



APPLICATION MANUAL

Glueing

PRECIOSA



Application of Preciosa components by glueing

Preciosa components can be glued on a wide range of materials in an extensive variety of applications. The highest quality of glueing is ensured by a careful observance of the following procedures.

OVERVIEW OF PRECIOSA PRODUCTS SUITABLE FOR GLUEING

COMPONENT		GLUEING
Fashion Jewellery Stones	Round Stones	✓
	Fancy Stones	✓
Flat Back Stones	No Hotfix Stones	✓
Nacre Pearls	Nacre Pearls, Nacre Cabochons	✓
Cabochons	Cabochons, Special Stones	✓
Stones in Settings	Round Stones, Fancy Stones, Cabochons, Special Stones	✓

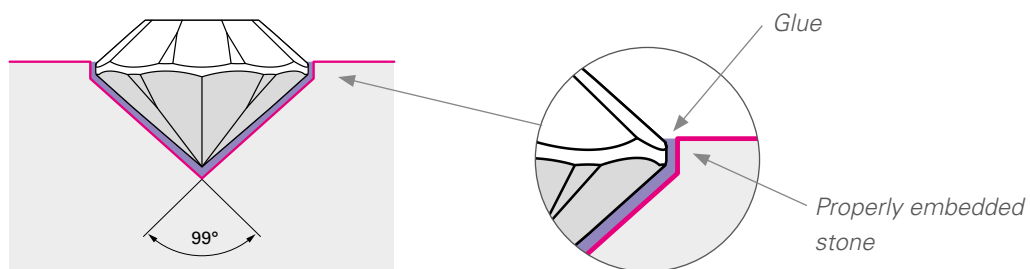
MACHINES FOR CAVITY PRODUCTION AND CAVITY SHAPE

Application of Preciosa stones by glueing requires cavities which can be produced by:

- CNC milling machine
- Column drill
- Hand drill



A correct shape of the cavity (the vertex angle for MC Chaton MAXIMA is 99°) is extremely important for proper mechanical qualities of the glued joint.



TOOLS AND AIDS



Always use protective aids.



Protective gloves



Goggles



Tools for producing glued joints:



Dosing device



Precision balance



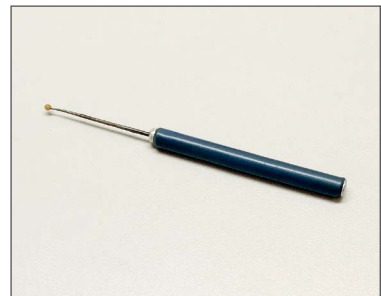
*Dispensing syringe with
dispensing tips*



Glue



Tweezers



Wax stick

Glueing procedure

When glueing Preciosa components, optimal results can be obtained only by coordinating the entire glueing procedure. It is very important to follow particular glueing steps in the right order. Experience has shown that the most common reasons for detached stones are inappropriate application areas, poorly produced cavities, unsuitable glueing system and insufficient quantity of the glue. Specific instructions for glueing particular products are given further in this section.

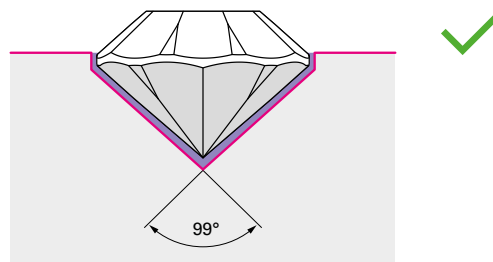
CAVITY PRODUCTION

Many Preciosa components require cavities for their application on some materials. A properly produced cavity and a suitable glueing system ensure a stylish and long-lasting application. The cavity makes it easy to glue the component properly and ensures a higher protection of stones against mechanical and chemical stress.

The optimal cavity for the Maxima chaton should have an angle of 99° . The maximal diameter and size of the cavity should be the same as of the stone plus at least 0,1 mm.

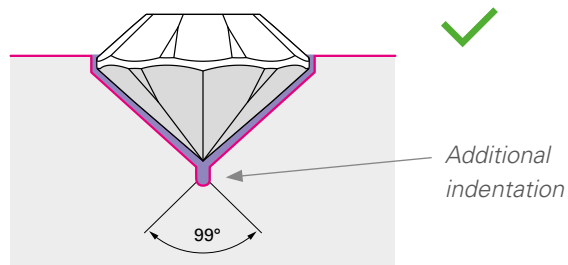
Production methods

- **Drilling** – hard materials
- **Milling** – hard materials
- **Water jet cutting** – shapes integrated into flat materials



Please note that only end-to-end cavities can be created in this way. In addition, materials that soak water and swell cannot be processed. Absorbent materials must be fully dried before glueing the stones.

• Casting

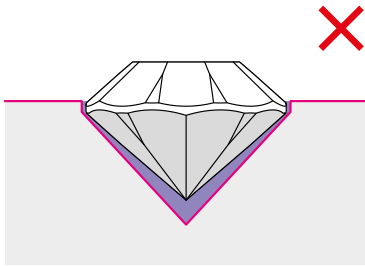


It is recommended to make an additional indentation that will prevent the stone to be lifted.

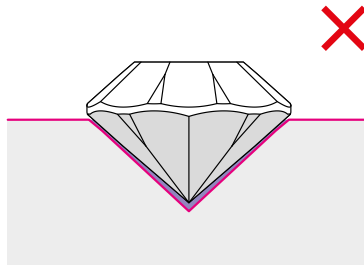


When producing cavities, the dimensions should be based on the main dimensions including the maximal tolerance for the used crystal components and the production tolerances. These dimensions can be required from the sales representative of Preciosa components.

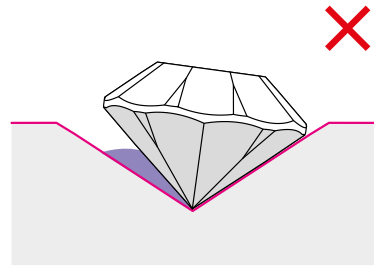
Incorrect cavities



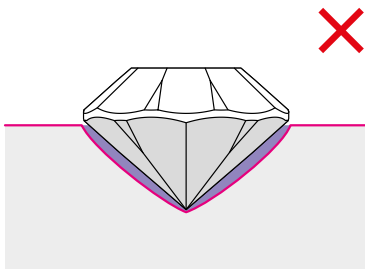
Angle too small



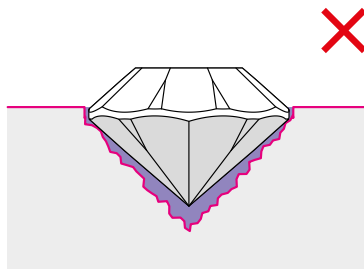
Stone too large / cavity too small



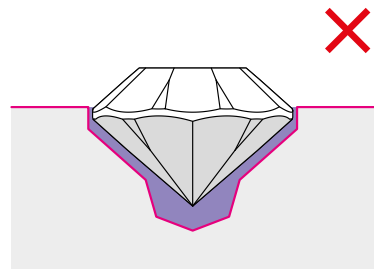
Angle too large



Rounded cavity



Cavity with an uneven surface



Gap too large

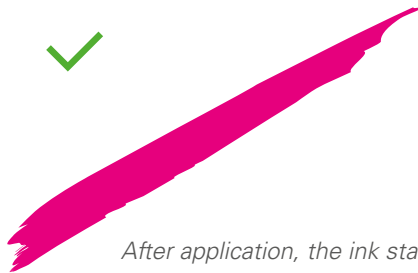
CHECKING THE SURFACE TENSION AND SURFACE PRE-TREATMENT



Test the correct wetting properties of the surface for crystal application with a test ink ARCOTEST. The material is suitable for stone applications if the ink does not disappear in few seconds.



Test of the surface tension



After application, the ink stays in a compact, uninterrupted and unchanged condition on the surface or it spreads and increases the wetted area without changing its consistency – the material is suitable for glueing



The wetted area becomes smaller and starts to break into spots and individual droplets – the material is not suitable for glueing

Surface pre-treatment

In case the surface tension is below 38 mN/m, the following surface pre-treatments can help. The cleaning procedures should be carried out in the right order.

TYPES OF CLEANING	PRE-TREATMENT CLEANING METHODS
<p>1 Mechanical cleaning Sanding, blasting, brushing; for costume jewellery usually not needed.</p>	<ul style="list-style-type: none"> • Removal of dirt, varnish residues, rust, scale. • Roughening the surface.
<p>2 Washing and degreasing It is important to make sure that the tensides do not contain any silicone as this would negatively affect the adhesion. When using solvents, it is recommended to test the durability of the cleaned surface in advance to avoid any damage. Do not use solvents containing substances with a high boiling point due to a high risk of residues. When using cleaning agents, wait a few minutes to allow them to evaporate.</p>	<ul style="list-style-type: none"> • 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 which does not contain substances with a high boiling point (risk of residues).

CHOICE OF THE GLUE

The choice of the best glueing system is the next step that ensures a long-lasting application. When selecting the most suitable glue, the following factors have to be considered:

- The cavity type / gap for glueing
- The stone size / glued surface
- The glueing properties and required surface treatment
- The type of the base material

Materials for glueing, types of glue

The following table provides a list of commonly known and readily available glues that are suitable for different applications and materials. It can also serve as a guide to select an optimal glue for the chosen application and base material.

TYPE OF THE BASE MATERIAL		TYPE OF THE GLUE			
		Two-compo- nent epoxides	Cyanoacrylate	Modified silicone	Dispersive
Hard materials	Glass	✓	✗	✓	✗
	Metal	✓	✗	✓	✗
	Ceramics	✓	✗	✓	✗
	Stone	✓	✗	✓	✗
Polymer materials (glueable)	Plastics: PPMA, PC, PS, ABS, PVC	✗	✓	✗	✗
	Rubber	✗	✓	✗	✗
	TPE (Thermoplastic elastomers)	✗	✓	✗	✗
	Casting resin	✓	✓	✓	✗
Porous materials	Textiles	✗	✗	✓	✓
	PU foams	✗	✗	✓	✓
	Wood	✓	✗	✓	✓
	Paper	✗	✗	✓	✓
	Cork	✗	✗	✓	✓

Stones in Settings

TYPE OF THE BASE MATERIAL	TYPE OF THE GLUE		
	Two-component epoxides		Modified silicone
	UHU	AB	E 6000
Metal	✓	✓	✓
Plastics	✗	✓	✓
Leather	✓	✗	✓

Examples of glue producers

Two-component epoxides	Cyanoacrylate	Modified silicone	Dispersive
Plus 300 Endfest (UHU GmbH)	Cyberbond Apollo 2999 (Cyberbond)	E 6000 (Eclectic product)	DSI glue* (DSI visions)
Araldite 2011 (Huntsman Corp.)	Pronto CA 50 gel (3M)	Konishi Ultrabond SU (Konishi Co., Ltd.)	Crystal Parade – Embellishing Glue (Crystal Parade)
RBC Adhesive 118 (RBC Ind. Inc.)	Loctite 454 gel (Loctite Corp.)	Cemedine Super XG (Cemedine Co., Ltd.)	
	UHU Sekundenkleber (UHU GmbH)		

* Components glued onto fabric with this adhesive are not suitable for machine-washing.



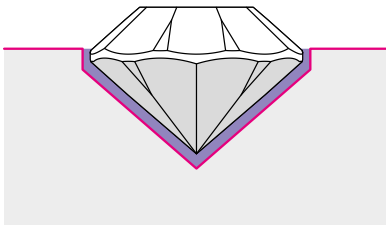
There are many producers of epoxy glues. The crucial quality of the glue is its curing time of ca. 12 hours at 20 °C. The use of epoxy glues „Rapid“ is not recommended. Never use a quick setting glue which could damage the stone foiling! The use of other unmentioned glues has to be discussed with the Preciosa components sales representative.

Glueing gaps between the base material and the stone

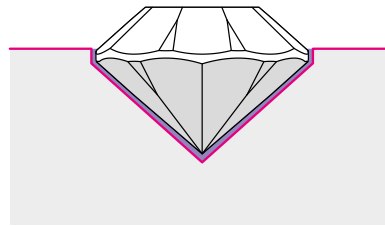


When selecting the glue, it is also important to consider the gap for glueing according to the chosen cavity type. Silicon glues are recommended for cavities with a large gap for glueing as they can fill the gap. The tension in the glued joint is so avoided.

Epoxy-ethane / polyurethane glues offer a higher strength and can be used in cavities with a small gap for glueing.



*Large glueing gap
– use silicon glues*



*Small glueing gap – use epoxy-ethane
/ polyurethane glues*

The size of the stone / glued surface



Please note that glues with a higher shear strength (e.g. two-component epoxy glue Plus 300 Endfest, producer UHU GmbH) should be used for glueing small stones.

GLUEING PROPERTIES AND FINAL PREPARATION OF MATERIALS

Consider also other important glue qualities, as e.g. pot life, viscosity, colour, curing time, ease of dosing and shrinkage when choosing the proper glue. All information can be found in the manufacturer's technical data sheet.

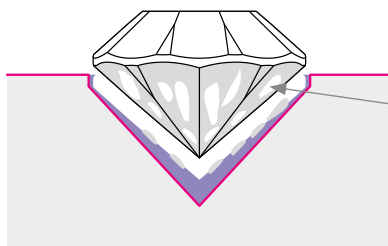
Shrinkage of the glue



Glues tend to shrink during curing and destroy thus the foiling (the applied stone can fall out).

Factors which can influence the shrinkage:

- Wrong choice of the glue – glues which shrink considerably during curing and are very hard afterwards are not suitable for glueing Preciosa components.
- Wrong climate conditions during glue hardening and curing.
- Wrong cavity dimensions – too much space around the stone.



Foiling comes off the stone because of an excessive glue shrinkage

Final preparation of base materials

Preparation of the costume jewellery parts:

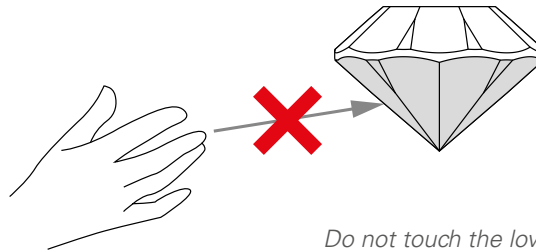
- Remove all undesirable impurities from the surface (dust, corrosion, preserving agents).
- Use organic solvents for cleaning (trichlorethan, acetone, isopropanol).

Preparation of the textile base material:

- Textile materials may have finishes (hydrophobic treatment, fluorine-plastic membrane) that complicate the glueing or make it even impossible.
- These surface treatments have to be removed by chemical cleaning, washing or both. Do not use softeners!

WORKING WITH THE STONES AND DOSING THE GLUE

Preciosa costume jewellery stones are delivered in an original packing with a trade mark. They can be worked with immediately after unpacking, without any further treatments. When handling the crystals, do not touch the lower part of the stone with a bare hand.

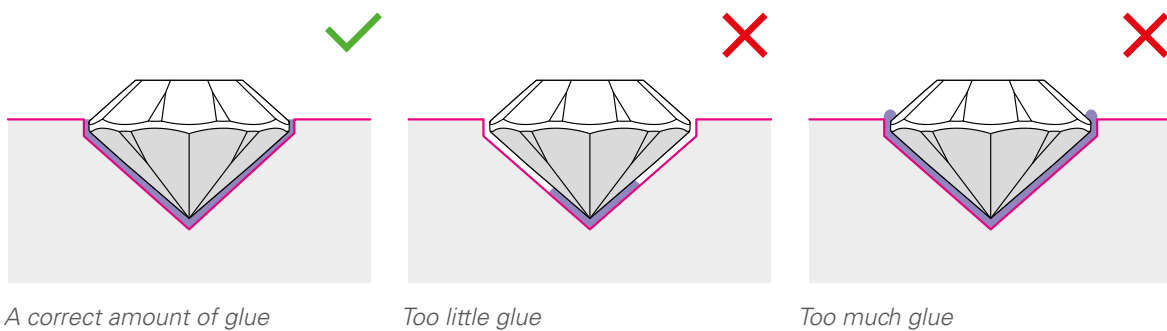


Do not touch the lower part of the stone with a bare hand!



If the lower part of the stone gets dirty (e.g. a finger print) a detergent can be used. The stone should be degreased, dry and without any surface impurities after cleaning.

Used quantity of the glue



A correct amount of glue

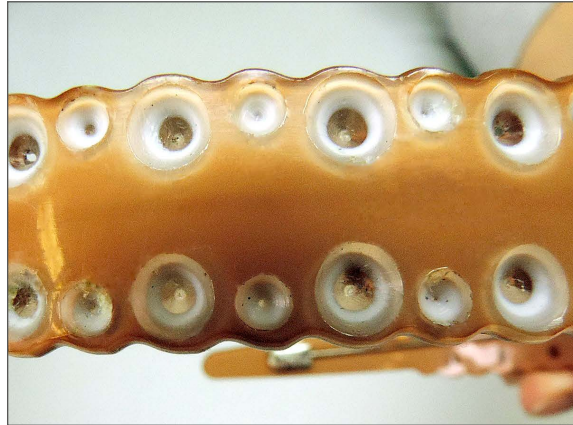
Too little glue

Too much glue

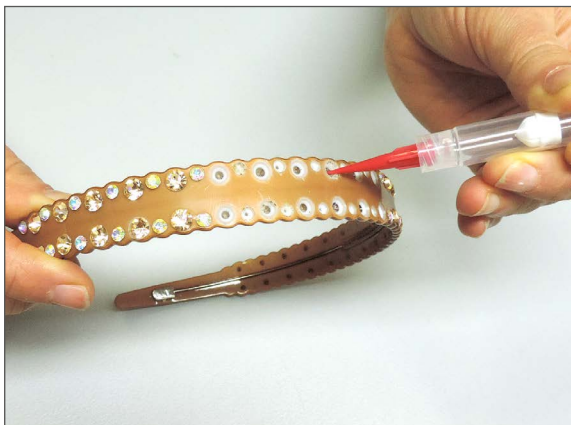
HOW TO GLUE STONES ON A SEMI-PRODUCT



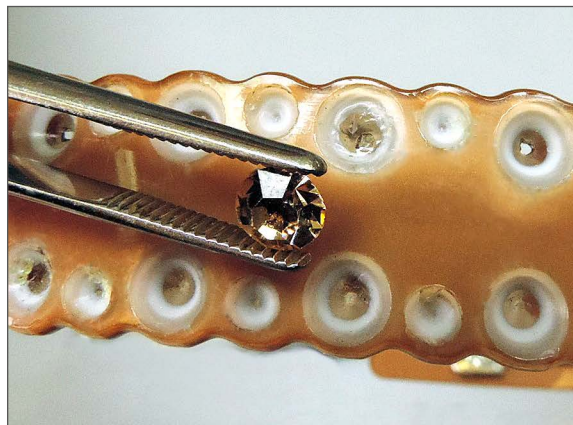
1 Clean the stones carefully before application (a cloth wetted in alcohol can be also used).



2 A semi-product with prepared cavities.



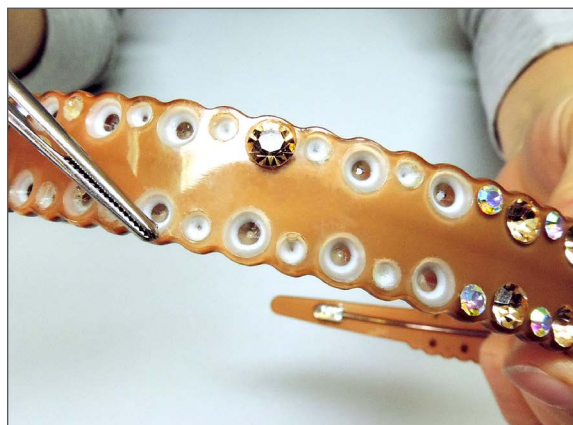
3 A cavity with the glue (applied by hand or with a dispenser).



4 Hold the stone with tweezers.



5 Put the stone into the cavity and press gently.



6 Check the stone setting visually.

Important advice and information

POSSIBLE PROBLEMS, THEIR CAUSES AND RECOMMENDATIONS

PROBLEM		CAUSE
Stones have changed their colour.	The stone is matt and yellow.	1, 2
	The stone seems dark and matt compared with the surrounding stones.	3
	The stone has been plated.	4
The stone fell out of the cavity without foiling.	The stone has changed its colour.	5, 6
	The stone fell out with the mirror coating but without the platinum foiling or the glue.	7, 8, 9
The stone fell out of the cavity with foiling.	Glue is attached to the stone.	10, 11, 12, 13, 14
	No glue is attached to the stone.	12, 15, 16
Excess glue.	Before curing.	2
	After curing.	17












CAUSE	RECOMMENDATION
1 Glue residues were not completely removed and made the stone dirty.	Use a suitable dispenser for applying exactly the right amount of glue. Vacuum dispensers prevent the glue from dropping and reduce the amount of needed cleaning.
2 Too much glue was used.	Use the exact recommended dosage and carefully remove any excess glue using e.g. acetone or isopropyl alcohol.
3 The cavity axis was off-centre in the original model already or the cavity was not drilled straight in the unfinished casting.	Use a special bit when drilling the original model. This offers a more precise control of the direction and depth of the drilling.
4 The jewellery was plated after the stones had been glued.	It is recommended to complete the plating before glueing the stones.
5 A glueing gap that was not completely filled causes corrosion.	Use the exact dosage of the glue.
6 Tensile stress reduces the adhesion of the mirror coating. Oxygen penetrates between the stone and the mirror coating and causes oxidation.	Use a glue that is more elastic and does not shrink so much.
7 A wrong glue was used.	Test other glues.
8 An incorrect proportion of resin and hardener was used.	Follow the manufacturer's instructions for mixing the glue.
9 Cleaning agents affected the glue and/or protective coating.	Use less solvents or a different type of the solvent.

CAUSE	RECOMMENDATION
10 Residues of polishing agent were not completely removed before plating.	Check again the used type of cleaning process.
11 The varnished piece of costume jewellery was not correctly pre-treated before glueing.	Increase the glue adhesion using e.g. a low-pressure plasma process or a flame treatment if necessary.
12 Too little glue was used.	Use the exact amount of glue.
13 The cavity has a wrong shape after plating.	Re-work the original model to make the cavity shape correct.
14 Residues of salts after electroplating were not completely removed.	Check if the cleaning procedure after electroplating of the base material is proper.
15 The given time for glue processing was exceeded and the glue was already stiff during glueing.	Observe the given time.
16 General problem of the glue.	Observe the instructions of the glue producer. Check the store conditions of the glue. Excessive solvent can damage the glue or the protective varnish of the foiling.
17 Products with applied stones were under mechanical stress before the glue cured.	Make sure that the glue has cured before transporting the product.

GENERAL RECOMMENDATIONS

FASHION JEWELLERY STONES

FLAT BACK STONES

		Round Stones, Channel	Fancy Stones, Ball	No Hotfix Stones	Hotfix Stones	Sew-on Stones
Stones with coatings — use only gentle wash cycle (30 °C).	 Turn inside out, choose a gentle wash cycle and use mild laundry detergent. To protect the crystals as much as possible, the use of a soft wash bag is recommended.	●	●	●	●	●
	 Turn inside out and use mild laundry detergent.					
	 Do not wash!					
	 Chlorine bleach may be used.					
	 Do not use chlorine bleach!	●	●	●	●	●
	 Turn inside out and dry at reduced temperature.					
	 Do not tumble dry!	●	●	●	●	●
	 Iron inside out using a silk/polyester viscose setting. Ironing the textile inside out and using a pressing cloth is recommended.					
	 Iron inside out using a wool setting.			●	●	●
	 Do not iron! Do not iron directly over the crystals.					
To protect the crystals as much as possible, the use of a soft wash bag is recommended.	 The textile can be gently dry-cleaned using perchlorethylene. Turn inside out.	●	●			
	 The textile can be gently dry-cleaned using hydrocarbon.	●	●	●	●	●
	 The textile will withstand gentle professional wet cleaning. Turn inside out.	●	●	●	●	●
	 The textile may not be dry-cleaned.	●	●	●	●	●

**BEADS AND
PENDANTS**

**NACRE
PEARLS**

**FASHION AND FASHION
JEWELLERY COMPONENTS**

Beads

Pendants

Cup Chains

Plastic
Bandings

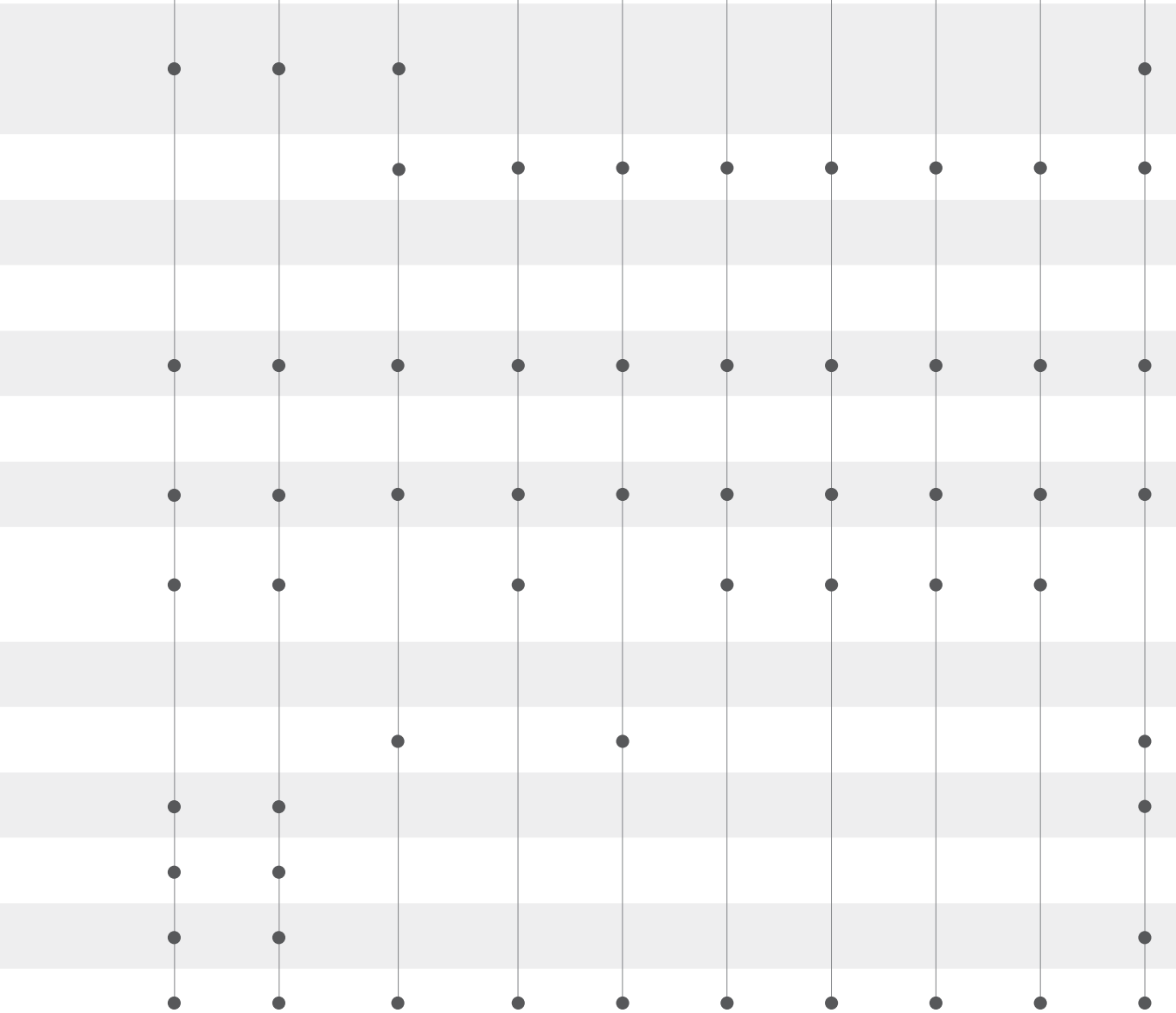
Metal
Bandings

Rondelles
and Balls

Fancy
Rondelles

Stones in
Settings

Crystal
Threads



Notes

Preciosa Components

A Member of the Preciosa Group

Preciosa Group is a global leader in products *manufactured from crystal*. From the world famous Czech Beads and Crystal Components used in fashion industry, to tailor made Lighting projects for luxury hotels, royal palaces and yachts, the true craftsmanship of crystal production has been present in Bohemia since 16th century.

PreciosaComponents.com