3

GLUING

Swarovski products can be glued to a wide range of materials in a variety of application areas. The greatest quality is ensured by following the entire application process.

PRODUCT OVERVIEW

The following products are suitable for gluing:

	GLUING
Round Stones	✔
Fancy Stones	✔
Settings	✔
Crystal Pearls	✔
Pendants	✔
Flat Backs No Hotfix	✔
Self-adhesive Elements	✔
Synthetics	✔
Plastic Trimmings: Basic Bandings	✔*
Metal Trimmings: Chaton & Flat Back Bandings/Motifs, Spike Bandings	✔
Crystal Mesh	✔

* Plastic Trimmings made of PE or PP are not suitable for gluing.

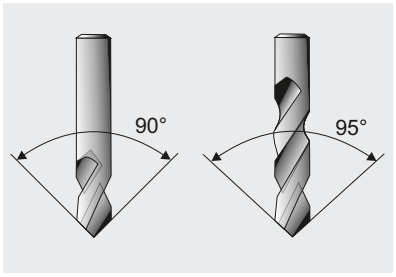
MACHINES AND TOOLS

The following machines and tools can be used for the various processes involved in gluing Swarovski products:

CNC milling machine

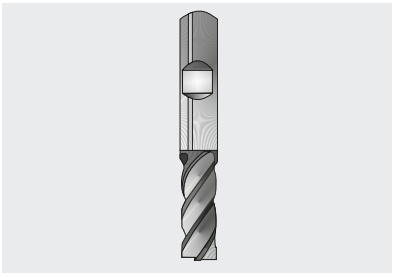
Box column drill

Hand drill



Twist drill 90°/ NC drill 90° for XILION Chatons

Twist drill 95°/ NC drill 95° for XIRIUS Chatons



Milling cutter

Test Pen (art. 9030/000)

Isopropyl alcohol/Acetone

Blow torch

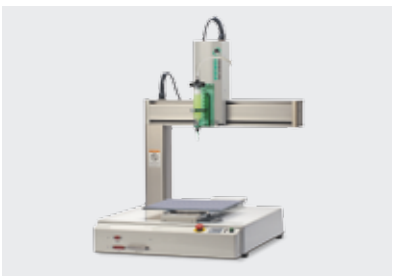
Corona

Plasma cleaner

Precision balance

Gloves

Protective eyewear



Dispensing robot

Courtesy of I&J Fisnar, Inc.

Fluid dispenser

Dispensing gun

Dispensing syringes with dispensing tips

Mixing Nozzle (art. 9030/126)

CG 500 (A+B)
Two-component epoxy resin glue: 50 ml cartridge (25 ml resin + 25 ml hardener)

CG 500 (A+B)
Two-component epoxy resin glue: 100 ml tube (50 ml resin + 50 ml hardener)

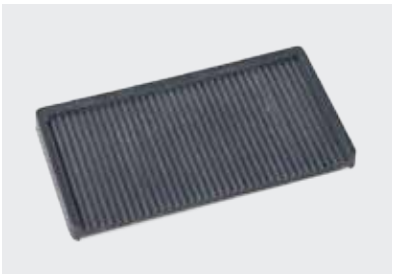
CG 500 (A+B)
Two-component epoxy resin glue: 2 l box (1 l resin + 1 l hardener)

CG 610 (A+B)
Two-component epoxy resin glue: 50 ml cartridge (33.3 ml resin + 16.7 ml hardener)

CG 610 (A+B)
Two-component epoxy resin glue: 750 ml box (500 ml resin + 250 ml hardener)

Different glues

Chaton Sieve for Chatons size PP 0 – PP 1 (art. 9030/003)



Chaton Sieve for Chatons size PP 2 – PP 20 (art. 9030/001)

Chaton Sieve for Chatons size PP 21 – SS 34 (art. 9030/002)

Vacuum pick-up system such as the Swarovski vacuum pump with silicone hose (art. 9040/022), adapted with a dispensing tip

Tweezers

Wax stick

UV light

Drying oven

SUPPLIERS

This list provides an overview of selected suppliers worldwide.

MACHINES & TOOLS	SUPPLIER	CONTACT
90°/95° NC drill/milling cutter	Dixi Holding SA Hahn & Kolb GmbH Hoffmann GmbH Reich Präzisionswerkzeuge Wedco	www.dixi.ch www.hahn-kolb.de www.hoffmann-group.com www.reich.at www.wedco.at
Test Pen	Swarovski: art. 9030/000	www.swarovski-professional.com
Fluid dispenser (with/without vacuum suction)	Epoxy & Equipment Technology Pte Ltd Hottemp (M) Sdn. Bhd. I & J Fisnar, Inc. PT. SKT International Vieweg GmbH	www.eet.com.sg www.hottemp.com.my www.fisnar.com www.sktisolution.com www.dosieren.de
Mixing Nozzle for CG 500 (A+B) and CG 610 (A+B) (10 pcs.)	Swarovski: art. 9030/126	www.swarovski-professional.com
CG 500 (A+B) Two-component epoxy resin glue	Swarovski: art. 9030, CG 500 (A+B) 50 ml cartridge, America, Asia, Europe art. 9030, CG 500 (A+B) 100 ml tube, America, Asia, Europe art. 9030, CG 500 (A+B) 2 l box, America, Asia, Europe	www.swarovski-professional.com
CG 610 (A+B) Two-component epoxy resin glue	Swarovski: art. 9030, CG 610 (A+B) 50 ml cartridge, America, Asia, Europe art. 9030, CG 610 (A+B) 750 ml box, America, Asia, Europe	www.swarovski-professional.com
Araldite® adhesives	Bodo Möller Chemie GmbH	www.bm-chemie.com
3M™ Scotch-Weld™ adhesives	3M	www.3m.com
DELO adhesives	DELO Industrial Adhesives	www.delo.de
Elastosil® adhesives / MS Clear HS	Wacker Chemie AG	www.wacker.com
Loctite® adhesives	Henkel Ltd.	www.loctite.com
C. Kreul Hobby Line Schmuckstein Kleber (glue for gems)	C. KREUL GmbH & Co KG	www.c-kreul.com
CHRISANNE glues	Chrisanne Ltd	www.chrisanne.com
Bostik 1475	Bostik SA	www.bostik.com
UHU plus endfest 300	UHU GmbH & Co KG	www.uhu.com
Tile glues / joint sealers	PCI Augsburg GmbH KERAKOLL Spa ARDEX GmbH	www.pci-augsburg.de www.kerakoll.com www.ardex.com

MACHINES & TOOLS	SUPPLIER	CONTACT
Chaton Sieve	Swarovski: For Chatons size PP 0 – PP 1: art. 9030/003 For Chatons size PP 2 – PP 20: art. 9030/001 For Chatons size PP 21 – SS 34: art. 9030/002	www.swarovski-professional.com
Vacuum pump with silicone hose, can be adapted to a pick-up system by attaching a dispensing tip	Swarovski: art. 9040/022	www.swarovski-professional.com
Vacuum pick-up system	Epoxy & Equipment Technology Pte Ltd I & J Fisnar, Inc.	www.eet.com.sg www.fisnar.com
Pick-up stick	Crystal Ninja	www.crystalkatana.com
Dispensing tip for adapting a vacuum pump	Gonano Dosiertechnik GmbH Vieweg GmbH	www.dosieren.net www.dosieren.de
UV light	DELO Industrial Adhesives Dr. Hönle AG Heraeus Holding GmbH Herbert Waldmann GmbH & Co. KG	www.delo.de www.hoenle.de www.heraeus.com www.waldmann.com
Drying oven	Heraeus Holding GmbH VWR International, LLC.	www.heraeus.com www.vwr.com

APPLICATION

When gluing Swarovski crystals, optimal results are obtained by **coordinating the entire application process**. Following the application steps in the right order is very important. Experience has shown that the most common reasons for crystals becoming detached are inappropriate areas of application, poorly produced cavities, unsuitable gluing systems, and insufficient quantities of glue. **Product-specific application instructions** are detailed later in this section.

CAVITY PRODUCTION

Many Swarovski crystals require cavities in order to be applied to materials. A properly produced cavity in combination with a suitable gluing system ensures a stylish, long-lasting application. The cavity makes it easy to glue properly and ensures higher **protection of the crystal against mechanical and chemical stress**.
There are several different production methods and cavity types. Always take into consideration the requirements and base material of the finished product when choosing the appropriate cavity, pre-treatment method, and kind of glue.

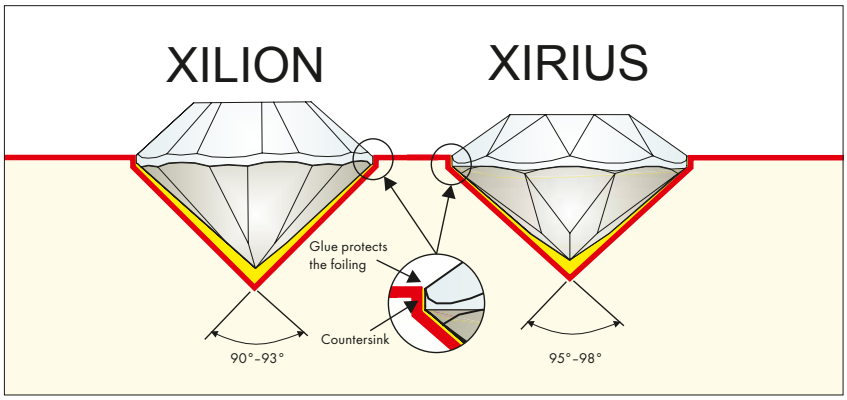
PRODUCTION METHODS

- **Drilling** is when materials are machined using a power drill and drilling tool.
- **Milling** is when materials are machined using a milling machine and milling cutter. Milling machines can be fitted with appropriate tools depending on the materials, e.g. for working with metal and plastic, wood, or natural stone. Modern CNC machining centers offer the greatest precision and can be used to produce **cavities of every shape** necessary. Please note that when machining natural stone, ceramic, or glass, for example, special diamond-tipped tools must be used.
- **Water jet cutting** allows materials to be separated via a high-pressure jet of water. Economic reasons make water jet cutting machines ideal for certain crystal shapes that are integrated into flat materials. Please note that only **end-to-end cavities** can be produced in this way. In addition, materials that swell through water cannot be worked with. Absorbent materials must be fully dried before gluing the crystal.
- **Casting:** To reproduce cavities, particularly in the jewelry sector, the cavities can be made when the metal component is cast. When following this process, the cavities must be cut into the original model. To prevent the bottom of the cavity being rounded off, which would result in the crystal sitting too high, it is recommended that an additional indentation is made when producing the original model.
  Further instructions on jewelry production can be found on page 37.

CAVITY TYPES

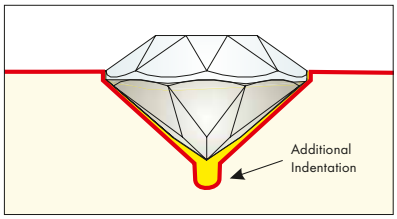
Depending on the Swarovski products used, various cavity types can be made using the different production methods.

SWAROVSKI PRODUCTS	PRODUCTION METHOD	CAVITY TYPE
Round Stones	Drilling Milling	**Chaton cavity**

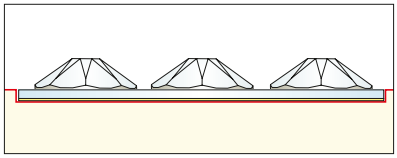
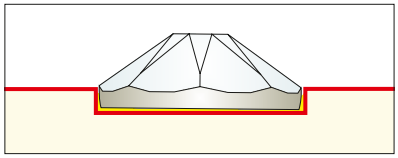
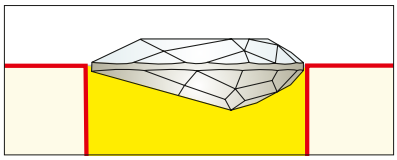
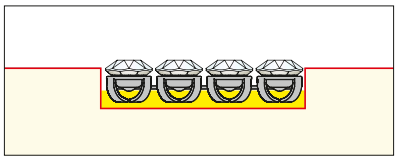
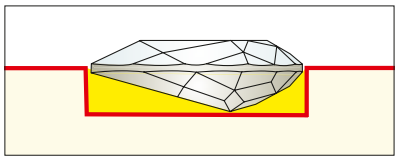
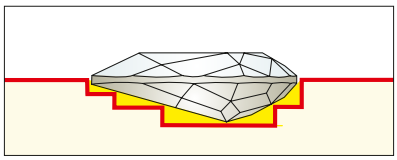


The optimal cavity for a XIRIUS Chaton is produced at an **angle** of **95° – 98°**, for a XILION Chaton at **90° – 93°.**
The cavity should have the same maximum diameter as the crystal plus at least 0.1 mm. The stone sizes available for Swarovski crystals can be found on page 21. For particularly large crystals with a prominent girdle, it is advisable to use an additional countersinking process. Please find a cavity calculator on WWW.SWAROVSKI-PROFESSIONAL.COM.

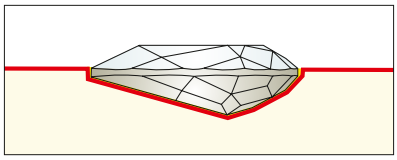
Round Stones	Casting	**Chaton casting cavity**



For jewelry manufactured by casting, an **additional indentation** at the bottom of the cavity can be drilled to avoid a rounded tip, therefore preventing the crystal from being raised out of the cavity.

SWAROVSKI PRODUCTS	PRODUCTION METHOD	CAVITY TYPE
Flat Backs No Hotfix Crystal Fabric Crystaltex Self-adhesive Elements Crystal Rocks Crystal Fine Rocks	Milling Casting	**Indentation**   When gluing an article with a **flat back** it is also advisable to create a cavity as shown here. This cavity ensures that the crystal is better protected against mechanical and chemical stress. The depth of the cavity depends on the height of the girdle and the strength of the base material.
Round Stones Flat Backs No Hotfix Fancy Stones	Drilling Milling Water jet cutting	**End-to-end cavity**  An end-to-end cavity is the **simplest option** when producing cavities. When selecting the glue (page 55), please note the additional instructions regarding the gluing gap.
Plastic Trimmings Crystal Mesh Fancy Stones	Milling Casting	**Blind hole**   A blind hole is another option when producing cavities. It allows Swarovski crystals in a variety of heights to be set and protected in the material. When selecting the depth of the cavity, ensure that there is still a **gap** between the lowest point of the crystal and the base material. When selecting the glue (page 55), please note the additional instructions regarding the gluing gap.
Fancy Stones	Milling Casting	**Step milling**  Compared to a simple blind hole, step milling offers **better hold** of the crystal with less glue. When selecting the depth of the cavity, ensure that there is still a gap between the lowest point of the crystal and the base material. When selecting the glue (page 55), please note the additional instructions regarding the gluing gap.

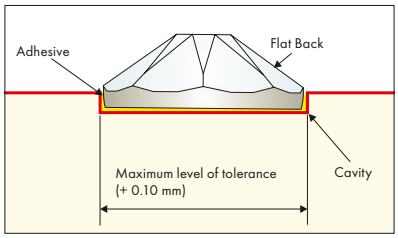
SWAROVSKI PRODUCTS	PRODUCTION METHOD	CAVITY TYPE
Fancy Stones	Milling Casting	**3D milling**



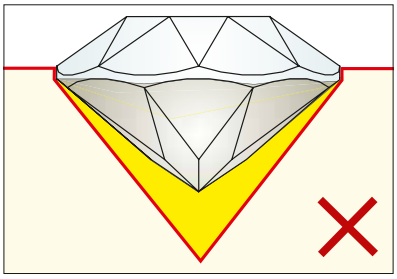
3D milling offers an **optimum fit** with the smallest gluing gap. Due to the fact that the cavity is adapted to the contours of the crystal, CNC milling machines are required.

PRODUCTION TOLERANCES FOR CAVITIES

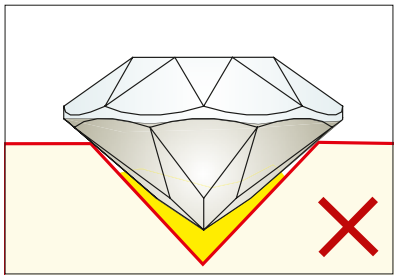
When producing cavities, the dimensions should be based on the main dimensions, including the maximum tolerance for the crystal components used, and the production tolerance. These dimensions can be requested from your Swarovski sales organization.



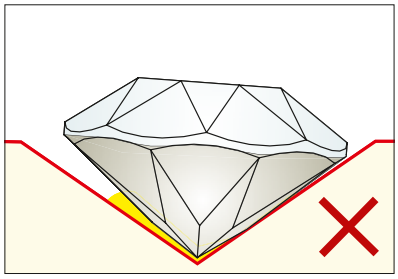
INCORRECT CAVITIES



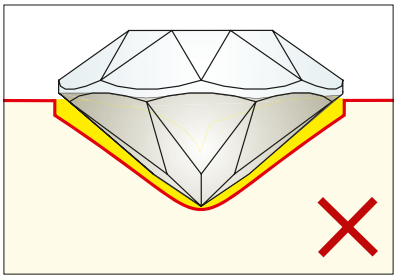
Angle too sharp



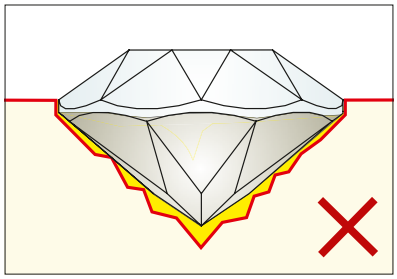
Crystal too large/cavity too small



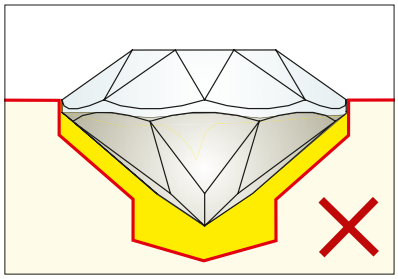
Angle too large



Rounded tip of the cavity



Cavity with uneven surface



Gap too big

CHECKING SURFACE TENSION AND PRE-TREATMENT

CHECKING THE SURFACE TENSION

The surface tension is an indicator for the wetting properties of the surface to be glued. A surface tension of **at least 38 mN/m** is recommended for gluing Swarovski crystals. It should also be randomly tested during production.

It is best to use the Test Pen (art. 9030/000) to measure the surface tension.

1 Before gluing, mark the surface.

2 If the ink remains visible for 2 seconds, the surface is suitable for gluing.

3 If the ink disappears or forms bubbles, the surface is not suitable for gluing. In this case, the pre-treatment cleaning methods should be checked.

Note: On porous or absorbent materials, the surface tension cannot be checked with the Test Pen. If the Test Pen is used on highly polluted surfaces (e.g. grease, oil) or on material like wood, the Test Pen might be polluted as well and cannot be used anymore.

PRE-TREATMENT

If the surface tension is below 38 mN/m, the following pre-treatment cleaning methods, applied in the correct order, can be effective in reaching the right level. After each cleaning process, the surface tension has to be checked again.

TYPES OF CLEANING	PRE-TREATMENT CLEANING METHODS
1 Mechanical cleaning This involves sanding, blasting, or brushing but is usually not necessary for jewelry.	– Removal of dirt, rust, scale, and residues of varnish – Roughening the surface
2 Washing and degreasing It is important to ascertain that the tensides do not contain silicone, as this would impair adhesion. When using solvents it is advisable to test the durability of the surface to be cleaned beforehand to avoid any damage. **Solvents containing substances with a high boiling point should not be used** due to the risk of residue. If using cleaning solvents, wait a few minutes to allow them to evaporate.	– Cleaning with tenside solutions, rinsing with de-ionized water – Cleaning with isopropyl alcohol/ethanol – Cleaning with acetone (MEK/ethyl acetate) – Cleaning with a cleaning solvent: should not contain high boiling point substances (risk of residue)
3 Physical cleaning and activation These cleaning methods can be applied if mechanical cleaning or washing and degreasing are either not possible or have not resulted in a surface tension of >38 mN/m. Therefore the pre-treatment cleaning method used should be done on a case-by-case basis.	– **Flame treatment via a blow torch** The surface to be treated is exposed to the flame of a torch very briefly. When using special gas mixtures, surface silication can also be carried out, so as to apply a more adhesive coating. – **Corona treatment** An electric corona discharge is briefly applied to the surface. – **Plasma treatment** Plasma treatment offers precise cleaning and activates the surface via an ionized gas.
4 Chemical cleaning and primers Applying a primer improves adhesion and helps to prevent corrosion.	– Applying small amounts of solvent and activating the surface. – Applying a primer.

CHOICE OF GLUE

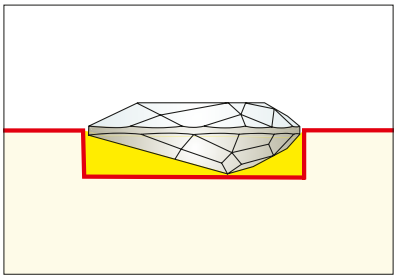
The selection of the best gluing system is the next stage in ensuring a long-lasting application.
When selecting the most suitable glue, the following factors should be considered:

– The type of cavities/the resulting gluing gap
– The size of the crystals/gluing surface
– The gluing properties and finish required
– The type of base material

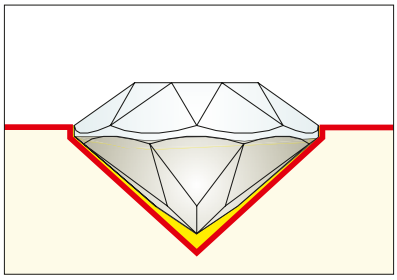
THE TYPE OF CAVITIES/THE RESULTING GLUING GAP

When selecting an adhesive, it is also important to consider the gluing gap that results from the type of cavity chosen. For cavities offering a **large gluing gap, soft and gap-filling** glues such as silicone glue are recommended to avoid tension in the glue joint.

Epoxyethane/polyurethane glues offer **greater strength** and can be used for cavities with a **small gluing gap.**



Large gluing gap



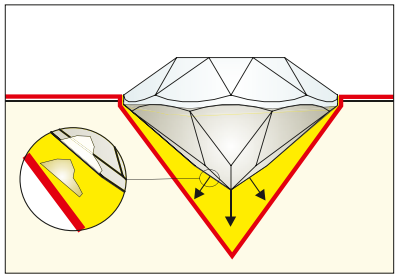
Small gluing gap

THE SIZE OF THE CRYSTALS/GLUING SURFACE

Please note that when gluing small crystals, glues with higher shearing strengths (e.g. CG 500 (A+B) two-component epoxy glue) should be used. Further information can be found in the manufacturer's technical data sheets.

THE GLUING PROPERTIES AND FINISH REQUIRED

When selecting glues, it is important to consider properties such as **pot life, viscosity, color, curing time, ease of dosing, and shrinkage**. Further information can be found in the manufacturer's technical data sheets. Adhesives tend to shrink during curing. There will be a greater amount of **shrinkage** if the wrong glue has been chosen, it is hardened under the wrong conditions, or if there is an incorrectly sized cavity (too much space around the crystal). The tension thus created can damage the foiling and the crystals may even detach. Glues that are very hard after curing and shrink considerably are not suitable for Swarovski crystals with foiling.



The foiling is torn from the crystal because of excessive glue shrinkage (shown in yellow).

THE TYPE OF BASE MATERIAL

The following table provides a selection of commonly known and globally available adhesives that are suitable for different uses and materials. Application tests are advisable to make sure the chosen glue fulfills the specific needs of your application.

Viscosity: Measure of a fluid's resistance to gradual deformation by shear/tensile stress. It corresponds to the informal notion of "thickness".

Color: Description of the glue's color type after curing.
Bonding: Depending on the carrier material, the bonding of the glues can vary.

Viscosity types

low	thin fluid
med	medium
high	pasty

Bonding types

+	sufficient or excellent bonding can be reached
o	sufficient bonding is possible
–	sufficient bonding is nearly impossible

	TWO-COMPONENT EPOXY RESIN GLUES						POLYURETHANE GLUES			CYANOACRYLATE GLUES	UV GLUES		SILICONE GLUES	ONE-COMPONENT SYSTEM	DOUBLE SIDED TAPES	DISPERSIONS & CONTACT GLUES		
	CG 500 (A+B)	CG 610 (A+B)	UHU plus endfest 300	Araldite® 2011	DELO-DUOPOX AD821	3M™ Scotch-Weld™ DP 190	Araldite® 2028-1	3M™ Scotch-Weld™ DP 610	DELO-PUR 9895	LOCTITE® 401™	DELO-PHOTOBOND GB368	DELO-PHOTOBOND 4494	ELASTOSIL® N 2199	DELOMONOPOX AD066	3M™	C. Kreul Hobby Line Schmuckstein Kleber	Bostik 1475	CHRISANNE
Color	translucent	translucent	beige	beige	beige	white/gray	transparent	transparent	beige	transparent	transparent	transparent	transparent	beige	transparent	transparent	beige	white
Viscosity	med	low	high	high	med	high	low	high	high	low	med	med	high	med	-	med	high	high
Crystal	+	+	o	+	+	+	o	o	o	–	+	+	–	+	o			
Glass	+	+	o	+	+	+	o	o	o	–	+	+	–	o	o			
Ceramics	+	+	–	o	+	+	+	+	+	–	–	–	o	o	o			
Stone	+	+	–	o	+	+	+	+	+	–	–	–	o	o	o			
Aluminum	+	+	+	+	+	+	+	+	+	o	+[1]	+[1]	o	+	o			
Brass	+	+	+	+	+	+	+	+	+	o	+[1]	+[1]	o	+	o			
Silver	+	+	+	+	+	+	+	+	+	o	+[1]	+[1]	o	+	o			
Steel	+	+	+	+	+	+	+	+	+	o	+[1]	+[1]	o	+	o			
PC	+	+	–	o	+	+	o	o	o	+	o[1]	+[1]	o	–	o			
PS	+	+	–	o	+	+	o	o	o	+	o[1]	o[1]	o	–	o			
PVC/ABS	+	o	–	o	+	+	o	o	o	+	o[1]	o[1]	o	–	o			
PMMA	+	o	–	o	+	+	o	o	o	+	+[1]	o[1]	o	–	o			
Paper	o	o	–	o	o	o	o	o	o	o	–	–	o	–	o	o	o	o
Cork	o	o	–	o	o	o	o	o	o	–	–	–	o	–	o		o	
Wood	o	o	–	o	o	o	o	o	o	–	–	–	o	–	o		o	o
Textiles[2]	–	–	–	–	–	–	–	o	–	–	–	–	–	–	–	o	o	o

[1] The second gluing part has to be UV transparent. [2] For permanent (wash-resistant) application a Hotfix application is suggested.

CG 500 (A+B) TWO-COMPONENT EPOXY RESIN GLUE

CG 500 (A+B) is a high-performance gluing system for both foiled and unfoiled Swarovski crystals, exclusively distributed by Swarovski for professional use within the jewelry segment and other industries such as accessories, interiors, and electronics.

Key features:
- Ideal mechanical resistance
- Ideal chemical resistance
- Future-oriented solution
- Diverse areas of application

Ideal mechanical resistance

CG 500 (A+B) **absorbs impacts and withstands distortion**. In addition, maximum elasticity protects the crystal foiling.

XILION Chatons that have been glued with CG 500 (A+B) remain in the cavities after extreme mechanical stress due to **optimal shock absorbance** (up to 500%).

XILION Chatons that have been glued with a **standard epoxy resin** fall out of their cavities after extreme mechanical stress due to its **poor shock absorbance** (around 10%).

Ideal chemical resistance

CG 500 (A+B) OFFERS EXCELLENT CHEMICAL RESISTANCE AGAINST:	
Humidity	CG 500 (A+B) prevents infiltration of humidity into the glue and thus any corrosion. Jewelry pieces can be stored and worn in places with high humidity.
Perspiration	CG 500 (A+B) prevents infiltration of perspiration into the glue and thus avoids corrosion. The glued Swarovski products are not damaged by perspiration.
Salt and chlorinated water	CG 500 (A+B) protects Swarovski crystals when they are exposed to salt or chlorinated water. The glued Swarovski products are not damaged during swimming.

Diverse areas of application

CG 500 (A+B) OFFERS IDEAL ADHESION FEATURES ON:	
Metals	E.g. application of Swarovski products on plated surfaces, brass, stainless steel, titanium, gold, rhodium, and silver within the jewelry industry
Gluable synthetics and rubber	E.g. application of Swarovski crystals on ABS, PMMA, PVC etc. within the accessories and electronics industries
Glass, crystal, wood, stone, cork, and porcelain	E.g. application of Swarovski products in the interior and home décor industries

Technical data of CG 500 (A+B)

Mixture ratio (A : B), by volume	100 : 100 (resin : hardener)
Mixture ratio (A : B), by weight	100 : 86 (resin : hardener)
Pot life at room temperature (23 °C/73.4 °F), quantity applied: 1g	15 min.
Complete curing time at room temperature (23° C/73.4 °F)	24h
Complete curing time in oven (40° C/104 °F)	12h
Complete curing time in oven (80° C/176 °F)	2h
Complete curing time in oven (100° C/212 °F)	1h
Handling time at room temperature (23 °C/73.4 °F)	3h
Viscosity (mixed)	20,000 +/- 5,000 mPa*s

Mixing CG 500 (A+B) two-component glue

The exact mixing of the two-component glue is especially important. Only a fully homogenous mixture leads to the desired results. Care must be taken to follow the manufacturer's instructions.

1 Weigh out the two components at a ratio of 100 : 86 (resin : hardener).

2 Mix the two components until a homogenous result is achieved.

3 Put the glue in a dispenser.

4 Attach the dispensing tip to the syringe.

CG 610 (A+B) TWO-COMPONENT EPOXY RESIN GLUE

The CG 610 (A+B) two-component epoxy resin glue was specially developed for gluing Swarovski crystals of very small sizes, starting with PP 0. Depending on the area of application the adhesive can be used for crystals up to the size of PP 14.

Key Features:
- Suitable for gluing very small crystals (starting with size PP 0)
- Low viscosity allows an easier dosing of small glue quantities
- Cost saving due to long pot life (140 min.)

Technical data of CG 610 (A+B)

Mixture ratio (A : B), by volume	100 : 50 (resin : hardener)
Mixture ratio (A : B), by weight	100 : 48 (resin : hardener)
Pot life at room temperature (23 °C/73.4 °F), quantity applied: 1g	140 min.
Complete curing time at room temperature (23° C/73.4 °F)	72h
Complete curing time in oven (40 °C/104 °F)	18h
Complete curing time in oven (80 °C/176 °F)	4h
Complete curing time in oven (100 °C/212 °F)	1.5h
Handling time at room temperature (23 °C/73.4 °F)	24h
Viscosity (mixed)	1,750 +/- 250 mPa*s

APPLICATION

Mixing CG 610 (A+B) two-component glue

The **50 ml cartridge** of CG 610 (A+B) is designed in a way that the containing resin and harder do not have to be mixed together by the user. Just attach a dispensing gun and the mixing nozzle (delivered with the 50 ml adhesive package) to the cartridge and start gluing.

When using glue of the **750 ml box**, resin and hardener have to be mixed in a different way. First, weigh the two glue components at a ratio of 100 : 48 (resin : hardener). It is very important to keep an exact mixing ratio of the two components to achieve maximum adhesion. Mix the two components well for at least one minute. Only a fully homogenous mixture leads to the desired results.
When a homogenous mixture is achieved, put the glue into a dispenser/syringe and attach a dispensing tip.

DOSAGE AND SETTING

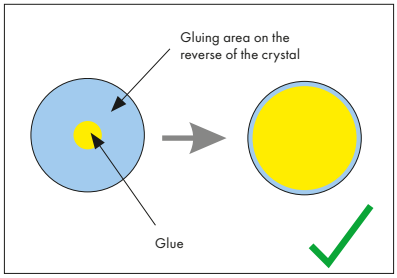
DOSAGE

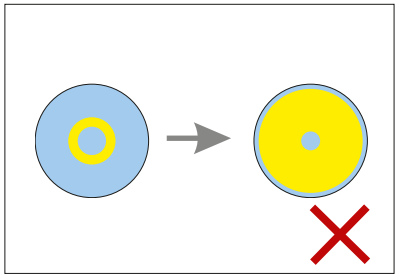
The glue can be precisely dispensed via a variety of dosage systems. Dispensers with a vacuum connection prevent the glue from dripping and reduce the amount of cleaning needed. The correct amount of glue will additionally protect the foiling from external influences. Attention must be paid to the application and quantity of the glue.

Glue application

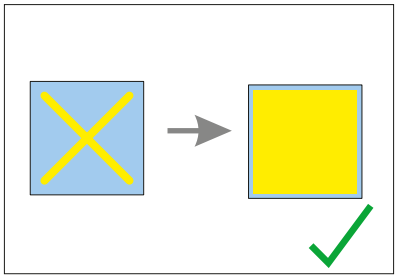
Irrespective of the shape of the gluing area, the glue should be applied as follows:

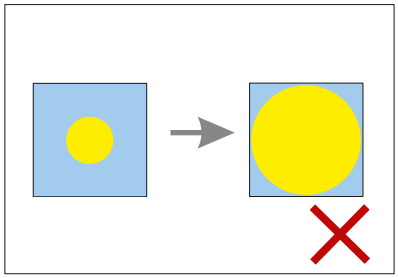
With a **round** gluing area, a dot of glue in the centre is sufficient. When the crystal is applied, the glue will be evenly distributed in the gluing gap. To glue a single spot, aim the dispensing needle just above the spot to be glued and lift it slowly upward to avoid any glue spreading out sideways.





With a **square or rectangular** gluing area, apply a cross of glue to ensure it is evenly spread into the corners.

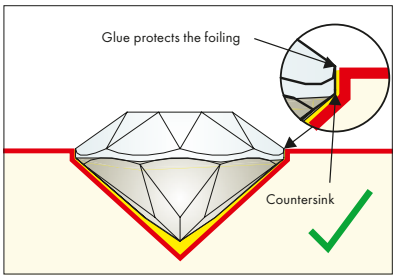


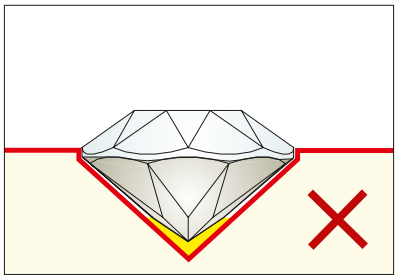


Glue quantity

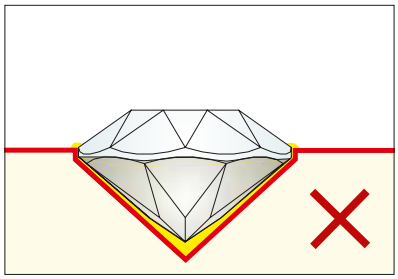
When selecting the amount of glue to dispense, ensure that when setting and pressing down on the crystal, the glue spreads to the edges, thus offering additional protection for the foiling.

Round Stone



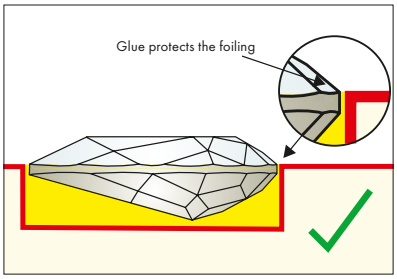


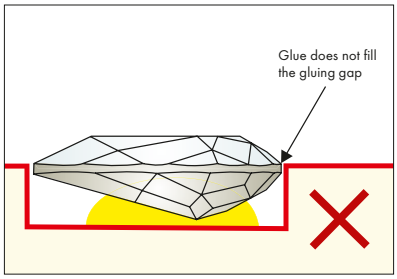
Too little glue



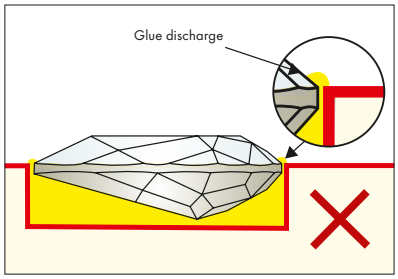
Too much glue

Fancy Stone





Too little glue

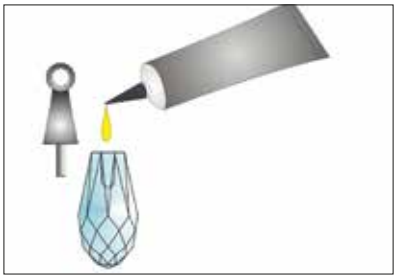


Too much glue

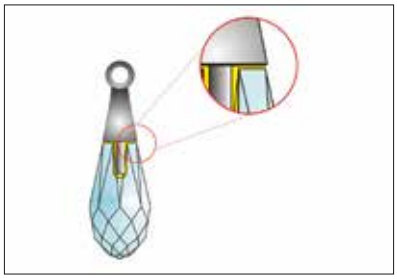
Half Hole Pendant

Two different types of adhesive can be used to affix the single Half Hole Pendant to the metal cap: UV glue and two-component epoxy resin glue.
If using UV glue, the crystal must be permeable to UV light. Please note that some crystal colors absorb UV light and are thus unsuitable for use with UV glues. Best results in internal tests were achieved using the UV glue DELO-PHOTOBOND GB 368. If the crystal color is not suitable for using UV glue, using epoxy resin glue is suggested. In internal tests, the best bond was achieved using CG 500 (A+B).

For further information about commonly known and globally available glues and their adhesion on metal, please check the overview of glues at the beginning of the chapter "Choice of Glue".



1 To achieve precise and consistent results, it is suggested to use a dosage system. Choose a dispensing tip with a diameter smaller than 1 mm and put a dot of glue into the pendant's hole. The amount of glue used depends on the type of adhesive and its curing behavior; performing application tests is therefore recommended.



2 After setting the metal cap into the hole, the glue should be evenly distributed in the gluing gap and spread over the edges to also affix the metal part on top of the crystal. Remove excess glue before it is hardening, e.g. with a cotton wipe soaked in isopropyl alcohol.

Crystal Pearl Metal Part

This metal cap can be glued to Crystal Pearls (art. 5810, art. 5818) or Beads (art. 5003, art. 5028) using an adhesive such as the Swarovski crystal glue CG 500 (A+B).

Please follow the whole gluing process (i.e., cleaning, mixing, dosing, setting, curing) carefully. When the glue is dispensed onto the metal part, make sure that the entire surface of the pin and the base part is covered with the adhesive.

SETTING

Once the glue has been dispensed the Swarovski product can be positioned. Pick up the crystals, for example with a wax stick or tweezers, apply them to the gluing position, and press down gently.

For preparing **Chatons** for the positioning process, a **Chaton Sieve** can be helpful.

Take the black sieve (for size PP 0 – PP 1, art. 9030/003), the gray sieve (for size PP 2 – PP 20, art. 9030/001) or the blue sieve (for size PP 21 – SS 34, art. 9030/002) according to the Chatons' sizes. As the gray and the blue sieves provide two sides with different cavity sizes, make sure to choose the sieve type and side that perfectly matches the Chatons to be set. Place some crystals onto the sieve. By slightly shaking the tool and wiping over it with glove-covered fingers, the majority of Chatons automatically turn into the suitable position for gluing (table pointing upwards).

Chaton Sieve for Chatons size PP 0 – PP 1 (art. 9030/003)

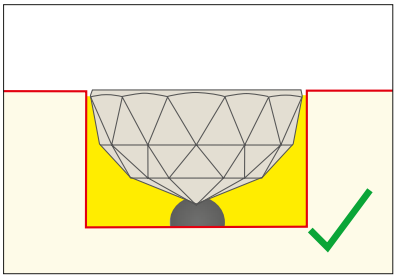
Chaton Sieve for Chatons size PP 2 – PP 20 (art. 9030/001)

Chaton Sieve for Chatons size PP 21 – SS 34 (art. 9030/002)

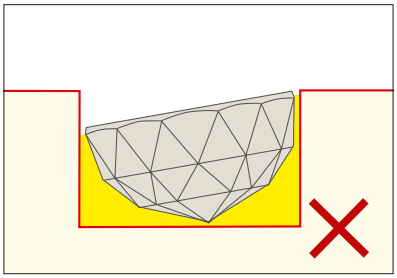
As a next step the Chatons can easily be picked up from the Chaton Sieve using a tool like the wax stick, tweezers, or a vacuum pick-up system. The use of a silicone wax stick is not recommended as this can impair the adhesion and the brilliance of the crystals.

Apply the crystals to the gluing position and press down gently. When working with cavities with large gluing gaps, the following tools assist in ensuring the optimum positioning:

A cross (or a similar tool) prevents the crystal from tipping over. Press the crystal down flat on the material using the chosen tool.



To prevent the crystal from sinking or tipping during the hardening process, a small **plasticine ball** can be used to fix it in place.



POST-CLEANING AND CURING

POST-CLEANING

Excess glue that escapes during setting can be carefully removed using a cotton wipe that has been soaked in a solvent, e.g. isopropyl alcohol. It must be removed **while the glue is hardening**, as dried glue cannot be fully removed. Remember to follow the glue manufacturer's instructions, as well as considering the resistance of the base material.

CURING

The curing time of the glue depends mainly on the **temperature**, or on the **humidity** in the case of silicone glues. Please note the glue manufacturer's instructions.
To minimize shrinking and tension during hardening, we recommend a **maximum curing temperature of 50 °C (122 °F)**, with the exception of two-component epoxy resin glues CG 500 (A+B) and CG 610 (A+B).

Both adhesives can be cured at a maximum temperature of **100 °C (212 °F)**, without any changes to its properties.

OVERVIEW OF THE SIMPLIFIED GLUING PROCESS

1 The surface must be correctly pre-treated before gluing (e.g. cleaning, degreasing, sanding).

2 The glue should be applied with a dispenser.

3 Pick up the crystal, e.g. with the wax stick.

4 Carefully place the crystal in the cavity and press it down gently; post-clean and cure.

PRODUCT-SPECIFIC APPLICATION INSTRUCTIONS

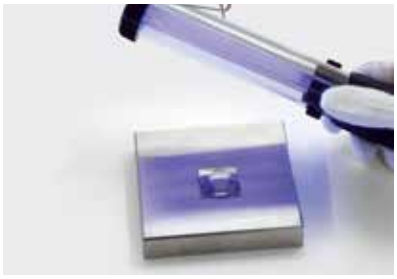
APPLYING UV-TRANSPARENT MATERIALS

When using UV glue, **at least one part** of the materials must be translucent for **UV light**. On a metal surface for example, only crystals without foiling can be applied. Similarly, foiled crystals can only be glued to UV-transparent materials.
Please note that some crystal and glass colors as well as UV-stabilized plastics absorb UV light and are thus unsuitable for UV glues.

1 The surfaces to be glued must be properly pre-treated to achieve a sufficient surface tension. This can be tested via a Test Pen (art. 9030/000).

2 Dispense the UV glue.

3 Press down on the crystal, until the glue completely covers the gluing area.



4 Cure the glue for a few seconds using a UV light (following the manufacturer's instructions), and remove any excess glue using a cleaning agent. The curing process can then be continued, according to the manufacturer's instructions.

Note: It is recommended that UV-protective eyewear is worn during curing, to prevent injury. Please follow the manufacturer's instructions.

APPLYING SYNTHETICS ON SOLID SURFACES (WITH EXTERNAL GLUE)

1 The surfaces to be glued must be properly pre-treated, so as to achieve sufficient surface tension.

2 Apply the correct amount of glue onto the carrier material.

3 Elapse the glue equally on the material.

4 Position the motif in the desired location and press down firmly for a few minutes.

5 Glue that escapes during positioning can be carefully removed using a cotton wipe.

6 During curing it is suggested to put some weight on the motif.

APPLYING CRYSTAL-IT INFINITY

This self-adhesive product consists of Flat Backs in different shapes, sizes, heights, and colors. If applying it on materials such as metal, make sure the surface is free of pollution such as grease or oil.

1 Before starting, put the motif onto a solid underlay such as a desk and press the crystals onto the transparent film. This can easily be achieved when the transparent film points upwards.

2 Make sure the motif still lays on the desk, this time with the white protective film pointing upwards. Fix the motif with one hand, while peeling off the white film at an acute angle with the other hand.

3 Position the motif in the location desired and press down firmly.

4 Carefully remove the transparent film at an acute angle and press down the motif again.

APPLYING OTHER SELF-ADHESIVE ELEMENTS

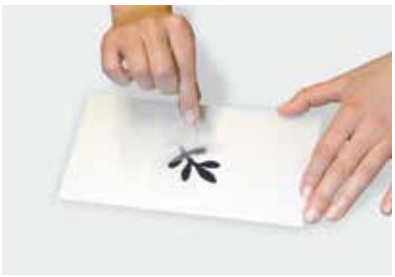
Dry application

1 The surfaces to be glued must be properly pre-treated, so as to achieve sufficient surface tension.

2 Press the motif onto the transparent film.

3 Peel off the white protective film at an acute angle.

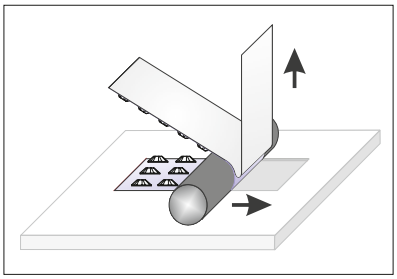
4 Position the motif in the location desired and press down firmly for around 10 seconds.



5 Carefully remove the transparent film at an acute angle and press down on the motif again.

Note: Prevent the self-adhesive back from sticking together, as separating it can cause damage. The minimum application temperature is 18 °C (64 °F), with the glue fully hardening after 72 hours.

For applications on surfaces subject to high mechanical stresses, it is recommended that a cavity is produced.



When applying Synthetics-it remove the white protective film during application in the pre-produced cavity.

Note: When producing cavities, the dimensions should consider the tolerance of the product and the production tolerance. The tolerances of the product can be requested from your Swarovski representative.

Wet application

For larger motifs and those that must be positioned accurately on surfaces, a wet application is recommended. It is essential, however, that the base does not absorb the soap water that is used here.

1 Moisten the cleaned surface with soap water.

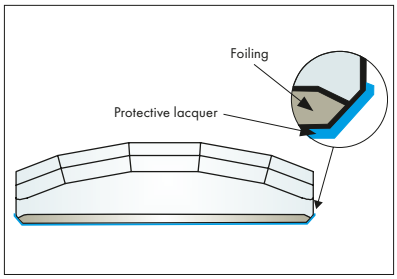
2 Carefully peel off the white protective film at an acute angle, and carefully position the product on the wet surface. After positioning it, press down on the soap water beneath the motif, e.g. using a rubber roller.

3 Carefully remove the transparent film at an acute angle and leave the surface to dry.

4 After drying, press down firmly on the motif again, e.g. using a rubber roller.

APPLYING FLAT BACKS NO HOTFIX FOR MOSAIC TILES

Due to their dimensions (outer dimensions and height) and coating (protective lacquer), selected Flat Backs No Hotfix have been tailored specially for use in tiles and mosaics.



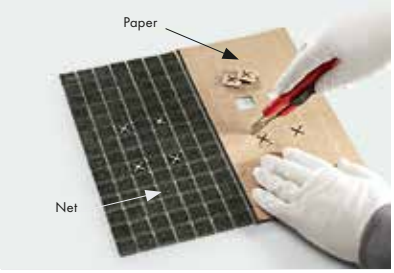
Protective lacquer is applied to the foiling of all crystals, and fully covers the reflective surface. Protective lacquer prevents moisture, cleaning agents, etc. from coming into direct contact with the reflective layer, which can lead to corrosion and damage the crystal.

Long-term, satisfactory solutions can only be achieved with **paper-glued** mosaic tiles and the use of recommended tile glues and joint sealers. When working with **net-glued** mosaics, their absorption and storage of moisture means the **support net** must be **completely removed** in the areas where the crystals are to be applied.
Find suppliers for tile glues and joint sealers on the supplier list on page 48. Solvent-resistant and alkaline tile glues and joint sealers are not recommended.

APPLICATION

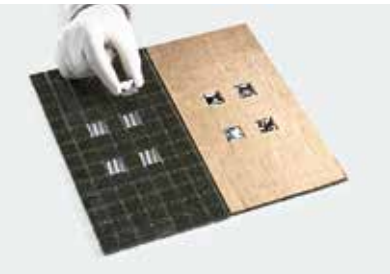
Unsuitable areas of application

- In swimming baths and steam rooms
- In contact with chlorine and other aggressive cleaning agents
- In saunas, due to the high temperatures and moisture
- Outside



1 Cut out the marked tile area and remove it from the mosaic.

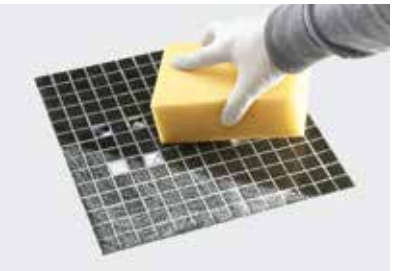
2 Apply the tile glue to the prepared base according to the manufacturer's instructions, then carefully position the mosaic tile and press down.



3 Place the individual crystals in the gaps and lightly press down.

4 Before curing, remove any excess glue with a damp sponge; follow the manufacturer's information regarding curing.

5 After curing, remove the paper support. Following this, the mosaic can be grouted with a soft rubber scraper.



6 Excess joint sealer can be removed with a wet sponge during curing.

Note: Please be aware that many tile glues and joint sealers can contain abrasive materials, which can lead to scratching of the crystal. To avoid damaging the crystal, these parts should be carefully cleaned with mild, pH-neutral cleaning agents and cleaning sponges.

USEFUL INFORMATION

APPLICATIONS ON SILVER JEWELRY

Without protection, silver jewelry can turn yellow or black with time due to chemical reactions. To slow or stop these reactions the surface of silver jewelry is often covered with a temporary (wax-based) or permanent protective coat (varnish-based). Tarnishing on the surface of the metal often results in a decline in the surface tension under the recommended 38 mN/m.

TARNISHING PREVENTION SYSTEMS	
Temporary protection against tarnishing:	**Permanent protection against tarnishing:**
– Wax-based – Low surface tension	– Varnish-based – Surface tension depends on varnish
Recommendation: Protect the rest of the piece after gluing	**Recommendation:** Use a tarnishing protection system with sufficient surface tension

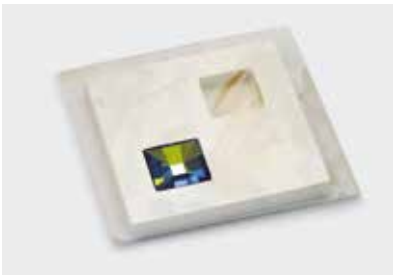
PROTECTIVE FILM

A self-adhesive film can protect against dirt during the application process and aid in positioning.

Blind hole

1 To protect the surface of the material used (e.g. metal, tiles, etc.) from dirt, a self-adhesive film can be applied.

2 It is then cut out along the previously produced cavities.



3 The crystal can now be glued into the cavity. Once any excess glue has been removed, the adhesive film can be removed following curing.

End-to-end cavities

1 Apply a self-adhesive film to the front of the material.

2 Place the Flat Backs No Hotfix elements into the end-to-end cavity from the back.

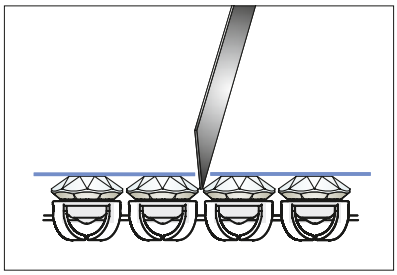
3 Now fill the cavity with glue. The glue should cover the entire foiling of the crystal, so as to avoid corrosion. The self-adhesive film prevents the glue spreading onto the front.

4 Once the glue has cured, the film can be removed.

Note: Highly viscous glues are best suited for end-to-end cavities, as they do not spread through the cracks at the front.

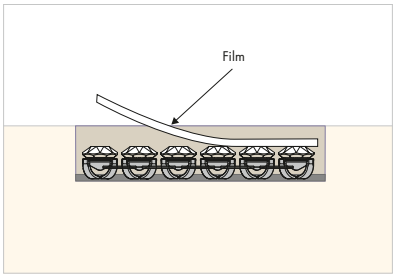
CUTTING AND GLUING CRYSTAL MESH

The transparent film should not be removed before gluing. The film allows the individual crystals to be aligned perfectly, and provides Crystal Mesh with the stability necessary for flawless application.



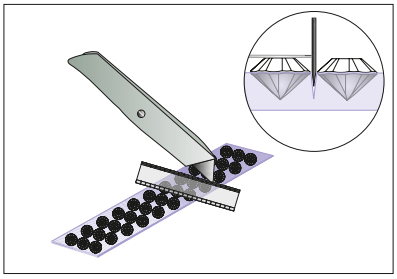
Cut the transparent film between the rows of crystals with a Stanley knife, but do not pull them apart, otherwise the stability of the crystals will be lost.

When gluing flexible Crystal Mesh products, do not remove the transparent film until the glue has cured to ensure the proper alignment of the mesh.

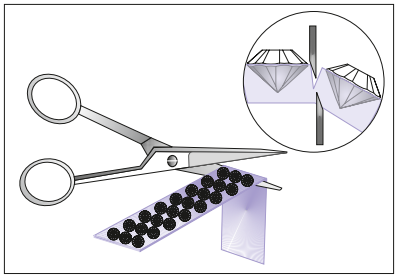


CUTTING CRYSTALTEX CHATON BANDINGS AND CABOCHON BANDINGS

When working with Crystaltex Chaton Bandings and Cabochon Bandings, the lack of space between crystals means great care must be taken during cutting, so as to avoid damaging the crystal.



1 Cut into the support film between the crystal rows with a Stanley knife.



2 Snap and cut off the Crystaltex Chaton Banding and Cabochon Banding along the scored edge.

QUICK ASSISTANCE

The following table outlines typical gluing problems, along with possible causes and recommendations on avoiding them.

PROBLEM	CAUSE
The crystal has become discolored:	
The crystal is matt or yellowed.	1, 2
The crystal seems black and dull compared to the surrounding crystals.	3
The crystal has been plated.	4
The crystal has detached from the cavity without the foiling:	
The crystal has become discolored.	5, 6
The crystal has detached with the mirror coating but without the platinum foiling or the glue.	7, 8, 9
The crystal has detached from the cavity with the foiling:	
Glue is attached to the crystal.	10, 11, 12, 13, 14
No glue is attached to the crystal anymore.	15, 16
Excess glue:	
Before hardening.	2
After hardening.	17

CAUSE		RECOMMENDATION
1	Glue residues have not been completely removed and have been smeared over the crystal.	Use a suitable dispenser to apply exactly the right amount of glue. Dispensers with a vacuum connection prevent the glue from dripping and reduce the amount of cleaning needed.
2	Too much glue was used.	Be sure to use the exact recommended dosage and to carefully remove any excess glue, e.g. using acetone or isopropyl alcohol.
3	The axis of the cavity was already off-center in the original model or the cavity was not drilled straight in the unfinished casting.	Use a special bit when drilling the original model. This offers more precise control of the direction and depth of the drilling.
4	The jewelry was only plated after the crystals had been glued to it.	It is recommended to complete the plating before gluing the crystals.
5	A gluing gap that has not been completely filled is causing corrosion.	Make sure the exact dosage of glue is used.
6	Tensile stresses are reducing the adhesion of the mirror coating. Oxygen is penetrating between the stones and the mirroring and causing oxidization.	Use glue that is more elastic and that does not shrink as much.
7	An incorrect glue system was used.	Carry out tests with other glue systems.

CAUSE		RECOMMENDATION
8	Incorrect proportions of resin and hardener were used.	Follow the glue manufacturer's mixing instructions.
9	Cleaning agents have affected the glue and/or the protective coating.	Use less solvent or a different type of solvent.
10	Residues of polishing agent were not completely removed before plating.	Double check the type of cleaning process used.
11	A varnished piece of jewelry has not been correctly pre-treated before gluing.	Improve the adhesion of the glue, e.g. with low-pressure plasma treatment or flame treatment if necessary.
12	Too little glue was used.	Make sure the exact dosage of glue is used.
13	The cavity has the wrong shape after plating.	Re-work the original model to improve the cavity shape.
14	Electrolyte residues have not been completely removed.	Double check the type of cleaning process used.
15	The specified processing time was exceeded and as a result the glue has already hardened.	Reduce the processing time.
16	General glue problems.	Follow the manufacturer's instructions. Check the conditions under which the glue is stored. Excess solvent could have corroded the glue and/or the foiling.
17	The jewelry piece was put under stress before the glue had hardened.	Make sure the glue has hardened, for example before transporting the jewelry.