

## Recommended Cleaning and Maintenance Instructions for Glass Products

The implementation of proper glass cleaning methods and maintenance procedures are critical in reducing the likelihood of glass damage during the cleaning process. This document provides cleaning and maintenance instructions recommended by Hartung Glass Industries (HGI) for use with its Architectural Glass, Laminated Glass, Spandrel Glass, Decorative Silkscreened Glass, HD Glass, Flat Glass Mirror, and Shower and Bath Enclosure Glass products.

### Architectural Glass Product Cleaning Guidelines

The National Glass Association (NGA) has a published informational bulletin titled, "Proper Procedures for Cleaning Architectural Glass Products" that outlines a set of recommended cleaning guidelines for glass products used in both commercial and residential applications. The recommendations featured in this technical bulletin are listed in the below table:

Things To Do	Things Not To Do
<p><b>DO</b> clean glass when dirt and residue appear</p> <p><b>DO</b> determine if coated glass surfaces are exposed</p> <p><b>DO</b> exercise special care when cleaning coated glass surfaces</p> <p><b>DO</b> avoid cleaning tinted and coated glass surfaces in direct sunlight</p> <p><b>DO</b> start cleaning at the top of the building and continue to lower levels</p> <p><b>DO</b> soak the glass surface with a clean water and soap solution to loosen dirt and debris</p> <p><b>DO</b> use a mild, non-abrasive commercial window cleaning solution</p> <p><b>DO</b> use a squeegee to remove all of the cleaning solution</p> <p><b>DO</b> dry all cleaning solution from window gaskets, sealants and frames</p> <p><b>DO</b> clean one small window and check to see if procedures have caused any damage</p> <p><b>DO</b> be aware of and follow the glass supplier's specific cleaning recommendations</p> <p><b>DO</b> caution other trades against allowing other materials to contact the glass</p> <p><b>DO</b> watch for and prevent conditions that can damage the glass</p> <p><b>DO</b> read the entire GANA bulletin on glass cleaning before starting to clean glass</p>	<p><b>DO NOT</b> start cleaning without reading the entire GANA bulletin on glass cleaning</p> <p><b>DO NOT</b> use scrapers of any size or type for cleaning glass</p> <p><b>DO NOT</b> allow dirt and residue to remain on glass for an extended period of time</p> <p><b>DO NOT</b> begin cleaning glass without knowing if a coated surface is exposed</p> <p><b>DO NOT</b> clean tinted or coated glass in direct sunlight</p> <p><b>DO NOT</b> allow water or cleaning residue to remain on the glass or adjacent materials</p> <p><b>DO NOT</b> begin cleaning without rinsing excessive dirt and debris</p> <p><b>DO NOT</b> use abrasive cleaning solutions or materials</p> <p><b>DO NOT</b> allow metal parts of cleaning equipment to contact the glass</p> <p><b>DO NOT</b> trap abrasive particles between the cleaning materials and the glass surface</p> <p><b>DO NOT</b> allow other trades to lean tools or materials against the glass surface</p> <p><b>DO NOT</b> allow splashed materials to dry on the glass surface</p>

It should also be noted that if any abrasive cleaners, solvents, acids, alkalis or other chemicals come into contact with HGI glass products, product warranty coverage can be voided.

### Laminated Glass Product Cleaning Guidelines

The cleaning of laminated glass products supplied by HGI should also be performed in accordance with the guidelines listed in NGA's "Proper Procedures for Cleaning Architectural Glass Products" technical document. Additional cleaning instructions pertinent to specific categories of laminated glass make-ups are listed below.

#### All Laminated Make-ups

- Do not expose laminated glass edges to organic solvents, acids or any cleaner containing ammonia, which can adversely react with the laminated glass interlayer materials.

#### Laminated Polycarbonate and Unbalanced Glass and Polycarbonate Laminates

- Exposed polycarbonate surfaces and polycarbonates with scratch-resistant coatings require additional care to avoid damage and scratches. Do not use abrasive cleaners or cleaning products that can mar or gouge the surfaces. Wash polycarbonate laminates with a mild soap or detergent (e.g., Formula 409 All Purpose Cleaner) and lukewarm water using a clean sponge or soft cloth. Rinse well with clean water. Dry thoroughly with a chamois or moist cellulose sponge to prevent water spots. Do not use a squeegee or clean in the hot sun. Avoid cleaners that contain ammonia.

- Fresh paint splashes, grease and smeared glazing compounds can be removed easily before drying by rubbing lightly with a quality grade of VM&P naphtha or isopropyl alcohol. Afterward, finish with a warm wash, using a mild soap or detergent solution and ending with a thorough rinsing of clean water.

### Spandrel Glass, Decorative Silkscreened Glass and HD Glass Cleaning Guidelines

For ceramic frit spandrel, Opaci-Coat® spandrel, decorative silkscreened, and HGI's High Definition Glass (HD Glass) ceramic ink digital print glass products, cleaning practices should be conducted in accordance with the instructions listed in the Architectural Glass Product Cleaning Guidelines section of this document.

When Opaci-Coat® silicone painted glass products are used in spandrel applications, coating surface cleaning prior to product installation may be necessary. Cleaning procedures should include the following steps:

- First remove any obvious visible debris.
- Pour or dispense isopropyl alcohol (IPA) onto a clean, soft, absorbent, lint-free cloth.
- Wipe the coated surface with the IPA and cloth.
- Repeat the steps above using a 2nd clean, soft, absorbent, lint-free cloth.
- Wait 5-10 minutes for the alcohol to fully flash off the coating before installation.

### Flat Glass Mirror Glass Product Cleaning Guidelines

Precautions need to be taken to avoid exposing mirror glass edges from coming into contact with any liquids or substances that could cause damage commonly referred to as "black edge corrosion". Should mirror edges become wet, they should be dried off immediately. The NGA's "Proper Procedures for Cleaning Flat Glass Mirrors" informational bulletin addresses how to properly clean mirror products to avoid black edge corrosion along with other types of glass surface damage. Recommendations from the informational bulletin on how to properly care for mirror products are as follows:

- 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.
- 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.
- 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.
- 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.
- Don't use commercial mirror cleaners that contain ammonia or vinegar.
- 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.
- Do use soft, lint and frit free cloths to clean a mirror. This reduces the chances of scratching the mirror surface.
- 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.

### Shower and Bath Enclosure Product Cleaning Guidelines

#### Shower Glass

- For general shower and bath enclosure glass product cleaning and maintenance, follow the Architectural Glass Product Cleaning Guidelines outlined above. A best practice is to squeegee shower and bath enclosure glass frequently, then dry with a soft, lint-free cloth. Using a squeegee after each shower helps keep spots and scale from accumulating on glass components. HGI also recommends cleaning the glass regularly with a glass cleaner. Read labels on cleaning products thoroughly before using.
- Avoid abrasives, bleach, acidic or vinegar-based cleaners and scrubbing pads. Read labels on cleaning products thoroughly before using. If your glass is coated or treated with surface protectants, follow the maintenance instructions specific to the coating you purchased.

#### Metal, Hardware and Vinyl

- Avoid using cleaning liquids, powders and pads with abrasive or acidic qualities. Read labels on cleaning products thoroughly before using. HGI recommends that these components be wiped down frequently with a dry, soft cloth.