

## Cleaning and Maintenance Recommendations

**Glass:** All architectural glass products require routine cleaning to prevent the build-up of potentially harmful mineral deposits and airborne contaminants.

During the construction period, the glass may become more heavily soiled than at any other time. Special care should be taken at the initial cleaning to make certain the glass surface will not be damaged because of heavy surface contamination. The first time the glass is cleaned after building construction or at any time during the construction phase, the glass surface should first be rinsed with clean water. This is done to remove any surface contamination that may be present which could potentially scratch the glass during the cleaning process. The glass should be cleaned with a soft, clean, grit-free cloth and a mild, non-abrasive, non-alkaline cleaning solution. The glass should be rinsed immediately with clean water and excess water should be removed from glass surfaces with a squeegee. Debris or grit that accumulates on glass can be damaging if not handled correctly.

### For routine cleaning:

1. Use a soft, clean, grit free cloth and commercial window washing solution or mild soap and water.
2. Begin by soaking the surfaces with water and soap solution then rinse with clean water to flush as much of the grit as possible.
3. Uniformly spray or re-apply the cleaning solution with a soft, grit-free, cloth sponge or pad and rinse thoroughly with clean water.
4. The glass surface should then be wiped dry with a clean grit-free cloth or squeegeed dry.

### Important:

- Care should be taken to ensure that metal does not come in contact with the glass surface.
- Razor blades, scrapers, putty knives and metal parts of glazing tools can scratch glass surfaces and should not be used to clean glass.

### Additional Considerations

In all cases when cleaning glass, extreme care should be taken to ensure that no abrasive particles are trapped between the glass and cleaning materials.

**Construction Sites:** Concrete or mortar slurry that runs down (or is splashed on) glass can be especially damaging and should be washed off as soon as possible. It is extremely alkaline and will eventually etch the glass surface. Follow routine cleaning instructions – It is strongly recommended that window washers clean a small area or one window, then stop and examine the surface for any damage to the glass.

**Cup Marks:** Vacuum cups are utilized to move and install large glass lites. The cups are made of silicone or rubber and can transfer small amounts of these materials onto the glass surface. The appearance of cup marks can be exacerbated by accumulation of dust and debris from the construction process. Glass protection and/or routine cleaning during the construction process will help to minimize this effect. Over the course of time, cup marks normally fade away due to repeated cleanings and exposure to the environment. Manually removing cup marks is challenging. We recommend rubbing the affected area with non-abrasive powder cleansers.

**Silicone:** Excess silicone on the glass face can be removed. If the glass is dirty, flush off the grit particulates with a spray of clean water. Remove as much of the silicone as possible from the glass without damaging the surface. A thin film of silicone may remain on the face of the glass. Once the silicone is thin enough, soak it with an isopropyl alcohol solution and use 4 ought steel wool (0000) to remove the remainder.

### Suggested Cleaners:

It is generally recommended to use mild, non-abrasive, non-alkaline cleaning solutions or non-abrasive powder cleansers.

The following have been used successfully in the past:

- Basic H® Classic
- Formula 409® Glass & Surface Cleaner
- Sparkle Glass Cleaner
- Windex® Original Glass Cleaner

### Important:

- Abrasive and caustic cleaners are not to be used. Please try a small test before cleaning, to prevent major damage caused by cleaning products and/or methods.
- Clean with a soft cloth and use moderate pressure. Excessive pressure or hard rubbing motions may damage the products surface. Wipe surface until dry, any liquids left on the product may cause staining.

## Special Considerations

**Films:** Clean any films applied with a mild soap and water solution or standard window clean solutions included above. Use a soft, clean cloth or soft paper towel. Exercise caution with using any window squeegee.

### Important:

- Do not use brushes or cleaners with abrasives in them.
- Films require special care at the corners. You must be cautious not to catch the corners with any cloth, paper towel and/or squeegee. It is recommended to wipe away from the corners or points.

**Fire and Wire Rated Glass:** Care must be taken to not scratch the film. Cleaning methods used should be similar to those mentioned above. Do not use the same towel, etc for wiping sills or frames. Do not leave the film wet. To maintain aesthetics, it is important to clean glass during and after construction. Normal practice applies, especially to ensure the glazing sealant system remains in good condition and water tight.

**X-ray Shielding Lead Glass Products:** As a high lead content glass, LX glass is more susceptible to staining as compared with normal window glass.

### Important:

- Do not stick anything on the surface of the LX glass during the installation. (When masking tape is used in caulking, remove it immediately after caulking and wipe off any traces of tape with alcohol)
- Do not use a wet cloth or water to clean the LX glass. Immediately wipe off water in case the LX glass becomes wet
- When the LX glass becomes dirty or marked with fingerprints, polish the surface slightly hard with a dry, clean cloth (like gauze) using alcohol. Wipe the LX glass again afterwards with a new, dry and clean cloth to completely remove the alcohol remaining on the surface.

**NOTE:** Failure to comply with these care and cleaning instruction may result in loss of warranty. The drain and ventilation holes in framing system must also be kept clear.

## Painted and Anodized Finishes

**Certain precautions must be taken when cleaning painted and anodized surfaces:**

- Select the appropriate cleaning method after identifying the finish.
- Do not use abrasive household cleaners or materials like steel wool or hard brushes that can wear and harm finishes.
- Excessive abrasive rubbing should not be used since it can damage the finish.
- Avoid drips and splashes and remove run-downs as quickly as possible.
- Consider the effects of run-downs on shrubbery, personnel and equipment and schedule cleaning appropriately.
- Strong cleaners should not be used on window glass and other components where they might come into contact with the aluminum.
- Avoid temperature extremes which can accelerate chemical reactions, evaporate or strengthen cleaning solutions cause streaking, staining or blotching.
- Do not mix cleaners or substitute a heavy-duty cleaner for a safer, milder cleaner.
- Never use paint removers or aggressive alkaline, acid or abrasive cleaners.
- Always do a test on a small area first and follow manufacturers' recommendations for mixing and diluting cleaners. Make sure cloths, sponges and cleaning equipment are grit-free.

### Important:

- Cleaning procedures to remove construction or accumulated environmental soils and discoloration should be initiated as soon as possible.
- Mortar, cement and other alkaline materials will quickly corrode anodic coatings if allowed to dry on the metal surface.
- Cleaning should start at the top of the building and proceed to the ground level in a continuous drop the width of the stage or scaffolding. The type of procedure depends upon the degree of soiling.

## Removal of Light Surface Soil

**Trial and error testing employing progressively stronger cleaning procedures can determine which method will be most effective:**

- A forceful water rinse should create initial surface agitation.
- If soil is still present after air drying the surface, scrubbing with a soft brush or sponge and concurrent spraying with water should be attempted.

- A 5 percent solution of industrial or commercial detergent and water should be applied with soft brushes, sponges or cloth using uniform alternate horizontal and vertical motion. Detergent should be safe for bare hands—stronger detergents should be spot tested.
- After washing, the surface should be rinsed thoroughly with clean water and allowed to dry. Do not allow detergent solution to dry on aluminum. Cleaner run-down should be minimized and rinsed immediately.
- A thorough rinse should remove solution from joints, crevices and surfaces.
- If it is necessary to remove oil, wax, polish or similar materials from anodized finishes, MEK, mineral spirits or an equivalent solvent is recommended.

(See cautions † listed under “Removal of Non-Water Soluble Deposits”)

## Painted Finishes

### Stain Removal:

- Sodium hypochlorite solution (laundry bleach, Clorox) may assist in removing certain stains from painted finishes.
- Hydrochloric acid, or 10 percent muriatic acid, diluted with 10 volumes of water, may assist in removing rust or alkali mortar stains from Permafluor™ surfaces.
- Limit contact to 5 minutes. Caution: acid solutions are corrosive and toxic. Flush all surfaces with water immediately after use.
- Acetic acid (vinegar) or oxalic acid solutions may be used for the same purpose. Flush with water.
- Anodized surfaces should not be washed with acidic or caustic solutions.

### Mildew Removal:

Remove mildew from painted aluminum finishes with a basic solution of:

- 1/3 cup detergent
- 2/3 cup trisodium phosphate (TSP)
- 1 quart sodium hypochlorite, 5% solution (bleach)
- Rinse with clear water immediately.

## Anodized Finishes

### Stain Removal:

- Once all the general cleaning procedures have been exhausted, cleaning with an abrasive pad soaked in clean water or a mild detergent cleaner may be tried:
- Using uniform pressure, hand scrub the metal surface using a palm size nylon cleaning pad. Thoroughly wet with clean water and a mild detergent cleaner or pumice powder. Start at the top and work down, rubbing in the direction of the metal grain.
- After scrubbing, the surface should be rinsed thoroughly with clean water or wiped with solvent to remove all residue.
- The surface should then be air dried or wiped dry with a chamois, squeegee or lint-free cloth, particularly if cleaner has dried on the surface.
- A power cleaning tool, such as an air-driven reciprocating machine fitted with cleaning pads, may be necessary for removal of unusually heavy soils. During this operation, the surface being cleaned must be continually wetted with clean water or a mild detergent cleaning solution to provide lubrication and a medium for carrying away the dirt. The machine should move in alternate vertical and horizontal strokes.
- After machine scrubbing, the area must be rinsed and thoroughly scrubbed again with a stiff bristle brush.
- A final rinse completes the operation and the cleaned surface is allowed to air dry or is wiped dry. It is important to remove promptly cleaner run-down on uncleaned surfaces to avoid staining.

## Removal of Non-Water Soluble Deposits

- Solvents may be used to remove non-water soluble deposits such as tar, grease, oil, paint and graffiti. However, extreme care should be used when using solvents on painted surfaces. Many solvents will reduce the gloss level of painted finishes and, if allowed to remain on the finish for more than a few minutes, may soften the paint and damage the coating. It is suggested that the painted area that comes into contact with the solvent be limited as much as possible.
- Extreme care must be exercised when solvents are used since they may damage organic sealants, gaskets and finishes. Solvents should never be used on anodic finishes protected by clear organic coatings, such as lacquer, unless the organic coating has deteriorated and is to be removed. Organic solvents should be used only in accordance with manufacturers' safety recommendations.
- Most organic solvents are flammable and/or toxic and must be handled accordingly. Avoid open flames, sparks and electrical motors and use adequate ventilation, protective clothing and goggles.

## Removal of Non-Water Soluble Deposits

	Examples	Cautions
Alcohols	Denatured (ethanol) Isopropyl (rubbing)	†Use with care. See cautions above.
Petroleum Solvents	VM&P Naphtha Mineral Spirits Turpentine (wood or gum spirits)	†Use with care. See cautions above.
Aromatic & Chlorinated	Xytol (Xylene) Toluol (Toliene)	†Use with care. See cautions above. These solvents should be used with caution on painted surfaces and limited to a maximum of five minutes exposure. A test should be carried out before using them.
Ketones, Esters & Lacquer Thinner	Methyl Ethyl Ketone (MEK) Methyl Isobutyl Ketone (MIBK) Ethyl Acetate (nail polish remover) Butyl Acetate Lacquer Thinner	†Use with care. See cautions above. Use with extreme caution on painted surfaces. Contact should be limited to a maximum of one minute and a test should be carried out prior to use. Manufacturers are not responsible for damage from unrestricted use.
Acetone Paint Remover	Acetones Paint Removers	†These should NOT be used on painted surfaces.