

## Using UV Adhesives

Bonding glass with UV Curing Adhesives can easily be achieved by taking your time and carefully following these basic steps:

### 1. Material Selection

Glass choice and adhesive selection is critical since both predetermine the results. A different mix of glass and adhesives will result in varying bond strengths. Clear float glass, mirrored, tempered glass, and smooth, flat wired glass can be bonded without problems. Structured glass like patterned, sandblasted, or wired glass can cause lower bond strengths or cannot be bonded at all. The UVA light permeability depends on the glass thickness and color intensity of the glass. Glass with high UV absorption such as laminated glass or colored glass cannot be bonded with common UV adhesives and require a highly sensitive adhesive such as our UV678 (page GB20). Bonding metal-to-glass requires a suitable adhesive such as our UV682 (page GB20).

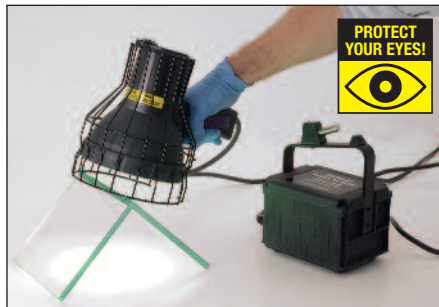


### 2. Surface Preparation

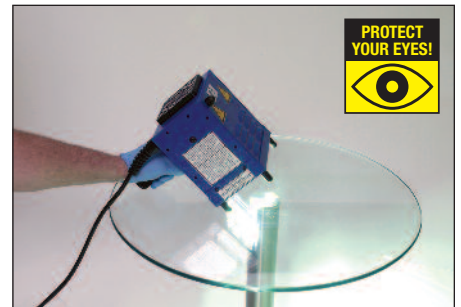
All bonding surfaces must be absolutely clean, free of grease, and dry. When UV bonding use appropriate cleaners such as CRL7528 (page GB06) that are free of surfactants (soap) or other contaminants. Common glass and general purpose cleaners are not suitable in most cases. In order to obtain a stable and durable bond, the adhesive and all parts to be bonded must be at room temperature. Heating all surfaces to 155°F (68°C) prior to bonding will remove any condensation that could adversely affect the bond strength.



CRL7528 Cleaner



UV665 Glass-to-Glass Bonding



UV682 Glass-to-Metal Bonding

### 3. Adhesive Selection

The correct UV Adhesive depends on the bonding materials, application of the finished product, and the resulting stress load.

- For glass-to-glass bonds, self-supported "closed" construction is recommended to obtain the highest possible stability. Adhesives such as our UV678 and UV690 (pages GB20-GB21) are best suited for this type of "closed" construction. When self-supported "closed" construction isn't possible, use UV740, UV665, UV770, UV760 or UV682 Adhesives for non-self-supported "open" construction (pages GB19-GB21).
- For glass-to-metal bonds, use our UV682 Adhesive (page GB20).



Self-Supported "Closed" Construction



Non-Self-Supported "Open" Construction

## 4. Applying UV Adhesive

Before applying the adhesive it is recommended to check if the bonding parts will fit in their intended position. This is best done by first assembling the project without bonding by using the CRL Fixation Devices shown on pages GB10 to GB17 to securely hold the surfaces in position.

- The adhesive should be applied within five minutes after the parts have been heated. Should a longer time period have passed, the parts should be re-heated.
- Bonding surfaces should preferably be in a horizontal position when the adhesive is applied.
- Precise and economic application of the adhesive can be achieved by using CRL Dispensing Systems and Application Needles shown on page GB24.



An important fact to always remember is that the smoother the bonding surface and the thinner the layer of adhesive, the stronger and more resilient the bond will be. A layer of too much adhesive reduces the strength of the bond, and increases the workload of removing excess adhesive.

### Applying the adhesive BEFORE joining the parts:

With medium/high viscosity adhesives, such as UV770 (page GB19), the adhesive should be applied in a wiggly pattern before the parts are joined.

- When bonding horizontally, the bonding parts should be evenly and carefully joined to avoid trapping any air bubbles.
- The weight of the bonding parts should be sufficient to evenly spread the adhesive over the entire bonding surface.
- When bonding metal-to-glass, apply a liberal amount of the adhesive to the center of the part and gently squeeze or clamp to eliminate any air bubbles.
- Air bubbles appearing in adhesive may be removed by carefully moving parts in a circular motion until bubble moves to the edge and is released.

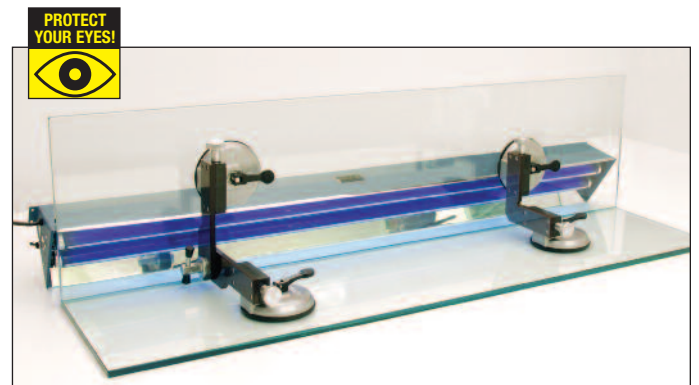
### Applying the adhesive AFTER joining the parts:

With low viscosity adhesive, such as UV740 (page GB19), the adhesive seeps into the bondline gap by itself. Therefore, the bonding parts can be joined in their final position before the adhesive is applied.

- Do not work on several parts at the same time, instead build the project one step at a time.
- To achieve an optimum distribution of adhesive over the entire bonding surface, the parts should be slightly lifted and lowered to increase coverage before curing. Care should be exercised as to not create air bubbles in adhesive.

## 5. Structural Stability

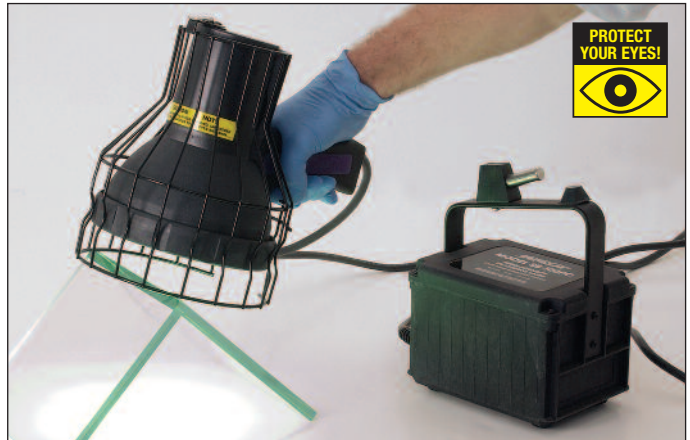
It is absolutely critical that the bonded surfaces are kept stable and in a fixed position. This is made possible by using the CRL Fixation Devices shown on pages GB10 to GB17.



## 6. Curing UV Adhesive

CRL UV Lamps are equipped with UV filters that reduce potential damage to eyes and skin. For your own safety, however, you should use additional suitable protection, such as UVS30 Safety Glasses with UV filtering (page GB32), and 700512 Disposable Gloves (page GB32).

- Use a suitable size CRL UV Lamp (page GB28). The Lamp should not be shorter than the bonding edge to avoid tension build-up due to uneven curing.
- Position Lamp as close as possible to the bonding surface during curing.
- Never move parts during the curing process, and do not expose the project to vibrations.



## The Exposure to UV Light is Done in Two Steps: Pre-Cure and Finish-Cure

- **Pre-Cure** the bond by exposing to UV light from at least 10 seconds to approximately two minutes, depending on the type of Curing Lamp used and glass thickness. By pre-curing, a working strength (approximately 30% of the final strength) is achieved. This allows excess adhesive outside the bonding surface to be removed easily.
- Remove any Fixation Devices and clean the object of any adhesive residue.  
CRL Loctite Chisel® Paint Stripper: 79040 (page GB09)  
CRL Glass Scraper: RS65 (page GB09)  
CRL Extra Fine Steel Wool: Z100 (page GB09)
- **Finish-Cure** the bond by exposing to UV light for at least 60 seconds to approximately five minutes, depending on the type of UV Curing Lamp used and glass thickness.

**NOTE:** Exposing the bond for a longer time has no negative or positive effects on the bond.

- After final curing (approximately 24 hours), the bond is fully functional, and can be put under load.

## 7. Bond Test

- Test strength of bond by subjecting it to stresses exceeding those it would normally incur by impacts, tilting, sudden movements, etc.  
**IMPORTANT NOTE:** Protect yourself from future liability claims by advising your customers in writing that no construction performed solely with adhesives is 100 percent fail safe. Conditions outside of your control, such as excessive loads, whether accidentally or intentionally placed on the completed project, can cause a bond to fail, and that you are by no means responsible in those situations.
- For technical assistance, contact CRL Technical Sales at (800) 421-6144 in the U.S., (877) 421-6144 from Canada, or (323) 588-1281 International. Ask for Ext. 7720. You can also e-mail us through our web site at [crlaurence.com](http://crlaurence.com). From the home page click on Contact Us, and then click on Technical Sales for Glass and Glazing Products.

**Limited Warranty:** CRL guarantees the satisfactory quality of the products and the materials supplied by us. The preceding information as well as any technical recommendation given in writing, verbally or based on tests, is provided to the best of our knowledge. They are non-binding recommendations only, and do not affect your responsibility to determine the suitability of the product for your particular processes and purposes. The quality of the bond depends on conditions which are outside of our control. We therefore have to reject any liability which exceeds the replacement of faulty material. This refers especially to any indirect or consequential loss, damages or expenses.