

# *sealing* WITH CRYSTAL GLOSS

Sealing CRYSTALLIZED™ – *Swarovski Elements* with Crystal Gloss allows the unmatched brilliance of the crystals to be permanently preserved. This is an innovative application technique developed by Swarovski that can today be used in numerous industries to achieve results of the highest standard.



## PRODUCT OVERVIEW

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The following product groups can be used for sealing with Crystal Gloss:

- Round Stones
- Fancy Stones
- Crystal Transfabric
- Crystal Fabric
- Crystal Glaze
- Plastic Trimmings
- Metal Trimmings
- Crystal Mesh

## MACHINES, TOOLS AND AIDS

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The following machines, tools and aids are necessary for sealing of CRYSTALLIZED™ – Swarovski Elements.

### Tools



#### Crystal Gloss (A+B)

Two-component epoxy resin sealing  
(1 kg box – Art. 9030/100, /200, /300,  
Sys.No. 1031129, 1031136, 1031139)

### Aids



**Weighing machine** (electric scale)



**Vacuum system** or exsiccator



**Mixing vessel & dosing syringes**



**Heating furnace**

## Innovative and future-oriented Sealing Compound by Swarovski Crystal Gloss (A+B) Two-Component Epoxy Resin Sealing

Crystal Gloss is a specially developed two component sealing compound, which preserves the optical brilliance of set in and sealed CRYSTALLIZED™ – *Swarovski Elements* in a quality that has not previously been reached. Crystal Gloss perfectly matches the optical characteristics of CRYSTALLIZED™ – *Swarovski Elements* and preserves their unmatched brilliance.



**Crystal Gloss (A+B)**  
Two-component epoxy resin sealing

Crystal Gloss is suitable for all rigid and glue-able surfaces and can be applied in various layers that have an outstanding resistance to possible cold/warm exposure. In addition, Crystal Gloss has a first class chemical resistance and an exactly balanced relationship between durability and surface hardness.

### Key Features

- Future-oriented solution fulfilling high standards for social responsibility
- High-grade ingredients
- Ideal mechanical and chemical resistances
- Multiple fields of application
- Optimised for CRYSTALLIZED™ – *Swarovski Elements*
- Exclusive distribution

➔ **The number of considerable advantages makes Crystal Gloss an ideal application solution to protect CRYSTALLIZED™ – *Swarovski Elements* on various solid glue-able surfaces.**








### Future-oriented Solution

Crystal Gloss is in line with Swarovski's corporate social responsibility, respecting the environment and supporting the community. It is a sustainable sealing system that fulfils high claims regarding environmental- and health protection for both the consumer and the manufacturer.

Crystal Gloss contains only high-grade ingredients. It is a specifically developed epoxy resin modification, which has been formulated in such a way that the component resin, as well as the component hardener, does not represent any hazardous materials in the sense of the transport regulations according to GGVS/E-ADR and ICAO/IATA, and therefore it offers significant advantages for transportation purposes (e.g. air freight shipping).

Crystal Gloss does not contain any toxically relevant materials and can therefore be classified as completely non-poisonous. In the hardened-out state the material does not contain any emigration-able contents. Usual auxiliary materials such as accelerators and stabilisers are not contained. Compared to standard two-component resin systems **most warning notices do not apply for Crystal Gloss**. It is only evaluated as Xi irritant.

#### Standard Epoxy Resin Sealing

						
E Explosive	F Highly Flammable	T Toxic	Xn Harmful	C Corrosive	N Dangerous for the environ- ment	UN 3082 Environmen- tally hazardous substance, liquid, n.o.s.

**These warning notices do not apply for Crystal Gloss**

## Ideal Mechanical and Chemical Resistances

Crystal Gloss offers ideal mechanical and chemical resistance against:	
Mechanical stress	Crystal Gloss absorbs hits and withstands slight deformations; in addition, maximum elasticity protects the sealing against disruption. E.g. CRYSTALLIZED™ – <i>Swarovski Elements</i> and the sealed surface remain undamaged if people walk over it.
Humidity	Crystal Gloss prevents infiltration of humidity into the sealed crystals and thus avoids any corrosion. E.g. the sealed crystals can be stored and embedded in places where high humidity is known to be present (e.g. bathrooms).
Perspiration	Crystal Gloss prevents infiltration of perspiration into the sealed crystals and thus avoids any corrosion. E.g. the glued CRYSTALLIZED™ – <i>Swarovski Elements</i> will not be damaged through perspiration.
Cleaner & solvent	Crystal Gloss is resistant against usual household cleaner or solvents, e.g. Acetone, Ethanol, Isopropanol, cleanser, soap water or Butyl Glycol
Salt- & chlorinated water	Crystal Gloss protects CRYSTALLIZED™ – <i>Swarovski Elements</i> when they are exposed to salt- or chlorinated water.
Weather resistance	Crystal Gloss protects CRYSTALLIZED™ – <i>Swarovski Elements</i> against extreme temperatures between -40°C to +80°C (-104°F to 176°F).
UV light	Crystal Gloss prevents discoloration of the resin when exposed to sunlight. Therefore Crystal Gloss can also be used for applications on glass. If you expect a very high ratio of UV light - e.g. exterior - we recommend an additional coating of the exposed surface with a UV protection lacquer.

## Multiple Fields of Application

Crystal Gloss offers ideal adhesion features on solid and flat carrier materials like metal, plastic, wood, glass and porcelain. Therefore it is a perfect application solution to protect CRYSTALLIZED™ – *Swarovski Elements* within the interior and home décor industry. In addition, it also represents a possible solution for other segments, e.g. the automotive and electronic industry.

Crystal Gloss is suitable for all solid, glue-able surfaces and can be applied in very thick or very thin layers, which provide excellent resistance to possible cold/warm strains from -40°C to +80°C (-104°F to 176°F). Adhesion properties to a whole range of various solid, glue-able surfaces can therefore be considered as very good.

## Optimised for CRYSTALLIZED™ – *Swarovski Elements*

Crystal Gloss perfectly matches the optical characteristics of CRYSTALLIZED™ – *Swarovski Elements* and preserves their unmatched brilliance. The ideal products for application with Crystal Gloss are Chatons, Fancy Stones, and semi-finished products made of Round Stones (e.g. Crystal Mesh).

**Crystal Gloss is exclusively distributed by Swarovski, available worldwide, without minimum order quantities.**

## Curing

Curing and final strength are dependent on temperature. Curing can be accelerated by application of heat (to a max 60°C/140°F).

If a crystal-clear and to a large extent yellowing-free sealing is to be obtained, then there should be an optimal hardening temperature of <60°C. After the hardening process is completed the material can be mechanically processed (e.g. grinding, milling, polishing) almost without restriction.

## Technical Data Crystal Gloss

Mixture ratio (A : B)	1 : 0.33
Processing time at room temperature (23°C)	3 h
Complete hardening time at room temperature (23°C)	72 h
Hard surface and handle-able in oven at 60°C	6 h
Complete hardening in oven at 60°C	12 h
Surface tension (23°C)	33.0 mN/m
Density (23°C)	1.13 g/cm <sup>3</sup>
Viscosity Crystal Gloss (mixed)	500 mPa*s
Polymerisation shrinkage (23°C)	3.5 %
Polymerisation shrinkage (60°C)	5.8 %

Please take note of the detailed instructions for application of Crystal Gloss, as well as the information for the highest quality sealing of CRYSTALLIZED™ – *Swarovski Elements* at [www.swarovski.com/crystallized/crystal-gloss](http://www.swarovski.com/crystallized/crystal-gloss). There you will also find the safety data sheets and further information.

## APPLICATION

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When applying the crystals, optimal results and maximum brilliance can only be achieved if the surface to be casted is properly prepared. The points below contain valuable instructions for pre-treating and sealing of all listed products in the product overview, and therefore should be followed exactly. Always take into consideration each of the layers of the finished product as well as the required profile and substrate of the finished product when choosing the appropriate cavity, pre-treatment method and the right temperature for hardening.

## Cavities

A correctly shaped cavity is essential for sealing CRYSTALLIZED™ – *Swarovski Elements*. To cast over the crystals they must be placed in an additional cavity. The depth of this cavity depends on the height of the used CRYSTALLIZED™ – *Swarovski Elements* and should allow casting the crystals at least with a minimum layer of 1 mm.



**Left sample:**  
Previously milled cavities for different CRYSTALLIZED™ – *Swarovski Elements*

**Right sample:**  
Fixed crystals (gluing, Hotfix) in the previously milled cavities – ready for sealing with Crystal Gloss

**Please note:** For further information regarding the preparation of cavities please read the instruction guideline in our Application Manual, chapter GLUING on pages 9–10.

## Surface Tension & Pre-Treatment

The **surface tension** is an indicator for the wetting properties of the surface to be sealed. The surface to be sealed must correspond to the general requirements for gluing, e.g. it must be clean, dry and free of oil and grease. A surface tension of at least 38 mN/m or more is recommended for sealing of CRYSTALLIZED™ – *Swarovski Elements*. It should also be randomly tested during production. It is best to use the Test Pen (Art. 9030/000, Sys.No. 919346) to measure the surface tension.

If the surface tension is below 38 mN/m there are several **pre-treatment cleaning methods** that can be effective in reaching the right level.

**Please note:** For further information regarding the ideal surface tension and pre-treatment cleaning methods please find all details in our Application Manual, chapter GLUING on page 10–11.

## Mixing Sealing Components

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



**1** Place component A and component B in a 1 : 0.33 ratio in a mixing container.



**2** Mix the material e.g. with a spatula or with a stirring machine until it becomes a clear and homogeneous liquid (required mixing time more than 2 min). Pot life of the sealing compound is approx. 3 h at room temperature.



**3** Wait until all the air introduced by the agitation has dispersed. Depending on the amount being used, this takes about 5–15 min. Accelerate this process by using a vacuum plunger.

**Attention:** If a larger quantity of the Crystal Gloss mixture remains in the full mixing vessel for a longer period, it can generate very high temperatures (approx. 150°C). Accordingly, the highest level of caution is necessary!

## Casting, Hardening and Processing



**1** When the air has completely escaped from the mixed compound, Crystal Gloss can be used for casting. You can either use a syringe for small cavities or a small vessel to cast it over the fixed CRYSTALLIZED™ – *Swarovski Elements*.



**2** After the casting, the product should be stored in a **clean and dry place** until the hardening process is complete. Hardening time can be accelerated with heat (to a max. of 60°C/140°F).



**3** After the hardening process is completed the material can be mechanically processed (e.g. grinding, milling and polishing) almost without restrictions.

### Avoiding Bubbles before/after Casting

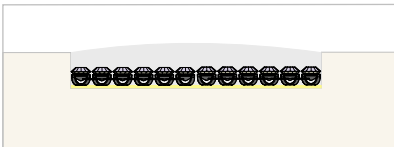
Wait until the air, which has been introduced by the stirring process, has escaped from the compound. This may last 5–15 min. depending on the quantity of used material. It is also possible to evacuate the air from the mixed compound faster with a vacuum system.



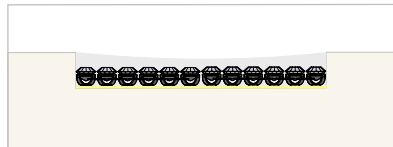
Should there be any air bubbles remaining in the cast, they can be sucked out using a syringe with a fine needle.

### Shrinkage

Generally a two-component epoxy system has a tendency to shrink as it hardens. With large surfaces and/or by thin casting forms, it can therefore result in a deformity of the sealing surface.



To compensate for this shrinkage, somewhat more material should be used.



The casting process can also be carried out in two steps and if necessary extra material can be added.

### Ideal Hardening Results

If a crystal-clear and to a large extent yellowing-free sealing is to be obtained, then there should be an optimal hardening temperature of  $<60^{\circ}\text{C}$ . In this case it is important to consider that the carrier material, on which Crystal Gloss will be applied, also has to reach the circulating air temperature of the furnace.

The application of a lacquer or any other coating, e.g. to increase scratch resistance, can be executed after mechanical working without problems.

## Troubleshooting

PROBLEM	ERROR
Crystal Gloss does not properly harden.	1
Crystal Gloss does not bond with the basic material.	1, 2
The crystal is not completely covered.	3
The casting used too much Crystal Gloss.	4
Air bubbles	5, 6, 7
Crystal Gloss looks yellowish.	1, 8, 9
A bad surface after the hardening process	1, 2, 10

ERROR	CAUSE	RECOMMENDATION
1	There has been an error in calculating the correct mixing ratio between the two components (resin/hardener).	It is absolutely vital to pay attention to the right mixture of <b>1 : 0.33</b> (resin : hardener).
2	Basic material is not glue-able. Incorrect pre-cleaning	See chapter "GLUING" in the Application Manual;
3	Too little Crystal Gloss used in the casting process	Slightly over cast in the first stage or add a little more to the casting form afterwards;
4	Too much Crystal Gloss was used in the casting process.	The additional material can be siphoned off with a syringe while it is still liquid; Or it can be mechanically worked after it is completely hardened. (e.g. by grinding or milling with subsequent polishing);
5	Crystal Gloss has been cast the wrong way.	The casting mass should always be poured from one point only so that no air is taken up with the Crystal Gloss.
6	Air gets into the casting process because of the use of porous basic material.	The pores of the basic material can be pre-sealed by casting a thin first layer and/or by an undercoat of lacquer.
7	Either unsatisfactory or no pre-cleaning of the crystal components being used.	Any air bubbles that result in the Crystal Gloss can be sucked out using a syringe with a fine needle.
8	Use of impure Crystal Gloss.	There must be a great emphasis on cleanliness during the entire casting process.
9	Too intensive exposure to UV rays.	The use of an additional lacquer with UV protection is recommended for use outdoors.
10	Hardening carried out in an environment that is not completely clean.	It is necessary to pay attention to cleanliness during the casting process (e.g. no dust or dirt).

## SUPPLIERS

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**Swarovski** distributes Crystal Gloss globally. Please contact your local Swarovski representative for further information. This list provides an overview of chosen recommended suppliers worldwide and should serve as a guide to locate the optimal supplies.

MACHINES / TOOLS / AIDS	SUPPLIER	CONTACT
Crystal Gloss Two-component epoxy resin sealing	Swarovski 1 kg Box: European version*: Art. 9030/100, Sys.No. 1031129 American version*: Art. 9030/200, Sys.No. 1031136 Asian version*: Art. 9030/300, Sys.No. 1031139	<a href="http://www.swarovski.com/crystallized/crystal-gloss">www.swarovski.com/crystallized/crystal-gloss</a>
Test Pen	Swarovski Art. 9030/000, Sys.No. 919346	<a href="http://www.swarovski.com/crystallized/crystal-gloss">www.swarovski.com/crystallized/crystal-gloss</a>
Dynamic mixing and dispensing devices	Rampf GmbH Bartec GmbH	<a href="http://www.rampf-dosierttechnik.de">www.rampf-dosierttechnik.de</a> <a href="http://www.bartec-dispensing.com">www.bartec-dispensing.com</a>

**\*Please note:** the composition of the sealing resin is the same for all three versions (the different description on the packaging is due to local legal requirements). It is mandatory to order accordingly. For further information please contact your Swarovski partner.

**IMPORTANT INFORMATION**

Our oral, written, and advice by testing are recommendations based on our current state of knowledge and the information provided by our suppliers. It does not discharge you from carrying out your own tests of the proposed techniques and their suitability for the intended application. You will therefore apply, use and process the techniques and products within your sole responsibility.

**GENERAL WARNING**

Loose crystals may present a small parts hazard to young children, particularly children under three years old. Depending on the size of the crystal and any attached material (such as glue, fabric, etc.), children may choke on, inhale, swallow or insert the crystal into nose. With crystal applied magnetic products pose a particular risk of serious intestinal injuries if ingested.

The application techniques in this manual do not guarantee that crystals will not come loose. For each application, the manufacturer must determine whether the product meets relevant requirements related to small parts hazards and assess any risk it may pose to small children. Failure to follow Swarovski's care instructions may result in damage to the crystal, which could pose a risk of laceration or other harm.

**WARNING FOR MAGNETIC PRODUCTS**

Loose crystals may present a small parts hazard to young children, particularly children under three years old. With crystal applied magnetic products pose a particular risk of serious intestinal injuries if ingested. For each application of magnetic crystal products, the manufacturer must determine whether the product meets relevant requirements related to small parts hazards and assess any risk it may pose to small children.

**WARNING**

Application of loose crystals to tableware presents a risk of aspiration, choking, swallowing, or tooth damage. To reduce this risk, crystals should never be applied to any surface of tableware likely to come in contact with food and crystals should never be placed on any tableware intended for use by children. To avoid dishwasher damage, tableware decorated with crystals should be washed by hand.

The application techniques in this manual/suggestion do not guarantee that crystals will not come loose. For each application, the manufacturer must determine whether the product meets relevant requirements related to small parts hazards and assess any risk it may pose to small children.

The use of crystals (which may contain substances known as hazardous) and adhesives on tableware is subject to legal restrictions in specific countries. The customer is fully responsible to comply with these country-specific provisions and shall defend, indemnify and hold Swarovski harmless from any and all third-party claims based on product liability or otherwise relating to uses of Swarovski products and waives all its own claims against Swarovski.

**NOTICE FOR APPLICATION ON PACKAGING**

The use of crystal that may contain substances like lead, cadmium or hexavalent chromium, on packaging is subject to legal restrictions in specific countries, including but not limited in regard to the total content of substances based on the proportion between crystal mass to the remaining weight of packaging. The customer is fully responsible to comply with these country-specific provisions and to pass on this information to his customers.