



HANDLING MANUAL AND INSTALLATION

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HANDLING AND INSTALLATION OF MIRO TECH MIRRORS

PURPOSE & INTRODUCTION

This guide provides instructions for processing, installing, and caring for Miro Tech mirrors.

A mirror's corrosion resistance depends on the anticorrosive paint and the silver layer's adhesion to the glass. Processing and installation methods can affect these properties and reduce the mirror's quality.

Standards have been developed to prevent this and ensure the highest quality with the most current technology.

The explanations outlined here aim to avoid damage to the paint or silver-glass adhesion during cutting, polishing, installation, and use.

Miro Tech mirrors are made using the **"Palladium Cooper Free Mirror"** process, where the reactive layer is silver. A paint primer protects the silver layer, which is then coated with two layers of anticorrosive paint.

The paint cures using infrared radiation furnaces and naturally through solvent evaporation.

Delivery, Handling and Storage

A. Receiving

* Check mirrors for moisture upon receiving. If moisture is found, separate sheets to dry quickly and store them dry.

B. Handling

* Always use provided protection: gloves, safety shoes, safety glasses, and cut-resistant sleeves when handling mirrors.

* Handle the painted surface carefully to avoid scratches that can detach the paint layer and cause corrosion.

C. Separator Element

* Avoid using high-hardness materials on the painted surface or glass.

* Use a soft, moisture-absorbing separator like tissue paper to prevent damage.

* Avoid acrylic resin separators as they can penetrate the paint.

* Avoid newspaper or cardboard paper as it contains hard points that can damage both glass and paint.

D. Storage

- * Store mirrors in dry environments to prevent condensation and oxidation.
- * Avoid direct sunlight, common construction materials, the weather, and chemicals.
- * Ensure good stock rotation (turnover). Where possible consider a maximum warehouse time of two months.
- * Space sheets apart to avoid surface damage.
- * Do not store any mirror sheets in direct contact with the ground.
- * Do not support the side of mirrors with any pointed surfaces that can penetrate the paint and damage it.
- * Any cut pieces should not be stored on the top of, or between, full size standard sheets as fragments could contaminate and damage the surfaces

Storage Structures

- * The storage structure should have an inclination of 4 to 6 degrees relative to the vertical plane resting on the regular floor or surface. Angles below 4° can cause instability and fall of stored sheets, while angles above 6° can cause compression breakage.
- * The carts or easels used must be clean and sized correctly for the size of the pieces. Avoid any excessive overhangs.
- The bases of the supports must be made of soft material (rubber or felt) without the presence of nails, screws, glass fragments, or materials that can damage the edges and surface of the mirror. They must also be free of moisture or other liquid that could attack the paint or silver. A rubber base of approximately 10mm thick with a 70 ± 5 Shore hardness is recommended. This can be softer on vertical supports where a minimum of 40 ± 5 Shore is required.

The tyres of any movable cart must be securely fixed as their detachment would cause inevitable breakage.

The condition of these tyres should be reviewed periodically.

The work environment must be clean.

Dust, glass fragments, oils or fats (including solvents) must be removed as they can damage the mirror. It is essential that professionals are trained and aware of their responsibility to work with mirrors, as these products require more attention in their handling and processing than common glass. Always wear clean gloves when manipulating the mirror.

Cutting Guidance

- The surface of the cutting table must be flat, always clean and free of glass splinters that could scratch the paint. Carefully brush and preferably vacuum the cutting table regularly. As a minimum at the end of each working day, more frequently is used intensively.
- Always cut the side of the glass and with cutting oil or lubricants which have been approved suitable for cutting mirrors and that do not react chemically with silver.
- The cutting wheels must be maintained in good condition to ensure a clean 90 degree cut.
- Use the correct wheel angle, depending on the thickness of the mirror. Wrong wheel angles will give a poor cut edge and can cause break-out issues.
- The use of a cutting table with an air floatation system is recommended.
- Do not use paraffin, kerosene, petrol or diesel oil in the cutting process, as they are extremely harmful to the mirror. Use only approved synthetic cutting oil for this product.
- A perfect cut is obtained with cutting tools in good condition. Serrated cuts or angled cuts resulting from worn-out cutting wheels tend to fragment the paint at the edge of the mirror and allow oxidation at that point.

Drill holes and Cut-outs

The following conditions must be observed:

- * The finished edge of the holes must be free of flakes as they concentrate tensions and can generate future breaks. The use of reamers is recommended over drill bits.
- * The internal edges of the cut outs must be rounded.
- * To achieve a perfect drilling process, this must be executed with cooling at the point of work and using quality drill bits in good condition.
- * The surface on which the mirror will be supported for the drilling and/or trimming process must be completely clean and free of fragments that damage the surface behind the mirror (paint layer).

Polishing

This is a critical process for the mirror and for its service life / duration.

- * Never perform polishing manually.
- * Check frequently that the polishing materials are in good condition and well regulated.
- * Heat generation must be kept to the minimum possible as it can cause damage to the protective layer. The paint layer, like any organic film, can be burned at the distance of a few microns near the edge of the mirrors, lose its adhesion and cause the oxidation of silver, resulting in darkening of this edge.
- * Wash and dry the pieces carefully after polishing, especially if water recirculation is used in the polisher.
- * Do not use any type of refrigerant without prior consultation on its effect.
- * Change the cooling water frequently to prevent it from becoming alkaline. The material that emerges from polishing makes the water more alkaline, therefore check the pH frequently

When a corrosion product is a non-coherent oxide, such as silver, it is semi-adhered to the board and helps keep moisture under it. This moisture cannot evaporate and produces more corrosion. All these phenomena are microscopic but continuous in time.

- When polishing, do not do it in a way that breaks the paint. The direction of rotation must be favourable to the paint layer.
- Do not apply more than one edging wheel pass on the side of the paint, as this will damage it.
- We recommend that you do not use a handheld or basic belt polisher, as this type of equipment lacks control over the water quality or the pressures applied to the face of the paint when handling the mirror.
- Do not let the edges of the mirrors overheat, as this affects the adhesion of the edge protector.
- The application of the edge sealant should be considered part of the polishing process.

Perform the grinding on the side of the paint only when safety reasons or aesthetics demand it. A mirror with a clean cut (unpolished) is more resistant to the oxidation of edges.

Recommended Use of Edge Sealant:

When a mirror is cut or polished, the silver on the edge of the mirror is exposed to environmental pollutants such as humidity, saline air, perspiration when handling the mirror, contaminants of some cleaning solutions or coolants of the polishing machine. This exposure can initiate oxidation.

To avoid this corrosion, Miro Tech highly recommends a special sealant of easy application that protects the mirror edge from humid environments and prevents its deterioration.

Recommended / Suggested items to use:

Gunther Seal-Kwik Edge Mirror Sealer
Dorman Easi Edge Mirror Sealer

Application Instructions:

- Clean any contaminants from the edges of the mirror with a mixture of alcohol and water or denatured alcohol.
- Do not shake the applicator as this is unnecessary and may cause air bubbles.
- Use at temperatures above 4 degrees Celsius and do not freeze
- Remove the applicator cap and protective cap. Apply the applicator sponge over a hard surface to saturate it with the solution.
- Position the widest part of the applicator sponge flat on the rear of the mirror (for face painting) with the narrowest part against the edge. With the applicator perpendicular to the surface of the rear of the mirror following the contour to be sealed. For longer edges, press the sponge to allow the substance to pass the sealant over the edge to keep the seal continuous.
- Allow 2 to 3 minutes for the sealing solution to dry.
- Fit the applicator cap after each use to extend the life of the applicator.

Before installation, check the surface and the back of the mirror for defects. Do not install any mirror that shows defects in the paint as it will be susceptible to corrosion.

- Sealants must not be aggressive. It is recommended to use specific adhesives for mirrors only
- Do not apply the glue in a circle (or patties) as the adhesive's solvents will be retained inside and cause circular corrosion on the backing which burn through to the surface view
- Apply in even thin stripes which allow the adhesives to cure correctly
- Approved mirror mounting tapes can be an effective addition to mounting mirror helping secure the position whilst the mirror adhesive fully cures

Considerations

The best mirror is not only one that impresses by its appearance but also one that was installed without difficulty.

Before choosing one of the various techniques of mirror installation, take the following precautions:

- A thorough survey of the walls or substrate on which the mirrors will be installed is essential for a successful installation.
- The installation site should be checked to avoid leaking walls and those containing networks of hot water or heat sources, particularly if they are not insulated.
- Mirrors should not be installed on materials that absorb moisture such as wood, rugs, plaster, paper and others as these tend to absorb moisture from the environment and the substrate.

A. Installation

- * Elevators, ceilings and height installations: Safety mirrors with protective plastic film.
- * Outdoor installations: Not recommended.
- * Corrosion and Deterioration: The reflective silver and protective layers are susceptible to environmental factors. To enhance protection a minimum clearance of approximately 3mm is required. The mirror and substrate should be recommended to allow ventilation and air circulation.
- * Multiple Mirrors: When installed on the same surface, the clearance between the edges should be a minimum of 1mm.
- * Hot Spot Lighting: Directly focused on the mirror should be avoided as it can cause heat to build up, deteriorating the silver layer or breaking the mirror.
- * Fine Mirrors (2mm to 3mm): To avoid optical distortion inherent in the drawing process, the pieces must be cut so that the direction of stretching of the Float is horizontal when installed.
- * Substrate Cleaning: The substrate of the painted face of the mirror should be thoroughly cleaned.

B. Substrate

The substrate is the installation surface and must meet the following criteria:

- * Flat: To prevent distortions in the installed mirrors.
- * Moisture-free: To avoid damage to the paint layer.
- * Mechanical strength: Sufficient to support the weight of the mirror sheet.
- * Curing and setting: At least two weeks of curing and setting of the concrete wall is recommended before installation to prevent damage to the paint layer. A wall seal paint is also recommended to isolate moisture and prevent contact with the mirror.
- * Avoid water accumulation: At the bottom edge of the mirror.

- * Floor level installations: Baseboards are recommended.
- * In the event of using wood as a substrate, MDF (Medium Density Fibreboard) is recommended as it does not absorb moisture.

SPECIAL SITUATIONS:

SAUNAS:

- The wet steam generated necessitates the use of a continuous colourless silicone fillet neutral along the perimeter to prevent moisture accumulation
- It is not advisable to install on wood as it tends to absorb moisture permanently.

Mirrors should not be installed on mirrored walls without a base to prevent serious corrosion issues.

RESTROOMS

- * Vapours contain ammonia which can attack the protective layer of the mirrors. Therefore, the premises must be ventilated
- * In the case of mirrors integrated by several parts, avoid contact between the edges (leave a minimum space of 1 mm) to inhibit moisture penetration by capillarity action
- * It is not recommended to use mouldings in mirrors installed in restrooms, bathrooms, kitchens or other areas subject to water condensation where there may be runoff and infiltration by capillarity action between mirrors and mouldings.
- * In the assembly, a free space must be left for moisture escape using a wedge or separator.

GARAGES:

- Internal combustion engine gases contain sulphur compounds that can attack the protective layer. Therefore, the premises must be ventilated, or the edges of the sealed parts must be sealed.

NEAR THE SEA:

- A free space must be left in the back of the mirror for the free transit of moisture to prevent condensation from accumulating or being trapped during the night.

Mirror installations can be categorised into basic types: chemical and mechanical.

Chemical Installation:

This type of installation uses a chemical adhesive to secure the mirrors to the substrate. The installation of mirrors requires careful consideration of the adhesive used. Most construction adhesives contain over 50% volatile solvents that can attack the paint on the edges of mirrors damaging the protective silver layer and reducing its resistance to corrosive agents.

For optimal adhesive performance, dust, dirt and grease should be removed between the surfaces using only water or isopropyl alcohol. Organic solvents, products containing ammonia, acid or abrasive solutions should never be used.

The adhesive manufacturer should be consulted to define the product application details including quantity, width, distance between adhesives and the need for spacers.

Recommended Adhesives:

The recommended adhesives for mirror installation should always be applied in vertical strips, never horizontally, to allow ventilation and prevent moisture accumulation. Small spacers made of plastic adhesive (thickness 2 mm) can be applied directly to the silicone or adhesive to ensure planimetry and parallelism of the mirror with the substrate.

All silicone used in contact with the mirror shall be neutral cure silicone only.

The use of Super Glue (cyanoacrylate adhesives) and any chemical dry accelerator, activator, or curing agent is strictly forbidden.

Ceiling and wall to floor Installation:

Ceiling installation requires additional considerations. It is advisable to avoid installing mirrors to the floor without skirting boards to prevent breakage or water infiltration during floor cleaning.

Adhesives should not be used on painted surfaces or with fine plaster as the best adhesive cannot guarantee adhesion against the risk of substrate detachment.

Chemical Installations to avoid - Not Recommended:

In chemical installations of mirrors, the following adhesives are not permitted:

- * Any adhesive containing organic solvents or acidic components such as neoprene. These products dissolve the paint from the edges of mirrors and significantly reduce their durability. Additionally, they pose a health risk to users.
- * Non-elastomeric adhesives, such as white glue, epoxy and cyanoacrylate.
- * Acetic or acidic cure silicone (which has a characteristic vinegar smell) is recommended as it dissolves corrosive products during the curing process and has chemical properties that attack the mirror protection coating.

Recommended Chemical Installations

The most effective chemical installation of mirrors is achieved using neutral elastomeric adhesives such as:

- * Alkoxy-based neutral curing silicone
- * Water-based elastomeric adhesive
- * Solvent-free double contact tape
- * Mixed (Double contact tape free of solvents and neutral curing silicone of alkoxy base or water-based elastomeric adhesive)

Mechanical Installation

Mechanical installations utilise mechanical elements to secure the mirrors, such as:

- * Screws
- * Mouldings
- * Front-end support
- * Clips or claws

The correct dimensional specification is the responsibility of the mirror designer for each application, including thickness determination.

Bolt through installations

The use of plastic rings as spacers on both sides of the mirror is mandatory, it ensures a more even distribution of the tightening force and guarantees the minimum required space between the substrate and the mirror (3mm).

The final tightening must be performed at the end and preferably diagonally to prevent deformation of the part and optical distortions. This also minimises the risk of breaking the mirror.

Any metal screw or bolt must not be in direct contact with the mirror surface or any region of the piece to prevent oxidation of the silver with the contact area.

Front Fixing Support

When defining the installation using this type of support, ensure the edge thickness is sufficient to withstand the weight of the glass.

For bevelled mirrors, this type of installation requires particular care due to the reduction in edge thickness and increased fragility at that point.

Mouldings

- * The use of mouldings made, preferably, of materials that do not absorb humidity.
- * Between soft mouldings and the mirror, soft spacers (rubber chocks or plastic clips) should be applied to avoid direct contact.
- * The minimum mirror fit inside the moulding is 5mm in all its edges.
- * Pointed or high-hardness elements must not be used in direct contact with the mirror as they risk product damage.

Mirror Clips or Claws



- * The number of clips and the distance between them are determined by the weight and dimensions of the piece.
- * A minimum distance of 3mm is required between the mirror and the substrate to ensure air circulation and moisture output.

Support and Edge of the Mirror

- * Direct contact between the support and the edge of the mirror is not recommended. The contact region should be isolated with a rubber or plastic spacer.
- * The number of supports and the distances between them vary according to the weight and dimensions of the piece.

Glass Cleaning

- * Glass can become dirty, particularly during construction. Corrosive contamination must be avoided, especially from plaster, mortar, concrete and cement slurry. These alkaline substances can corrode the glass surface. Any such impurities must be washed off immediately. Rinse with plenty of clean water to avoid scratching the surface. Use a soft, clean sponge, cloth or chamois. Do not attempt to remove impurities while the glass is dry.

* To protect the glass during construction, Miro Tech recommends covering installed glass with sheets of plastic film. Other teams working on the project should also be informed about proper glass handling.

Good cleaning practice is essential to prolong the life of the mirror. The best practices for maintenance and cleaning of Miro Tech mirrors are:

- * Clean the mirror with hot water applied to a soft cloth. This is the most straightforward and safe procedure. Be careful not to leave the edges of the mirror wet after cleaning.
- * Never use acid or alkaline products for mirror cleaning after installation. These products can damage the surface and edges of the mirror.
- * If using glass cleaning products, choose neutral ones that do not contain ammonia or vinegar. Never spill cleaning products directly onto the mirror. Apply them with a damp cloth and clean the mirror. Always dry the mirror, particularly the edges, after this cleaning.
- * Remove surface stains or remaining dirt with a very sharp steel blade. Do not use solvents as these can damage the edges and lining of the mirror.
- * When cleaning the mirror, always use damp and clean cloth to reduce the risk of scratching the surface.
- * Pay attention to the complete drying of the mirror edge. Verify that no cleaning products remain in contact with the edge or the back cover.
- * A ventilated environment inhibits moisture condensation, which can be corrosive and detrimental to the mirror's conservation.
- * Do not use abrasive products or abrasive sponges on any mirror surface, as this can cause irreversible streaks.
- * Alcohol can be used but must be moistened on a cloth before applying it to the mirror. Immediately after, use a clean, dry cloth to remove any stains.
- * When cleaning the mirror, the edges must always be dried quickly and thoroughly. Miro Tech mirrors can be cleaned with modern pH-neutral cleaning products.

HEALTH AND HYGIENE CONSIDERATIONS

A mirror's environment is its greatest enemy.

Over time, humidity and other atmospheric conditions, ammoniated cleaners, and many mastic adhesives used in installation erode a mirror's protective coatings and corrode its reflective surface. Copper-Free Mirrors are proven superior to conventional copper mirrors. The proof is in the test results.

To extend the life of your mirrors:

1. Ensure bathrooms are well-ventilated during showers to prevent condensation that can pool at the edge.
2. Avoid using ammonia-based cleaners on mirrors.

3. Refrain from using acid silicon for installation.
4. Never spray cleaners directly on a mirror; instead, spray a cloth first and then wipe.
5. Protect the edge from excessive moisture. If the mirror is designed to meet a countertop, ensure it is kept dry or sealed with a safe silicone.
6. When in doubt, use a damp cloth for cleaning. An alternative method is to wipe a mirror with newsprint to avoid lint.

PURPOSE

The purpose of this publication is to provide the latest available information to glass dealers, distributors, and installers on the procedures recommended by the National Association of Mirror Manufacturers for the proper storage, handling, fabrication, shipping, installation, and cleaning of high-quality mirror products.

**This guide is not a warranty.
Mirotech publishes its warranty separately.**

The National Association of Mirror Manufacturers has undertaken this project to help preserve the integrity and prolong the life of mirrors.

Publication of this information does not guarantee the resolution of all mirror problems.

Sporadic and rapid edge deterioration, known as 'black edge', is a current, unresolved problem in several geographic areas.

Research into more durable backing materials and improved mirror manufacturing processes is ongoing.

However, a mirror, being a combination of delicate materials and processes, will never be indestructible. Proper storage, handling, fabrication, and installation practices significantly reduce the risk of failure or damage. Furthermore, educating consumers on the correct care and cleaning of mirrors requires a continuing industry effort to ensure proper maintenance after installation.

This publication contains the most current information available from material suppliers, experienced dealer-installers, and major mirror manufacturers on the care and handling of today's quality mirrors.

Miro Tech and the team are always here to help.
Contact us in case of any questions or support.

This publication is Dated June 2026 and replaces any prior guidance until superseded