve sanding, buffing and polishing the sheet to restore original high gloss surface if needed after machining. Rough spots after sanding may be removed by polishing. Do not use solvents for edge or surface polishing. Flame polishing is generally used sparingly and mostly for lighting applications where cementing is not necessary. Deep imperfections which cannot be buffed out can be sanded with fine grit sandpaper.

LuciteLux<sup>®</sup> can accumulate a static charge which may attract surface dust. If this occurs, the static charges can be dissipated by wiping the sheet surface with a soft, water-dampened, clean cloth.

This information is given expressly in regards to participants using LuciteLux<sup>®</sup> continuous cast acrylic sheet. For further information on design data or processing techniques, please contact Lucite International, Inc. via our website at [www.lucitelux.com](http://www.lucitelux.com) or call 1-800-4LUCITE, and ask for sheet technical services.