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Technical Information

UV BONDING

Incorporates verifix glass positioning devices, UV-curing lamps and Bohle UV glues to enable strong clear bonding of glass and metal pieces.



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UV Glass Bonding Products & Fittings 🔳

Application examples of the Verifix glass bonding system: Glass furniture, decorative and utility glass objects

to suit various applications.

POSITIONING

- Angular constructions such as showcases
- Glass constructions in general, ie, display windows
- Installing partitioning walls into glass cabinets

BONDING

UV glues can be used to bond:

- Glass to glass
- Glass to some metals
- Glass to some wood types
- Glass to some plastic types

UV glues are cured by exposure to UV radiation. For best results always use the correctly specified Bohle UV lamp.

Verifix glass positioning devices are available in different configurations

BENEFITS OF UV BONDING

- Crystal clear bonding
- Short curing time
- Strong and durable
- Can be used on laminated glass
- Coloured adhesives available

DISPENSING

Controlled application of the UV glue is important to provide optimum strength and durability. Various applicators are available to suit different dispensing requirements.

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CURING

UV adhesives can only be cured with Bohle UV lamps

Bohle offers a wide range of different models to meet any requirement. Highly efficient lamps with a long effective work length are designed to cure longer distances quickly and tension free. Smaller lamps are handy to use for smaller glass objects or whenever the rapidness of the curing process is not the main factor.

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HARDWARE AND ACCESSORIES

For many glass assemblies, accessories such as hinges, locks, etc, are needed. Glasscorp stocks a wide range of these high quality accessories.

ADVICE AND TRAINING

Our qualified staff will be happy to answer any questions. Glasscorp regularly organises seminars and training sessions covering this topic. These take place at Glasscorp's premises.



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GLASS-BONDING TECHNOLOGY

Instructions for glass bonding with UV-curing adhesives.

MATERIAL SELECTION		
MAXIMUM STRENGTH	MEDIUM STRENGTH	LOW STRENGTH
 Glass/glass Glass/metal (stainless steel) Glass/stone (granite) Glass/wood (hard wood) 	 Glass/plastic Tempered glass Laminated glass Coloured glass Ornamental glass Sand-blasted glass Sanitised glass 	All porous or open-pore materials and heavily structured (> 0.5 mm) materials as well as lacquered and coated materials

MATERIAL SELECTION (check suitability of adhesive)

Depending on the chosen material and the corresponding adhesive, different bonds will have different final strengths.

The table above refers to transparent, UVA light permeable float glass. Clear float glass, mirror (non silvered side) and tempered glass can be bonded without problems. Special glasses may lead to lower strength values or cannot be bonded at all. Problematic are all structured glasses, such as ornamental glass, wired glass, sandblasted glass or sanitised glass. The UVA light permeability depends on the glass thickness and how intensely coloured the glass is.

Note: Glasses with high UV absorption such as laminated glass, intensely coloured glass (eg, green/blue/bronze) cannot be bonded with common UV adhesives. For these applications use only the highly sensitive Lamifix® 678. (UV100)

Note: The smoother the bonding surfaces and the thinner the adhesive layer, the stronger and more load resistant the bond. When bonding glass to metal, the metal parts should be free of separating agents (eg, grease, polishing agents, silicones, oils, etc) and they should not be coated in any way (Laquer etc) Stainless steel is the most suitable material.

PREPARING THE BONDING SURFACES

Cleaning

- Bonding surfaces must be absolutely clean, free of grease, and dry.
 Use appropriate cleaners when UV bonding without
- tensides and separating agents.
- Common glass cleaners are in most cases not suitable.
- Recommendation: IPA cleaner in combination with fine steel wool.

Note: Improved long term adhesion of challenging bonds may require the use of Pyrosil[®] surface treatment. The additional pretreatment of problematic surfaces with the Pyrosil[™] technology results in a durable high-tensile/shear strength as well as better moisture resistancy of the bond. Especially important for high load bearing glass/metal bonds, such as hinges/locks etc.

(Used in very specialised applications - for further information contact Glasscorp).



OPEN CONSTRUCTION (LOW STRENGTH)

Warming

Adhesive as well as parts to be bonded must be at room temperature during bonding. However, in order to obtain a durably stable bond it is essential to heat parts prior to bonding in order to remove any (possibly not visible) condensation. All bonding parts must be slowly and evenly heated to avoid any tension build-up. Heat parts to approximately 30 degrees Celsius above room temperature using a hot air gun or blow dryer. Allow to cool to just above room temperature before bonding The adhesive should be applied within 5 minutes of heating parts. Should a longer period have passed, the parts should be reheated.

Disregarding this recommendation may lead to considerable (in cases not immediately noticeable) loss of strength, resulting in a break of the bond.

Choosing the right adhesive

Choosing the right adhesive depends on factors such as materials to be bonded, applicable loads and intended uses.

Constructions

Whenever possible the glass construction should be self stabilising (see illustration). This avoids high bending tensions within the glass and bond. The construction is more stable and can durably bear higher loads.

Elastic adhesives such as 678 (UV100) and 690 (UV104A) should not be used in open constructions, only closed.

Positioning devices

Use Bohle Verifix positioning devices to hold parts securely in place during bonding.

Application of adhesive

- Before applying the adhesive it is recommended to check if bonding parts fit in their intended position. This is best done by building the complete construction without bonding with the help of positioning devices.
- Bonding should preferably be executed in a horizontal position; vertical application of the adhesive may lead to problems.
- Too much adhesive reduces the strength of the bond and increases the workload for removing excess adhesive. Dispensing systems allow a precise and economic application of the adhesive.



CLOSED CONSTRUCTION (HIGHER STRENGTH)

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GLASS-BONDING TECHNOLOGY – Continued

Instructions for use for glass bonding with UV-curing adhesives.

Adhesive application BEFORE joining the parts

When bonding surfaces with Bohle 682 (UV104) or MV760 (UV179A) adhesive, the adhesive is always applied before joining the parts.

- When bonding horizontally, the bonding parts should be evenly and carefully lowered to avoid trapping any air bubbles.
- The weight of the bonding parts is sufficient to evenly spread the adhesive over the complete bonding area.

Adhesive application AFTER joining the parts

Low-viscosity adhesives (Bohle 665 (UV101), LV740 (UV179), 678 (UV100) and 690 (UV104A) adhesive) possess a capillary action creeping into the bonding gap by itself. Therefore the bonding parts can be joined before applying the adhesive.

- Do not work on all parts at the same time but build the object step by step.
- Should the adhesive not have spread over the whole bonding surface, the parts should be slightly lifted and lowered again (enlarging and decreasing the bonding gap) before curing.

Curing exposure to UV light

Curing is completed in two steps. By pre-curing a working strength approximately 70% of the final strength is achieved. At this stage, excess adhesive outside the bonding surface can easily be removed.

- Use only Bohle UV lamps. The lamp should not be shorter/smaller than the bonding edge/surface to avoid build-up of tensions due to uneven curing.
- Position lamp as close as possible to the bonding surface.
- Never move parts during the curing process and do not expose to vibrations.
- Pre-curing takes between 10 seconds to approximately 2 minutes, depending on type and efficiency of the lamp.
- Exposing the bond longer than necessary to UV light does not have any negative effect, but does not improve the bond either.

- After pre-curing, remove any positioning devices and clean assembly from possible adhesive residues
- End-curing the bond: Expose for between 60 seconds to approximately 5 minutes depending on the type of lamp.
- After the final curing the bond is fully functional and can be put under load.

Bohle UV lamps are equipped with UV filters to avoid any damage to eyes and skin. For your own safety, you should additionally use appropriate protection, for example, protective glasses with UV filter and disposable gloves.

Test bonding

If you are uncertain of ideal bonding conditions, always make trial bonds.

- Follow instructions as above when bonding
- Test strength of the bond by subjecting to stresses in excess of those to which it would normally suffer, e.g., impacts, tilting or sudden movements. If necessary, use tools like pliers, etc
- Put under load until parts disconnect or break to determine the load limit (ensure protective clothing and safety glasses are worn during testing procedures)

Note: In case of problems, doubts about specific bonding conditions or any other questions, please contact our experienced staff.

WARRANTY

Bohle guarantees the satisfactory quality of the products and the materials supplied by them. However, the quality of the bond depends on parameters which are outside their control. Bohle 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. - latglass

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PYROSIL® SURFACE PRETREATMENT

This process involves using a flame and coupling agent to enhance adhesion on problematic surfaces or where a higher degree of strength is required. For example metal parts, hinges, locks, etc. Please contact Glasscorp for full details.

The load bearing capacity of a bond is measured by its tensile strength, which indicates at which level of force the bond fails.

Optimal effectiveness is achieved when the greatest possible adhesion of the adhesive is attained. To make sure that bonds of problematic surfaces stay securely and durably bonded, e.g. glass/metal bonds such as hinges/locks or glass subject to continuous stress such as humid rooms, a surface pre-treatment is essential.

With the Bohle PYROSIL® technology, a silicate sinter layer is brought on to the glass surface with the help of a flame burner. In a second step, a coupling agent is applied, which reacts with the silicate sinter layer and subsequently also forms a permanent chemical bond with the adhesive when bonding. Such a pre-treated bond is durably protected against moisture infiltration.

IMPORTANT INSTRUCTIONS FOR USE

- Both bonding surfaces must be treated
- Only the combination of flame and coupling agent produces the targeted characteristics
- The coupling agent must be applied thinly and be allowed to flash off sufficiently
- All further instructions relevant to glass bonding equally apply to the silicate technology
- As far as possible, bonding should be done immediately after pre-treatment

PLEASE NOTE:

UV Bonding requires specialist training and the completion of each step (cleaning/heating/curing) to obtain satisfactory results. Please contact Glasscorp for advice before proceeding.



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