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# NEWTON COUNTY

# CENTRALIZED STORAGE FACILITY

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## 08-4300 Storefront O&M

# Maintenance of Painted and Anodized Finishes

## Recommended Inspection Procedures

Building managers and owners should have an engineer or other qualified person inspect cleaning and maintenance of anodized or painted finishes.

- It is important to check metal seams, sills, crevices and other areas that can trap dirt, cleaner or water to be sure they are clean and dry.
- It is recommended that a final inspection be made to verify that no stains or discoloration remain on surfaces.

## Cleaning and Care of Painted Finishes

Architectural aluminum finishes, whether painted or anodized, require care before and during installation and periodic maintenance after installation. Although resistant to corrosion, discoloration and general wear, both types of finishes can be damaged by neglect, abuse, and harsh chemicals. Also, exterior surfaces collect various amounts of dirt and soil – of course, the amount depends on the environmental conditions, the building elevation and the type of finish.

Architectural aluminum should be cleaned at least once a year to prohibit accumulation of soil, which can speed-up the weathering of finishes. For efficiency, glass and aluminum cleaning should be scheduled simultaneously. More frequent cleaning is recommended for finished aluminum that is exposed to harsh marine environments. Buildings located in certain areas also may dictate more frequent cleaning. These include locations in heavy industrial areas, locations with heavy rainfall and sheltered areas lacking rainfall and encouraging condensation.

## Cleaning Painted Finishes

When cleaning painted surfaces, precautions must be taken. These include:

- Cleaning should start at the top of the building, moving down to the ground level in a continuous descent the width of the scaffolding.
- Always consider the effects of run-off on personnel, plants and equipment when scheduling the cleaning of finishes.
- Choose the appropriate method of cleaning for the type of finish.
- First test a small area of the finish and follow recommendations for mixing and diluting cleaners.
- Avoid using abrasive materials such as steel wool or hard-bristle brushes, which can damage finishes. Strong window glass cleaners that may come in contact with aluminum should not be used.
- Do not use paint removers, aggressive alkaline, acid or abrasive cleaners. Never mix cleaners or substitute heavy-duty cleaners when milder cleaners are specified.
- Be sure that all sponges, cloths and other cleaning equipment are free of grit.
- Do not clean finishes during extreme temperatures, which can accelerate chemical reactions, therefore causing streaking or staining.
- Post-construction cleaning should take place as soon as possible, due to the fact that mortar, cement and other alkaline materials will corrode anodic coating and can possibly stain a painted finish when allowed to dry on the metal surface.

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# Maintenance of Painted and Anodized Finishes

## Cleaning Light Surface Soil

When removing light surface soil, only by testing progressively stronger procedures can be best method be determined.

- First, a strong water rinse should be applied to the finish.
- If soil is still present after the water rinse has dried, use a soft brush in conjunction with sprayed water.
- Next, try a 5-percent solution of commercial or industrial detergent with a cloth, sponge or soft brush in an alternate horizontal and vertical motion.
- Rinse the surface thoroughly with clean water after washing. Do not allow the detergent to dry on the aluminum. The thorough rinse should remove all cleaners from crevices and joints, as well as the surface.
- MEK, Mineral spirits or equivalent solvents are recommended for removing oil, wax, polish or like substances; however, care must be taken when applying to painted finishes.

## Stain Removal—Painted Finishes

Specific solutions are appropriate in the removal of stains from painted finishes.

- Sodium hypochlorite solutions, such as laundry bleach, help remove certain stains.
- Acetic acid (vinegar) or oxalic acid solutions may be used to remove rust or alkali mortar stains from Duranar® and Fluropon® finishes. Surfaces should be flushed with water afterwards
- 10 percent muriatic acid, diluted with 10 volumes of water, can also be used for rust or mortar stains.
- With acids, limit contact to five minutes and always flush with clear water immediately after use. (Anodized surfaces should not be cleaned with acidic or caustic solutions.)

## Mildew Removal—Painted Finishes

Mildew can be removed with a solution of:

1/3 cup detergent
2/3 cup trisodium phosphate
1 quart sodium hydrochlorite, 5-percent (bleach)

Rinse with clean water immediately afterwards.

## Cleaning of Non-Water Soluble Deposits for Painted Finishes

Non-water soluble deposits such as grease, tar, oil and paint may be removed with solvents no stronger than mineral spirits or denatured alcohol. Use extreme care when using solvents on painted surfaces—many of them will reduce the gloss level of the painted finishes. When solvents remain on the finish for more than a few minutes, they may soften the paint and damage the coating. It is recommended that the contact between solvent and painted areas be as limited as possible.

- Prolonged contact with solvents may also damage organic sealants, gaskets and finishes.
- Most organic solvents are flammable and toxic and should be handled with extreme care. Use protective clothing, goggles and be sure of adequate ventilation.
- When using solvents, avoid open flames, sparks and electrical motors.

# Maintenance of Painted and Anodized Finishes

## Touching-Up Painted Aluminum (Large Areas)

Procedures for the touch-up of painted finishes in the field begin with surface preparation:

- First, be sure the surface is clean, dry and free of any contaminants.
- Sand the surface lightly, and feather edges at the damaged area.
- After sanding, remove dust with a clean cloth dampened in solvent.
- Pretreat any areas of bare aluminum with a conversion coating, such as Alodine 1201 or Amchems Alumiprep No. 33, following the manufacturer's label directions.
- Prime any bare aluminum with an approved wash primer, again following label directions.

After preparation of the aluminum surface, follow these procedures for the application of air-dry, touch-up enamel.

- For the application of the paint and an initial 24-hour drying period, be sure that ambient air and surface temperatures are at least 50 degrees F.
- Except for small scratches and minor defects, it is advised to apply touch-up coatings with air spray equipment due to the coating' drying speed.
- Multiple light passes are recommended to slowing build to the desired 1.0 mil minimum film thickness.

## Touching-Up Painted Aluminum (Small Areas)

CAUTION: The guidelines below are to be used to touch up small scratches, not to repaint a large surface. These guidelines will not apply to all situations; therefore Valspar does not offer a warranty if this work is done. Please seek a qualified technical person to assess your specific situation and make recommendations. This is for Fluropon® using air dry additive.

Mixing ratio is 1 to 1. One part Fluropon®, and one equal part air-dry additive (920X346). Apply product in temperatures above 70 degrees F for best results.

It must be noted that the first step in repairing a damaged film is to observe the damage and evaluate what must be done.

If the surface to be repaired is intact and not exposed to the substrate, clean the locale of all dirt, oil, grease or other foreign matter. The most important step in painting any surface is to be sure the area is ready to be coated. Lightly scuff the damage with #400 grit sandpaper.

If the surface is damaged to the substrate or corrosion is present, then sanding to bare substrate and priming would be indicated.

Dampen a lint free cloth or tack cloth with MEK (Methyl Ethyl Ketone) using the proper precautions for handling solvents as instructed on the MSDS or container of the solvent. This may include safety glasses, gloves, protective clothing and a respirator. Wipe the surface liberally to clean the exposed area to be re-painted.

The surface must be dry before the finish coat is applied.

# Maintenance of Painted and Anodized Finishes

## Touching-Up Painted Aluminum (Small Areas) Cont'd

When applying touch up paint, less is best. Apply with as small an applicator as possible. To small imperfections such as surface scratches, a brush similar to a finger nail polish applicator is best. Dip the brush half the length of the bristles into the paint. Tap the brush against the side of the container but don't wipe against the lip. Hold at the handle near the base and apply light pressure with the fingertips to make the bristles flex slightly. Feather the touch up into the scratch using the least amount possible.

If the paint is applied in too thick a layer and spread to areas where it is not needed, long term differential fading between the two coatings present will be much more apparent. An air-dry paint is being applied to a surface that originally was factory applied and thermally cured. The same performance cannot be expected.

Follow the manufacturer's directions on the label of the material chosen for application instructions. There may be limitations such as ambient temperature at which the material may be applied and would cure properly.

## Reworking Painted Finishes

There are no set reworking procedures, which cover all possible situations that occur. If reworking the surface exposes the aluminum substrates, one can assume the pretreatment of that area no longer exists and other considerations are needed. If bare aluminum has not been exposed, recoating is usually satisfactory. Keep in mind that touch-up enamel is intended for minor defects and scratches only. If larger areas of the aluminum need repainted, contact your manufacturer.

## Protective Coatings for Painted Aluminum

Aluminum finishes should be protected at the job site and following installation. As stated earlier, cement, mortar and other alkaline materials, as well as acid-based cleaning materials for masonry products, are damaging to finishes and should be removed with soap and water immediately. Coatings that protect finishes at the job site include:

Stripping Plastic—these plastics have been available for some time, but they also have weaknesses:

- They are developed with cohesive strength but inadequate adhesive strength.
- Uniform thickness is difficult to achieve, and where the film is thin, the cohesive strength decreases and the adhesive strength increase.
- Exposure to the sun can make the vinyl film brittle.
- Thin coatings can be difficult to remove.
- Thick coatings, on the other hand, tend to peel off prematurely.
- If the time is taken to properly apply these plastic coatings, they can provide adequate protection at the job site.

# Maintenance of Painted and Anodized Finishes

## Insulating Coatings for Painted Aluminum

For jobs that require that the architectural aluminum be attached directly to other metals, a coating should be applied to act as an insulator between the two metals. A zinc-based primer is the most common coating. It should be applied to the steel or other metal, as opposed to the aluminum--its pigment offers cathodic protection for the coated metal. The formulation used depends on the solvent system, as well as the vehicle used.

Zinc and clear lacquer are often used when aluminum is installed with direct contact with uncured concrete plaster or other alkaline material. This type of coating protects the aluminum from corrosion. Bituminous paint is also used for insulation. It has very good resistance to water, salts, acids and alkalines that depend on water as a carrier for ionization. Bituminous paints are inexpensive allowing contractors to use a thick coating, which provides insulation against galvanic action. These paints are easily dissolved with almost any organic solvent.

## AAMA Reference Publication

The American Architectural Manufacturers Association (AAMA) has published a combined specification guide to provide information on the care and maintenance of architectural finishes.

- AAMA 609 & 610-02—
  Cleaning and Maintenance
  Guide for Architectural
  Finished Aluminum
- For copies of the guide, contact:
  American Architectural Manufacturers Association
  1827 Walden Office Square, Suite 104
  Schaumburg, IL 60173
  Phone: 847.303.5664

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# Maintenance of Painted and Anodized Finishes

## Anodized Finishes Designation

The Aluminum Association Designation System is considered the standard of the industry for standard anodized finishes. The Aluminum Association, however, lists many finishes, some of which are not often used in architectural applications. In order to keep costs down and to maintain optimum shipping schedules, while still providing the finest in architectural aluminum, Oldcastle Glass® Engineered Products currently offers seven standard finishes. For internal record keeping, a 3-digit designation has been assigned to our standard finishes.

| Trade Names | | Oldcastle Glass®Engineered Products | AA |
|---|---|---|---|
| CLEAR | CLASS II | 204 | AA-M12C22A31 |
| CLEAR | CLASS I | 215 | AA-M12C22A41 |
| BRONZE | CLASS I | 740 | AA-M12C22A44 |
| BLACK | CLASS I | 760 | AA-M12C22A44 |
| LIGHT BRNZ | CLASS I | 700 | AA-M12C22A44 |
| MED BRNZ | CLASS I | 710 | AA-M12C22A44 |
| CHAMPAGNE | CLASS I | 699 | AA-M12C22A44 |

Class I - .7 mils, Class II - .4 mils

## Recommended Inspection Procedures

Building managers and owners should have an engineer or other qualified person inspect cleaning and maintenance of anodized or painted finishes.

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- It is recommended that a final inspection be made to verify that no stains or discoloration remain on surfaces.

## Cleaning, Care and Maintenance of Anodized Finishes

Architectural aluminum finishes, whether painted or anodized, require care before and during installation and periodic maintenance after installation. Although resistant to corrosion, discoloration and general wear, both types of finishes can be damaged by neglect, abuse and harsh chemicals. Also, exterior surfaces collect various amounts of dirt and soil—of course, the amount depends on the environmental conditions, the building elevation and the type of finish.

Architectural aluminum should be cleaned at least once a year to prohibit accumulation of soil, which can speed-up the weathering of finishes. For efficiency, glass and aluminum cleaning should be scheduled simultaneously. More frequent cleaning is recommended for finished aluminum that is exposed to harsh marine environments. Buildings located in certain areas also may dictate more frequent cleaning. These include locations in heavy industrial areas, locations with heavy rainfall and sheltered areas lacking rainfall and encouraging condensation.

# Maintenance of Painted and Anodized Finishes

## Cleaning Anodized Finishes

When cleaning anodized surfaces, precautions must be taken. These include:

- Cleaning should start at the top of the building, moving down to the ground level in a continuous descent the width of the scaffolding.
- Always consider the effects of run-off on personnel, plants and equipment when scheduling the cleaning of finishes.
- Choose the appropriate method of cleaning for the type of finish.
- First test a small area of the finish and follow recommendations for mixing and diluting cleaners.
- Avoid using abrasive materials such as steel wool or hard-bristle brushes, which can damage finishes. Strong window glass cleaners that may come in contact with aluminum should not be used.
- Do not use paint removers, aggressive alkaline, acid or abrasive cleaners. Never mix cleaners or substitute heavy-duty cleaners when milder cleaners are specified.
- Be sure that all sponges, cloths and other cleaning equipment are free of grit.
- Do not clean finishes during extreme temperatures, which can accelerate chemical reactions, therefore causing streaking or staining.
- Post-construction cleaning should take place as soon as possible, due to the fact that mortar, cement and other alkaline materials will corrode anodic coatings when allowed to dry on the metal surface.
- Brickwash, which is also acidic, can corrode anodic coatings.

## Stain Removal—Anodized Finishes

If general cleaning procedures have been attempted, the next step is cleaning with an abrasive pad soaked in clean water or mild detergent.

- Hand-scrub the metal surface using a small, nylon cleaning pad. Rub the metal in the direction of the grain.
- After cleaning, rinse the surface thoroughly with clean water or wipe with solvent to remove all residue.
- If cleaning solutions have dried on the surface, wipe dry with a clean cloth, squeegee or chamois.
- For the removal of heavy soils, a power-cleaning tool may be needed. If this operation is necessary, the surface must be kept wet with a clean water or mild detergent to provide lubrication and dirt removal. As with hand cleaning, alternate horizontal and vertical strokes should be used.
- The area then must be rinsed and scrubbed again with a hard-bristle brush. The operation is completed by a final rinse, and the surface is wiped dry or air-dried. Any cleaner running down onto unclean surfaces should be removed to avoid staining.

## Cleaning of Non-Water Soluble Deposits for Anodized Finishes

Non-water soluble deposit such as grease, tar, oil and paint may be removed with solvents.

- Prolonged contact with solvents may also damage organic sealants, gaskets and finishes.
- Always avoid using solvents on anodic finishes protected by clear coatings such as lacquer. Use organic solvents in accordance with manufacturer's safety recommendations.
- Most organic solvents are flammable and toxic and should be handled with extreme care. Use protective clothing, goggles and be sure of adequate ventilation.
- When using solvents, avoid open flames, sparks and electrical motors.

# Maintenance of Painted and Anodized Finishes

## Protective Coatings for Anodized Aluminum

Aluminum finishes should be protected at the job site and following installation. As stated earlier, cement, mortar and other alkaline materials, as well as acid-based cleaning materials for masonry products, are damaging to finishes and should be removed with soap and water immediately. Coatings that protect finishes at the job site include:

Lacquer—although a clear lacquer coating can temporarily protect the surface of anodized aluminum, it has draw-backs, which include:

- Changing the appearance of anodized finishes.
- Making the surface seem painted rather than anodized.
- Causing small white areas to appear where there is a loss of adhesion.

Strippable Plastic—these plastics have been available for some time, but they also have weaknesses:

- They are developed with cohesive strength but inadequate adhesive strength.
- Uniform thickness is difficult to achieve, and where the film is thin, the cohesive strength decreases and the adhesive strength increases.
- Exposure to the sun can make the vinyl film brittle.
- Thin coatings can be difficult to remove.
- Thick coatings, on the other hand, tend to peel off prematurely.
- If the time is taken to properly apply these plastic coatings, they can provide adequate protection at the job site.

## Insulating Coatings for Anodized Aluminum

For jobs that require that the architectural aluminum be attached directly to other metals, a coating should be applied to act as an insulator between the two metals. A zinc-based primer is the most common coating. It should be applied to the steel or other metals, as opposed to the aluminum--its pigment offers cathodic protection for the coated metal. The formulation used depends on the solvent system, as well as the vehicle used.

Zinc and clear lacquer are often used when aluminum is installed with direct contact with uncured concrete plaster and other alkaline material. This type of coating protects the aluminum from corrosion. Bituminous paint is also used for insulation. It has very good resistance to water, salts, acid and alkaline that depend on water as a carrier for ionization. Bituminous paints are inexpensive allowing contractors to use a thick coating, which provides insulation against galvanic action. These paints are easily dissolved with almost any organic solvent.

## AAMA Reference Publication

The American Architectural Manufacturers Association (AAMA) has published ~~two~~ a combined specification guide to provide information on the care and maintenance of architectural finishes.

- AAMA 609 & 610-02 - Cleaning and Maintenance Guide for Architectural Finished Aluminum
- For copies of the guide, contact:
  American Architectural Manufacturers Association
  1827 Walden Office Square, Suite 104
  Schaumburg, IL 60173
  Phone: 847.303.5664

NATIONAL GLASS ASSOCIATION

GLASS ASSOCIATION OF NORTH AMERICA

**Glass Informational Bulletin**
**FB01-00 (2016)**

*Formerly referenced as TD 01-0116*

# Proper Procedures for Cleaning Architectural Glass Products

Architectural glass products play a major role in the comfort of the living and working environment of today's homes and commercial office spaces by providing natural daylight, views of the surroundings, thermal comfort and design aesthetics. Glass usage and condition often affect our selection of where we live, work, shop, play and seek education.

This document describes procedures that generally apply to most architectural glass products. Certain glass types may require different procedures and care. Glass can be clear or tinted and have pyrolytic or sputtered Low-E or reflective coatings, some of which may be on the exposed surface of the glass. Glass products can be monolithic (single lites), laminated glass or insulating glass units. (See Glass Informational Bulletin ID 01-1107 Describing Architectural Glass Constructions). Glass can be of various strengths, i.e., annealed, heat-strengthened or fully tempered. There are also other decorative and functional glass types including spandrel, silk-screened, patterned, acid etch, and sand-blasted.

Architectural glass products should be properly cleaned and protected throughout the construction process using a program of regularly scheduled maintenance designed to maintain visual clarity and prevent glass surface damage. Since glass products can be permanently damaged if infrequently or improperly cleaned, glass producers and fabricators recommend strict compliance with the following procedures for cleaning glass surfaces.

**Routine Cleaning & Maintenance**

For routine maintenance, interior and exterior glass surfaces should be thoroughly cleaned as dirt and residue appear. Cleaning frequencies should be tailored to the individual characteristics inherent to the site conditions, as well as the severity of local environmental factors and atmospheric pollutants that vary from region to region. Before proceeding with cleaning, determine whether the glass is clear, tinted or reflective. Surface damage is more noticeable on reflective glass as compared with the other glass products. If the reflective surface is exposed, either on the exterior or interior surface, special care must be taken when cleaning, as damage to the reflective glass surface may result in coating removal and a visible change in light transmittance which is very noticeable. A simple test to determine the location of the reflective coating is to touch the point of a pencil to the glass surface. If the reflection of the pencil point meets the real pencil, the coating is exposed on that side. If there is a gap between the pencil point and the reflections, the coating is not exposed on that side of the glass. Cleaning tinted and reflective glass surfaces in direct sunlight should be avoided, as the surface temperature may be too hot for optimum cleaning. Exterior cleaning should begin at the top of the building and continue to the lower levels to reduce the risk of leaving residue and cleaning solution on glass that has already been cleaned. Cleaning procedures should also include checking that the wind is not blowing the cleaning solution and residue onto already cleaned glass.

Prior to beginning a cleaning project, it is strongly recommended that window cleaners test clean a small area of one window, then stop and examine the surface carefully for any damage to the glass and/or any exposed coating. The ability to detect certain surface damage, such as light scratches, may vary greatly with the lighting

conditions. Daylight conditions are needed to properly evaluate a glass surface for damage. Scratches that are not easily seen with a dark or gray sky may be very noticeable when the sun is at a certain angle in the sky or when the sun is low in the sky. In addition, because different backgrounds may yield different observations, cleaning methods should be tested on all glass constructions on the building, including both vision and spandrel units.

Cleaning should begin by soaking the glass surfaces with clean water and a mild, non-abrasive glass cleaning solution. Apply generous amounts of solution to the glass surfaces with a brush, strip washer or other non-abrasive applicator, and lightly agitate to loosen the soil and debris. Immediately following the application of the cleaning solution, a window-cleaning squeegee should be used to remove all of the cleaning solution from the glass surface. During routine cleaning care should be taken to avoid metal contact with the glass surface; razor blades and metal scrapers should not be part of routine cleaning. The use of sufficient water will help prevent abrasive particles from being trapped between the glass and the cleaning tools being used. However, the window cleaner needs to be diligent in keeping all abrasive particles from scratching the glass.

The International Window Cleaning Association (IWCA) recognizes an additional glass cleaning technique being utilized by some professional window cleaning contractors. This technique employs the use of pure water delivered to the glass surface using a specialized extension pole. Gentle agitation with a non- scratching (non-abrasive) brush is followed by the final pure water rinse. Rinse water is generally allowed to evaporate from freshly cleaned surfaces. Therefore, the pure water used in both the wash and rinse must have a total dissolved solids content (TDS) of 20 parts per million (PPM) or less to prevent spotting and streaking of cleansed surfaces. The use of tap water is not acceptable. Effective water treatment, via ion exchange and/or reverse osmosis equipment, should be used in conjunction with delivery & rinse methods at all times. Water quality can be monitored with a handheld TDS or conductivity meter. A reading of 40 micro-Siemens/cm (0.025 Me ohm – cm) represents a TDS level of 20 PPM.

**Non-Routine Post-Construction Cleaning & Restoration**

Careful communication between the responsible parties should precede the use of aggressive cleaning techniques, as any non-routine cleaning carries a risk of irreparable damage to glass products.

During all stages of construction, the glass must be properly protected from construction debris such as cement, paint, varnish, adhesives and other construction material commonly found on job sites. (See the GANA/ IWCA Bulletin TD 03-1003 (2010 Edition) Construction Site Protection and Maintenance of Architectural Glass). Extended construction schedules may create the need for multiple cleanings to avoid the accumulation of significant amounts of soil and debris, and to avoid potential damage. In addition to ordinary techniques for protection from construction debris used by various trades, temporary protective window films may be applied to glass. Follow specific manufacturer instructions regarding film application and removal. If the film is removed prior to job completion, additional cleanings may still be needed to prevent glass damage. Failure to remove temporary protective films by the manufacturer's recommended date may result in aggressive methods being required to remove the film.

Glass that is improperly stored or left unprotected during construction may result in glass that cannot be successfully cleaned using routine cleaning procedures. In such situations, more aggressive cleaning and restoration techniques may become necessary, such as the use of razor blades, chemical cleaning and/or mechanical polishing. Glass surface conditions that may require more aggressive cleaning techniques would include, but not be limited to, the accumulation of paint, stain or varnish overspray; mortar, concrete or cement splashing on glass; silicone sealants and/or lubricants being smeared or sprayed onto glass and frames; and sealer overspray or run-off from adjacent masonry or stone waterproofing operations. In the process of removing tenacious contaminates from unprotected glass, particles may be trapped between the razor blade and the

glass, resulting in fine scratches.

While members of NGA and GANA neither condone nor recommend scraping of glass surfaces with blades or scrapers for routine cleaning, it is recognized that window cleaners may choose more aggressive techniques, including the use of razor blades, in non-routine cleaning. In such cases, use of razor blades should be limited to the affected areas of the glass. Scraping should be done in one direction only with a new blade. Never scrape in a back and forth motion as this could trap particles under the blade that may cause scratches. These scratches may be visible at all times, but in some cases they may be visible only under certain lighting conditions. Significant care should be taken to ensure the glass is not scratched. Razor blades should never be used on coated glass surfaces. Contact a professional window cleaner proficient in construction window cleaning, such as a member of the IWCA for the most appropriate solution.

**GLASS TYPES**

When cleaning the glass in architectural windows and doors, it is necessary to determine what type of glass is being cleaned and what, if any, type of coatings may be present on the exposed surfaces. In addition to reviewing the bulletins previously referenced, it is important to review the Glass Informational Bulletin TD 02-0402 (2008 Edition) *Heat-Treated Glass Surfaces are Different* before initiating the window cleaning process, as glass may be heat-treated, i.e., heat-strengthened or fully tempered. Heat- treated glass is used in most architectural glass products today for a variety of strength and safety reasons, but it must be understood that heat-treated surfaces require greater care when cleaning as discussed in detail in the above referenced bulletin.

Some glass may contain a logo that may indicate the glass supplier and if the glass is tempered, heat- strengthened or laminated, but it typically will not indicate the glass type or if exposed coatings are present. A logo may not be visible or present on all heat-treated glass products, so the lack of a logo does not mean the glass is not heat-treated.

High performance windows may be produced with a coating on one or both exposed surfaces. Low-E coatings are typically neutral in color and very difficult to see. Reflective coatings increase the reflectivity of the glass and are normally obvious. Specific glass cleaning procedures must be adhered to when attempting to clean coated glass surfaces. Consult the glass manufacturer's guidelines for specific procedures.

The plastic interlayer in laminated glass is generally exposed around the periphery of the window glass; cleaning fluids and their vapors must be kept away from this area. For cleaning laminated glass, or windows and doors containing laminated glass, do not use anything that is corrosive such as solvents, acids, bases or other chemicals. Examples of some materials that may cause harm include, but are not limited to:

Bleach (or other solutions containing sodium hypochlorite)
Acids, especially muriatic/hydrochloric and hydrofluoric (often found in glass cleaning and restoration products)
Ammonia
Toluene
Xylene
Methyl Ethyl Ketone (a.k.a. MEK)
Acetone
Ethyl Acetate
Mineral Spirits
Turpentine
Methanol
Products with labeling that states they are flammable or corrosive

Contact the laminated glass supplier or interlayer manufacturers for additional recommendations and cautions.

Insulating glass, laminated glass and decorative glass is glazed in many ways, utilizing glazing sealants, gaskets, and/or tapes. Glazing materials do not provide a sufficient barrier to prevent cleaning agents from entering the glazing pocket and damaging the edge of the glass product or affecting the insulating glass unit seal. The presence of weep holes is recommended but is also not sufficient to overcome the risk of improper cleaning materials coming in contact with the edge of glass products. Exposure to certain chemicals may affect the sealants of insulating glass units and the surface of decorative products. Insulating glass unit longevity may be negatively affected by exposure to certain chemicals. Contact the supplier for additional recommendations and cautions.

The glass industry takes extreme care to avoid glass scratches by protecting glass surfaces during manufacturing and fabrication, as well as during all shipping and handling required to deliver the glass to the end user. A large percentage of damaged glass results from non-glass trades working near glass. They may inadvertently lean tools against the glass, splash materials onto the glass and/or clean the glass incorrectly, any of which can permanently damage glass.

To ensure long-term performance of the glass in a building, GANA and IWCA encourage glazing contractors, general contractors, building management and owners to be diligent in preserving the integrity of glass products. It is important to be aware of conditions that can lead to glass damage, to follow the handling and cleaning guidelines provided by GANA/IWCA and the glass fabricator, and to adhere to a regular schedule of maintenance cleaning. Generally, twice per year cleaning is sufficient; however, specific regions may require more frequent cleaning due to environmental factors and atmospheric pollutants. Contact a professional window cleaner, such as members of the IWCA, to discuss recommended frequencies for your particular building.

**Quick-Reference Guide to Cleaning Architectural Glass Products**

The following “Do’s” and “Don’ts” are offered as a supplement to the Glass Informational Bulletin 01- 0116 Proper Procedures for Cleaning Architectural Glass Products:

**The following are things to DO:**

- DO clean glass when dirt and residue appear
- DO protect glass during all stages of construction
- DO determine if coated glass surfaces are exposed
- DO exercise special care when cleaning coated glass surfaces
- DO avoid cleaning tinted and coated glass surfaces in direct sunlight
- DO start cleaning at the top of the building and continue to lower levels
- DO soak the glass surface with a clean water and soap solution to loosen dirt and debris
- DO use a mild, non-abrasive commercial window cleaning solution
- DO use a window-cleaning squeegee to remove all of the cleaning solution
- DO clean one representative window and check to see if procedures have caused any damage
- DO be aware of and follow the glass supplier’s specific cleaning recommendations
- DO caution other trades against allowing other materials to contact the glass
- DO watch for and prevent conditions that can damage the glass
- DO read the following Glass Informational Bulletins (GIBs) before cleaning any heat- strengthened or tempered glass products:
  - ID 01-1107 Describing Architectural Glass Constructions
  - TD 02-0402 (2008) Heat-Treated Glass Surfaces Are Different.

- TD 03-1003 (2010) Construction Site Protection and Maintenance of Architectural Glass (in collaboration with IWCA)
- 01-0300 Proper Procedures for Cleaning Architectural Glass Products

**The following are things NOT to do:**

- DO NOT start cleaning without reading:
  - ID 01-1107 Describing Architectural Glass Constructions
  - TD 02-0402 (2008) Heat-Treated Glass Surfaces Are Different.
  - TD 03-1003 (2010) Construction Site Protection and Maintenance of Architectural Glass (in collaboration with IWCA)
  - 01-0300 Proper Procedures for Cleaning Architectural Glass Products
- DO NOT allow dirt and residue to remain on glass for an extended period of time
- DO NOT begin cleaning glass without knowing if a coated surface is exposed
- DO NOT clean tinted or coated glass in direct sunlight
- DO NOT allow water or cleaning residue to remain on the glass or adjacent materials
- DO NOT begin cleaning without rinsing excessive dirt and debris
- DO NOT use abrasive cleaning solutions or materials for maintenance cleaning
- DO NOT ever use razor blades on coated glass surfaces
- DO NOT allow metal parts of cleaning equipment to contact the glass
- DO NOT trap abrasive particles between the cleaning materials and the glass surface
- DO NOT allow other trades to lean tools or materials against the glass surface
- DO NOT allow splashed materials to dry on the glass surface

Consult either www.glasswebsite.com or www.iwca.org for additional information and links providing additional technical resources.

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This bulletin was developed by the Tempering Division and IWCA Glass Committee, and approved by the Tempering Division and GANA Board of Directors.

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