



Mirror Informational Bulletin

GANA MD 06-0413

Mirrors: Handle with Extreme Care

Tips for the Professional on the Care and Handling of Mirrors

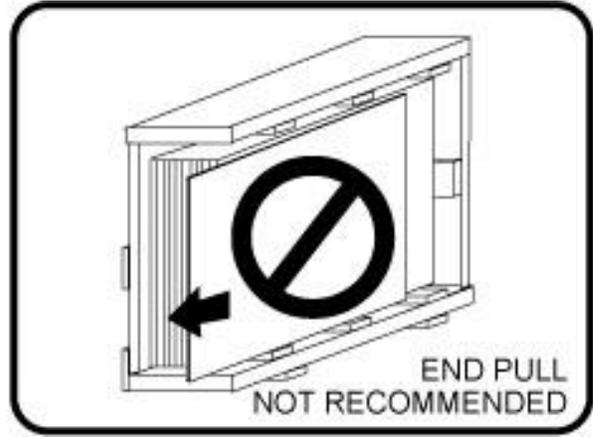
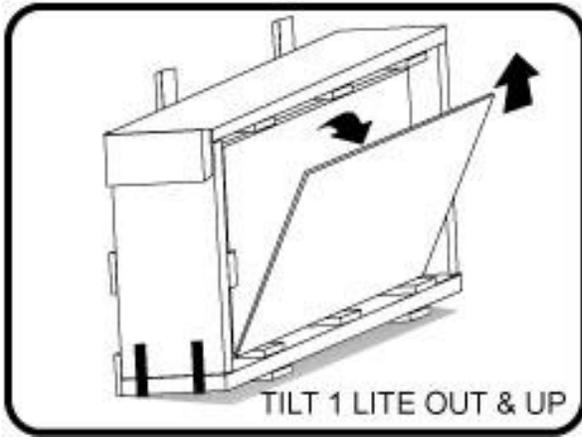
The purpose of this publication is to provide the latest available information to glass dealers, distributors and installers on the procedures recommended by the Mirror Division of the Glass Association of North America (GANA) for the proper storage, handling, fabrication, shipping, installation, and cleaning of high quality mirror products. This publication contains the best information currently available from material suppliers, experienced dealer-installers, and major mirror manufacturers on the care and handling of today's quality mirrors.

Proper Procedures for Receiving, Storage and Transportation of Flat Glass Mirrors

Every time a mirror crate or an open mirror is moved, there is potential for damage. Therefore, the key to successful handling is to keep movements to a minimum. Plan your storage in an efficient manner. Use proper handling techniques and equipment. Ship wisely. Review the suggestions below and compare them to your present practices.

1. The very first step in maintaining mirror integrity is to check shipments upon arrival. If there appears to be moisture present, the mirrors should be unpacked and allowed to dry using a separating technique. Moisture can attack the backing or stain the face of a glass over a period of time.
2. Be sure that your mirror storage areas are in dry, adequately ventilated spaces. Don't store mirrors in areas of high humidity, where exposed to chemical fumes, or near high heat such as steam or water pipes. These conditions can cause deterioration of the mirror edges, backing, or surface staining.
3. Mirrors should be unpacked as soon as possible to allow moisture caused by condensation to dissipate; especially if the mirrors have been subject to temperature changes during shipment.
4. Store mirrors vertically, but it is not recommended to pull mirrors from the ends of the case. Do not lay mirrors flat. Glass exhibits more strength, fewer strains when stored vertically.

800 SW Jackson Street, Suite 1500 Topeka, KS 66612-1200
(785) 271-0208 Fax: (785) 271-0166
www.glasswebsite.com



5. Don't store mirrors outdoors or in unheated areas. The mirror can be affected not only by the moisture prevalent under these conditions, but also by excessive expansion and contraction caused by cyclic temperatures.
6. Block mirror cases off of floors and away from walls. This will assist in proper ventilation of the storage area and prevent any water damage to the bottom of the cases. Also, do not store crates or mirrors on uneven surfaces. This can lead to stresses and strains on the glass, which can lead to cracks and breakage.
7. Mirrors should not be placed touching cinder block wall or other concrete material.
8. Protect cases and mirrors from falling objects. Even a small impact could cause cracks and ruin a mirror.
9. Be certain to rotate mirror stock. Consume older stock first. Organize storage areas so that faster moving items are more readily accessible. This will reduce traffic and handling and make damage less likely.
10. Be certain that handling equipment is strong enough to handle the weight of the mirror.
11. Do not ship partially unpacked mirror cases without proper repacking. Movement within the case can cause damage or breakage.
12. If mirrors are transported in an open or exposed condition and become spattered or come in contact with foreign elements such as road salt, they should be washed with warm water and dried with a soft rag.

Proper Procedures for Fabrication of Flat Glass Mirrors

Silvered flat glass mirror products can be fabricated to provide additional aesthetic appeal such as beveled edges and surface accents. As additional fabrication features are applied, it is critical to ensure proper fabrication conditions and techniques are utilized in order to protect and maintain the integrity of the mirror backing and edges and to reduce the chances of black edge developing. When fabricating silvered flat glass mirror products, the members of the Mirror Division of the Glass Association of North America (GANA) recommend consideration of the following guidelines:

1. Whenever possible, mirror fabrication should take place in the environment of a fabrication shop or glass distribution facility.
2. Mirror fabrication operations should be located in an area away from exposure to solvents, heavy-duty cleansers and other materials or chemicals that can damage the mirror backing.
3. Fabrication areas and equipment should be frequently cleaned to prevent exposure to dirt, grit, solvent or other contaminants that can damage both the glass and mirror backing surfaces.
4. All cutting table and fabrication equipment surfaces that contact the glass and/or mirror backing surfaces should be frequently vacuumed or swept to prevent scratching or other surface damage.
5. Glass handling gloves should be worn by all individuals handling mirror products before, during and after fabrication. Gloves prevent skin oils, body salts, and chemicals from contaminating the edges.
6. Clean, fresh water with a coolant is the best lubricant for grinding and polishing operations. The solution should be pure with the pH maintained between 6 and 9. If coolant tanks are used, the water should be changed often enough to prevent biological growth. The solution temperature should be maintained below 100 °F (38 °C).
7. Fabrication wheels should be centered over the edge to minimize excessive grinding on the mirror backing.
8. Diamond wheels should always be dressed and maintained in good cutting condition.
9. When using a belt sander for manual grinding and polishing operations, it is preferable to use a wet operation.
10. When manually dry-belt sanding, caution should be given to the fact that some belt lubricants contain chloride contaminants.
11. Both dry- and wet-belt seaming should be in a direction from back (paint surface) to front. Grinding or polishing wheels should be used in one direction only, either parallel with the edge (such as with a peripheral wheel) or from back (paint side) to front.
12. Heat generated by sanding and swiping should be minimized to prevent damage to the mirror backing.
13. If product applications call for the use of heat-treated mirror products, glass surface and edge fabrication must take place prior to the heat-treating in order to maintain proper surface and edge compression required for the safety glazing material. Silvering operations take place after heat-treating.
14. As mirrors are handled following fabrication, do not slide mirror or glass surfaces over each other as permanent scratching or other damage may occur.

15. Following fabrication, all mirror backing, edges and glass surfaces should be thoroughly and promptly washed and dried. It is very important that ALL traces of coolant and polishing compound are removed from the edges. If left in place, they are a contaminant that can cause black edge.
16. For vertical wall applications whenever possible, retain at least one factory cut edge of the fabricated mirror for installation at the sill (bottom) where the mirror may be subject to condensation puddling.

Installation Techniques Designed to Prolong the Life of Flat Glass Mirrors

The reflective surface of a mirror is a thin film of pure metallic silver. Although well protected by paint, the silver film remains vulnerable to corrosion if exposed to chemicals or excessive moisture. Following are some important installation recommendations. Strict adherence to these dos and don'ts will help protect the silver from corrosion and prolong the life of the mirror.

1. Always use gloves when handling any mirror to prevent damage to the face or backing from skin-borne salts or chemicals.
2. Never install mirrors on unsealed plaster or masonry, or on a freshly painted wall until dried and/or properly sealed. Also do not install in any new construction area where airborne solvents or heavy-duty cleaners or chemicals are in the air.
3. In humid climates, wait until the air conditioning is operating before installing mirrors.
4. Never install mirrors outdoors without additional engineered protection for the backing of the mirror.
5. The mirrors should have a breathing space behind them when installed to promote air flow over the back of the mirror and prevent moisture condensation and entrapment.
6. Never install a mirror in contact with a splash board or sink back. Never permit edges of the mirror to be exposed to puddling conditions such as on back splashes. Insist on at least 10mm of space between the bottom edge of a mirror and other surfaces. This will prevent moisture entrapment and permit drainage.
7. Mechanical means of installation, such as J-moldings, clips and screws, or framing are recommended for most applications. J-molding should have weep holes. Mirrors should always have a 3mm neoprene setting pad between the mirror and clip or molding used. The use of tapes, adhesives, mastics, etc. can be used in addition to mechanical means of installation.
8. If using adhesives in the installation process, use those that are 'neutral-cure'. It is highly recommended that a mechanical means of fastening be used in conjunction with adhesives. Refer to specific adhesive manufacturer's instructions for further information. Carefully choose the adhesive system you will use. Be sure adhesive selected is compatible with the mirror backing. Avoid adhesives containing strong solvents or acids like acetone, toluene, methylene chloride, acetic acid, etc., as these can severely damage mirror backings.



9. Caulking gun adhesive application is recommended, as it allows for adhesive application without the risk of mechanical contact of mirror backing with trowels, putty knives, etc. When using adhesives, always refer to the specific manufacturer's instructions for application techniques.
10. Careful cleaning of installed mirrors is very important to avoid abrasion of the surface or damage to the silver film at the edges. For proper cleaning procedures, please refer to the GANA Mirror Information Bulletin entitled *Proper Procedures for Cleaning Flat Glass Mirrors*. Also be sure to provide cleaning instructions for the new owner or the housekeeping staff after installation.
11. Ventilation is an important consideration in prolonging mirror life. New owners should be advised of the need for proper ventilation and/or air conditioning in environments of high temperature and humidity.
12. Where possible, lay out a mirror installation in your shop before taking it to the job site. Any errors in cutting or sizing can be caught and remedied immediately and no excessive handling will occur.
13. Be sure that there are adequate tolerances between installed mirrors to avoid later problems as the building settles.
14. Mirrors should be one of the last items installed in new construction after final cleanup.
15. Consult the mirror manufacturer's warranty for additional installation recommendations or restrictions.

Care and Cleaning of Mirrors

Many people are unaware of how to properly care for and clean the mirrors in their homes and offices. Many cleaning products make claims to be the best for mirrors. The truth is the care and cleaning of mirrors is simple and inexpensive. **Care should always be taken to avoid getting the edges of the mirror wet with any liquid or substance. This can result in damage to the mirror edges, commonly called "black edge". Should mirror edges become wet, they should be dried off immediately.**

The following are recommendations from manufacturers of quality mirrors:

1. The very best and safest cleaner for a mirror is clean, warm water used with a soft, lint-free cloth. Wring all water from the cloth before wiping the mirror. Dry the mirror immediately with a dry lint-free cloth.
2. Don't use acid or alkali cleaners for mirror cleanup after installation. Either substance can attack the front surface and edges as well as the backing of the mirror. No abrasive cleaners should ever be used on any mirror surface.
3. Don't spray cleaners directly on the mirror. Always apply cleaner directly to a soft, lint-free cloth and then wipe the mirror. This will help prevent the cleaner from contacting the edges of the mirror and damaging them.



4. Don't clean across the face of multiple mirrors at the same time. When cleaning several mirrors installed on a wall, wipe the joints in the same direction as the joints. This will keep the cleaner from collecting in the area where the mirrors join.
5. Don't use commercial mirror cleaners that contain ammonia or vinegar.
6. Do use 0000 oil-free steel wool, not solvents, to remove surface marks or stubborn dirt. Use of solvents can attack and damage the edges and backing of mirrors.
7. Do use soft, lint and grit free cloths to clean a mirror. This reduces the chances of scratching the mirror surface.
8. The last step to cleaning a mirror is to make sure all joints and edges are dry so that no liquid or cleaner comes into contact with the edges and backing.

Additional Information

Transparent Mirror Products

Transparent / two way mirror products allow vision through one direction while giving the appearance of a standard mirror on the opposite side. These applications typically expose the coated surface to the mirrored room. With the exception of the 0000 oil-free steel wool procedures, the cleaning procedures provided above also apply to cleaning the coated glass surface. In addition, extreme care must be taken to ensure that no hard objects such as rings or metal surfaces of cleaning equipment contact the coated surface. Permanent damage to the coated surface may result from improper cleaning procedures.

Construction Site Conditions

Mirror products must be protected during construction site storage and installation. Mirrors should be stored in a dry, well ventilated area, free of chemical fumes and away from high heat sources such as steam or water pipes. Exposure to excessive moisture or harmful construction materials can result in hard to remove surface conditions. Mirrors should be the last materials to be installed. Sprayed material such as wall texture or adhesives for wall covering should be completely cured before mirror installation. If conditions are found that mirrors cannot be cleaned using the above procedures, contact the mirror supplier for guidelines for construction debris removal.

Failure to properly clean mirrors can result in damage to the mirrored surface and deterioration of the optical quality of the mirror reflectance.

Members of the mirror industry also encourage awareness of the industry consensus document ASTM C 1503 – *Standard Specification for Silvered Flat Glass Mirror*. The ASTM International standard addresses the requirements for silvered flat glass mirrors of rectangular shape supplied as cut sizes, stock sheets or as lehr ends; quality requirements of silvered annealed monolithic clear and tinted flat glass mirrors up to 6 mm (1/4 in.) thick; and mirrors intended to be used indoors for mirror glazing, for components of decorative accessories or similar use.



The standard may be purchased by visiting the ASTM International website: www.astm.org. For additional information on mirrors and the Mirror Division of the Glass Association of North America, visit the Division website: www.mirrorlink.org and the Association website: www.glasswebsite.com.

We are hopeful that you have found the suggestions contained in this publication, on the care and handling of mirror products, informative. If one or more of them are new to you and can improve your operations, this booklet has served its purpose. If you have been employing other techniques which you think would benefit other distributors, dealers and installers, please pass them on to us, and we will consider them for inclusion in future revisions of this publication.

The Glass Association of North America (GANA) Mirror Division developed this document solely to provide general information as to promote installation procedures that will help prolong the life of flat glass mirrors. The document does not purport to state that any one particular type of installation practice or procedure should be used in all applications or even in any specific application. The user of this document has the responsibility to ensure the installation guidelines from the mirror manufacturers are followed and for consideration of applicable building code requirements. GANA disclaims any responsibility for any specific results related to the use of this document, for any errors or omissions contained in the document, and for any liability for loss or damage of any kind arising out of the use of this document.

This document was developed by the GANA Mirror Division – Technical Committee and approved by the Mirror Division membership and the GANA Board of Directors. This is the original version of the document as approved and published in April 2013.

