

CONLOC UV ADHESIVES



Proper and professional application is essential to ensure the functional performance of bonded assemblies. The following instructions, recommendations, tips and limitations are of fundamental importance. However, the necessary technical expertise can only be acquired through practical experience. EGO will be pleased to provide technical support and individual application advice.

Preparation of Bonding Surfaces

All bonding surfaces must be dry, sound, and free from dust and release agents. For initial cleaning, we recommend EGO REINIGUNGSSPRAY. Particularly for glass surfaces, we recommend removing any residual moisture with pure isopropanol [e.g. EGO REINIGER SOFT] and a clean linen cloth, followed by drying with hot air. The surface roughness of materials is generally sufficient for good adhesive bonds. For excessively smooth surfaces, such as hard-chrome-plated parts, the bonding surface should be mechanically roughened by sanding or sandblasting. Optimum bonding requires flat, precisely fitting bonding surfaces with narrow bond gaps [see Technical Data Sheets].

Adhesive Application

Apply the adhesive bubble-free, sparingly but sufficiently, to the bonding surface, using the appropriately cut nozzle tip of the original bottle, if necessary fitted with a CONLOC dispensing nozzle. On rough substrates [e.g. turned metal plates], there is a risk of entrapping microscopic air bubbles. In such cases, we recommend applying the adhesive with a hard, short-bristled brush to wet the rough surfaces. For specific applications and bonding configurations, the low-viscosity adhesive types CONLOC UV 665 and 688 can also be applied to the bond gap by capillary action.

Assembly of Bonded Parts

Due to the high bond strength and lack of elasticity, stress-free assembly of the parts to be bonded is essential for a functional bond. Otherwise, there is a risk that material stresses will be trapped and later lead to glass breakage. For this reason, clamps or other tensioning tools must be avoided as assembly aids.

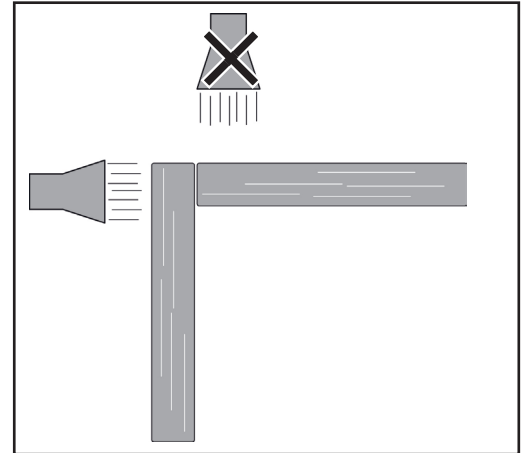
When using the daylight-curing CONLOC UV adhesive types, it is recommended to align and adjust the parts to be bonded in dark areas of the room. Any adhesive that has squeezed out through the bond gap should be wiped off after the parts have been joined, but before the adhesive cures. The parts must be adequately fixed to prevent them from shifting.

Low-viscosity adhesive is easier to remove, whereas high-viscosity adhesive is more difficult to remove. A dry cloth or paper towel, or one moistened with cleaner, is suitable for this purpose. Once cured, the adhesive can only be removed mechanically.

Curing

The controlled curing of the adhesives is achieved by using suitable lamps, preferably CONLOC UV Lamps, which are precisely matched to the CONLOC UV adhesives. The adhesive itself absorbs the radiation required for curing. Therefore, a narrow bond gap [see Technical Data Sheets] and irradiation as perpendicular as possible to the bonding surface, rather than to the bond gap, are essential. Position the UV lamp as close to the bonding area as possible.

The curing time depends on the lamp's spectrum and energy, the distance between the lamp and the adhesive joint, the degree of lamp ageing, the adhesive layer thickness, as well as the transmission, absorption and reflection of the glass. Depending on the combination of these factors, the required curing times are generally between 15 seconds and 5 minutes. Due to the pigmentation, curing the coloured CONLOC UV 665 type requires an irradiation time up to five times longer than that of the colourless type.



As a general rule, we recommend carrying out preliminary tests for the specific application in order to determine the required curing times. Longer curing times do not have any adverse effects, provided excessive heat exposure is avoided. If a milky discoloration appears in the adhesive joint during curing, this indicates incomplete curing or insufficient irradiation due to an excessive adhesive layer thickness. In such cases, the adhesive should also be irradiated from the back side. During the curing phase, the components must remain stationary. Avoid transporting or loading the components before curing is complete.

The final bond strength is achieved approximately 3 hours after completion of irradiation. Excess adhesive cures anaerobically, i.e. oxygen in the air prevents curing at the surface, which means that the adhesive remains liquid in thin layers at these areas. As the bonding surface is not exposed to air, this effect is generally insignificant. It can also be avoided by using high-powered lamps.

Tips & Tricks

To prevent bubble formation in the adhesive film, a sufficient amount of adhesive must be applied for large-area bonding applications. Visible air inclusions should be pierced with a needle. The applied adhesive should be allowed to spread for approx. 30–60 seconds. Slowly bring the part to be bonded into “wet contact” with the adhesive surface, starting from one edge, and carefully release it.

The adhesive can now spread evenly over the entire surface by “floating,” while excess adhesive is squeezed out at the sides. The parts to be bonded must be adequately fixed in the desired position until curing is complete. If too little adhesive has been applied or air inclusions are present, do not attempt to correct the defect by applying excessive pressure, as the glass parts may spring back as soon as the pressure is reduced, resulting in the formation of an “air spider.” Likewise, do not cure the adhesive under pressure, as this may cause residual stresses within the bonded parts.

When bonding narrow glass edges, such as in display cabinets, the adhesive's inherent shrinkage during curing generally does not have a negative effect, as the stresses occurring within these narrow bond widths can still be compensated for. In large-area planar bonding applications, the adhesive can no longer compensate for shrinkage. This can result in the formation of so-called “shrinkage voids.” In addition, stresses may occur which, in sensitive glass components, can ultimately lead to breakage under subsequent loading. To prevent this, gradual curing from the central area towards the edges is recommended by selectively covering and uncovering sections of the bonding surface using light-blocking masks.

Floating



Adhesive application from bottle or dispensing nozzle

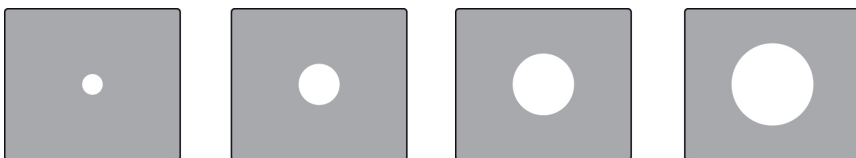


Allow the adhesive to flow for approx. 30 seconds to 1 minute



Slowly allow the glass pane to float onto the adhesive surface

Covering and uncovering the bonding surface with light-blocking masks



Disassembly

A UV-cured bond is virtually permanent, i.e. any disassembly of incorrectly bonded parts that may become necessary is generally neither mechanically nor chemically practicable. However, since adhesives behave thermoplastically, debonding at temperatures of around 200 °C is possible, provided that the bonded components can withstand these temperatures. However, there is a risk of glass breakage due to uneven heating or cooling; therefore, the components should be heated and cooled carefully.

Limitations

CONLOC UV adhesives are not suitable for:

- Constructions requiring an elastic bond or exposed to continuous water contact at the bond gap, e.g. aquarium bonding
- Large-area bonding of materials with significantly different coefficients of thermal expansion, e.g. an aluminium strip bonded to glass

For such applications, EGOSILICON sealants and adhesives are available. EGO will be pleased to provide technical advice and support.

Occupational Safety

As with all chemical products, proper occupational hygiene is essential when working with CONLOC UV adhesives. Please refer to the Safety Data Sheet. Technical data and further application instructions can be found in the Technical Data Sheets for the respective CONLOC UV adhesive types.

Notes

In addition to the information provided in our Technical Data Sheets, the relevant DIN standards as well as the applicable regulations, codes and guidelines issued by various trade associations and organisations must be observed for the intended application. The information and recommendations regarding the application and processing of our products are based on our application engineering tests, our product and technical expertise, and our practical experience.

Due to the wide variety of materials, application-specific conditions and working conditions beyond our control, we recommend carrying out sufficient application tests in all cases to ensure the suitability of our products for the intended application. As a general rule, we recommend carrying out a test bond and subsequently determining the load-bearing capacity/load limit of the bond through your own tests [impact, tilting, movement]. Please take the expected temperature exposure into account when conducting the tests.

If you have any questions, we recommend seeking technical advice. No liability can be derived from these instructions or from any verbal advice.

Lap Shear Strength Test Specification

See technical data under Test Specification

- based on an overlap of the bonding surface of 6 × 35 mm
- Glass-to-glass bonding
- UV curing is possible using suitable UV lamps
- measured under standard climatic conditions at +23 °C [50 % relative humidity]
- Test speed: 1 mm/min
- Substrate cleaning with EGO REINIGER SOFT

