



### HARDWARE<sup>i</sup>

Due to the wide range of environments our hardware is used in, some cleaning may be required. Wind blown dust and dirt can cause the windows to be more difficult to operate, as well as cause the hardware to wear or corrode faster.

We recommend the window hardware be inspected at time of installation and once a year thereafter (more if necessary). Clear off dirt and grime build up. Particular attention should be given to cleaning dirt from slides in hinges.

#### Fasteners

The tightness of all screws should be checked. Any screw found loose should be re-tightened.

#### Cleaning

Clean water should be used when possible to flush the hardware clean. A mild (hand wash) dish soap and water mixture can be used to loosen stubborn dirt. Always rinse the hardware with clean water. Allow the hardware to dry completely before lubricating.

#### Cleaners to AVOID

##### DO NOT USE THE FOLLOWING:

- Vinegar Based Cleaners
- Citrus Based Cleaners (Lemon, etc.)
- Industrial Strength Cleaners
- Abrasive Cleaners

These types of cleaners will not only remove the lubricants from the hardware, they can also remove the corrosion resistant coatings.

**Warning:** Glass cleaners and brick/siding washes, with the above ingredients, must not come in contact with the hardware for the reasons listed above.

#### Lubrication

After the hardware is clean and dried it must be lubricated to restore the smooth operation, and in some cases corrosion resistance. There are a number of commercially available products which can be used. It is recommended that the replacement lubricant be similar to what was removed. (If the gears were coated with grease before you cleaned them, relubricate only with grease, not a spray such as WD40, etc.) The following list of products will help you know where each should be used.

Lithium Grease	Use on all gear drivers; such as operators and locks. Best choice due to waterproofness.
WD40 or CD2	Use on all siding or rotating joints; such as rollers, hinges and chains. Doesn't last as long as oil.
Automotive Grease or Petroleum Jelly	Will work in same areas as White Grease, but is not as waterproof and it will attract dust. Be careful when applying grease since it will stain any wood it contacts.
Light Oil such as 3 in 1 Oil:	Can be used on sliding or rotating joints. Care must be used when applying due to possible staining of wood parts.
Graphite	Can be used on sliding or rotating joints. Also works good on cam locks and hinges.

*Warning: Avoid the use of silicone based sprays or lubricants. Silicone can cause some plastic parts to become brittle*

There are many other products which can be used which will give equal results. Care must be used when applying any lubricants to avoid staining and/or damage to window parts. Since lubricants only work if present, periodic checks should be done to ensure the function of the hardware.



## Aluminum Finishes<sup>ii</sup>

### CARE AFTER INSTALLATION OF ANODIZED ALUMINUM

#### GENERAL CONSIDERATIONS

Building owners and managers, along with the architects who have designed the buildings, have always been concerned about the appearance of the exterior wall. The attractiveness of the wall design and the continued excellent appearance of a properly located building brings in and keeps satisfied tenants. The architect who has specified anodized aluminum wall and window components has done so first because of the beauty which can be achieved with such anodized finishes and second because of the long life, durability, and low maintenance that these finishes provide. It then becomes the responsibility of the building owner or manager to see that the original beauty of the building exterior is maintained in order to preserve the desirability and profitability of the property.

The American Architectural Manufacturers Association, recognizing the need for the aluminum industry to provide information on the care and maintenance of exterior wall finishes, released a publication entitled "Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum, AAMA609. This specification outlines methods equipment, and materials to clean anodized aluminum after construction and for subsequent, periodic maintenance. The methods outlined are applicable to architectural products fabricated from both rolled and extruded shapes, including window and door frames, store fronts, and entrances, curtain walls, mullions, hand rails, flag poles, and hardware. The information provided in the specification is useful to building owners, managers, architects, contractors, and others in the building industry who are interested in the proper care and maintenance of anodized aluminum.

As with any finished building material, aluminum requires reasonable care prior to and during installation and periodic cleaning and maintenance after installation. Although anodized aluminum is exceptionally resistant, to corrosion, discoloration and wear, its natural beauty can be marred by harsh chemicals, abuse or neglect. Such conditions usually affect only the surface finish but do not reduce the service life of the aluminum. All exterior surfaces collect varying amounts of soil and dirt, depending on geographic area, environmental conditions, finish and location of the building. These factors and the owner's attitude regarding surface appearance determine the type and frequency of cleaning required. The aluminum cleaning schedule should be integrated with other cleaning schedules for efficiency and economy. For example, both the glass and the aluminum curtain wall can be cleaned at the same time.

Cleaning may be required more often in one geographic area than another when appearance is of prime importance. More frequent cleaning will be required in heavy industrialized areas than in rural areas. Seasonal rainfall can affect washing frequency by removing water soluble deposits and less adherent soil. In foggy coastal regions, frequent cycles of condensation and drying can create a heavy buildup of atmospheric salts and dirt which may adhere tenaciously. In climates where the rainfall is low, the opportunity for atmospheric washing of the surface is minimal. Los Angeles, for example, with its unique combination of limited rainfall, temperature fluctuation, smog and condensation, requires that aluminum be cleaned more frequently than in other metropolitan areas with more frequent rainfall.

In both wet and dry climates, recessed and sheltered areas usually become more heavily soiled because of the lack of rain washing. More frequent and longer periods of condensation also occur in protected areas, increasing the adhesion of the soil. This is particularly true of soffit areas on overhangs, bottoms of fascia panels, sheltered column covers and the like. Periodic maintenance inhibits long term accumulation of soil which, under certain conditions, can accelerate weathering of the finish.

#### CLEANING PROCEDURES

Cleaning procedures for aluminum should be initiated as soon as practical after completion of installation to remove construction soils and accumulated environmental soils and discoloration.



For light soils, the simplest procedure is to flush the surface with water using moderate pressure. If soil is still present after air drying the surface, scrubbing with a brush or sponge and concurrent spraying with water should be tried. If soils still adhere, then a mild detergent cleaner should be used with brushing or sponging. Washing should be done with uniform pressure, first horizontally then vertically. Following the washing, the surfaces must be thoroughly rinsed by spraying with clean water.

If it is necessary to remove oil, wax, polish, or other similar material, MEK or an equivalent solvent is recommended for clean up. Extreme care must be exercised when solvents of this type are used since they may damage organic sealants, gaskets and finishes. These solvents should never be used on anodic finishes protected by clear organic coatings unless the organic coating has deteriorated and should be removed. Solvents can be dangerous if used improperly or without adequate ventilation. They should be used only by trained professionals following procedures established by the solvent manufacturer.

Removing heavy surface soil may require the use of an abrasive cleaning pad. In this procedure the pad is thoroughly soaked with clean water or a mild detergent cleaner and the metal surface is hand scrubbed with uniform pressure. scrubbing action should be in the direction of the metal grain.

Scrubbing with a nylon cleaning pad impregnated with a surface protectant material is also recommended for removing stubborn soils and stains. After scrubbing, the surface should be rinsed thoroughly with clean water to remove all residue.

In some circumstances it may be desirable to wipe the surface with a solvent. The surface is then permitted to air dry or is wiped dry with a chamois, squeegee or lintfree cloth.

Using power cleaning tools may be necessary to remove unusually heavy soils from large areas including panels and column covers. When using such tools, the surface must be continually flushed with clean water or a mild detergent cleaning solution to provide lubrication and a medium for carrying away the dirt. After an area has been machine scrubbed, it must be rinsed with clean water and thoroughly scrubbed with a fairly stiff bristle brush. The surface may then be air dried or wiped dry.

### **INSPECTION**

It is suggested that the building owner or manager provide an engineer or other qualified representative to inspect the cleaning work. Care must be taken to see that metal seams, crevices, sills and other areas that may trap water, cleaner, or dirt are carefully cleaned and dried. A final inspection to ensure that no discoloration or stains remain on the surface is recommended.

### **CLEANING PRECAUTIONS**

Certain precautions must be taken when cleaning anodized aluminum surfaces. Aluminum finishes must first be identified to select the appropriate cleaning method. Aggressive alkaline or acid cleaners must never be used. Cleaning hot, sun-heated surfaces should be avoided since possible chemical reactions will be highly accelerated and cleaning non-uniformity could occur. Strong organic solvents, while not affecting anodized aluminum, may extract stain-producing chemicals from sealants and may affect the function of the sealants. Strong cleaners should not be used on window glass and other components where it is possible for the cleaner to come in contact with the aluminum. Excessive abrasive rubbing should not be used since it could damage the finish.

### **FIELD PROTECTION AND MAINTENANCE**

Field protection and maintenance of cleaned surfaces is of particular interest. A wipe on surface protectant is now available which is estimated to provide protection for 12 to 24 months in the harshest environment. This protectant is applied to a thoroughly cleaned and dried anodized surface with a lint-free cloth or felt pad. The benefits of such an application are two-fold; first, it protects the finish, and second, it makes subsequent maintenance easier. Subsequent maintenance may well be reduced to simply flushing the surface with water, permitting it to dry



## CARE AFTER INSTALLATION OF PAINTED ALUMINUM

### GENERAL CONSIDERATIONS

Care and maintenance guidelines for anodized aluminum also apply to painted aluminum. The architect depends on the finish to provide the beauty in the building he has designed. The building owner and manager want to preserve this beauty thereby preserving the desirability and profitability of the property.

As in the case of anodized aluminum, the American Architectural Manufacturers Association released a publication entitled "Voluntary Guide Specification for Cleaning and Maintenance of Painted Aluminum Extrusions and Curtain Wall Panels, AAMA 610.1". This specification covers procedures to be used for sheet and extruded aluminum products found in curtain wall, window and storefront construction.

Organic aluminum coatings do not normally show an appreciable amount of dirt accumulation. In many atmospheres, dirt and soil would not be detrimental to the coating, but cleaning and surface care may be desirable for the sake of appearance. In areas where heavy industrial deposits have dulled the surface; where materials from construction processes have soiled the surface; or where cleaner has run-down from other surfaces, surface cleaning is desirable.

Climatic conditions affect the cleanliness of organic coatings in the same way they affect anodized coatings. In some areas rainfall may be sufficient to keep exterior surfaces looking clean and bright. In areas of low rainfall or in heavily industrialized areas, periodic cleaning will be necessary. This is also true of foggy coastal regions with frequent cycles of condensation and drying which may cause a build up of atmospheric salts and dirt. In any climate, sheltered areas under overhangs may become soiled from lack of rain washing. Cleaning painted aluminum components in the exterior wall may be scheduled along with cleaning the glass.

If automatic wall cleaning equipment is to be used on a building, a test should be made early in the equipment design to ensure that the cleaning solutions and brushes, as well as the frequency of cleaning, will have no detrimental effect on the coating.

### CLEANING MATERIALS

Painted surfaces should be cleaned as soon as possible after installation to remove construction soils and accumulated environmental soils. Ideally, a forceful water rinse from the top down should be employed before applying any cleaner. Some type of surface agitation helps. A low volume of water at moderate pressure is better than a high volume at low pressure. Rubbing the surface with soft brushes, sponges or cloth during the rinsing also helps.

If a simple water rinse with brushing, sponging, or rubbing with a cloth is not sufficient to remove the soil, a mild detergent or mild soap will be necessary.

Washing with a mild detergent or mild soap should be done by, brushing or sponging with a uniform pressure, first horizontally, then vertically. Following the washing, the surfaces must be thoroughly rinsed with clean water. If the cleaner has been permitted to dry, it may be necessary to sponge the surfaces while rinsing. Rinsed surfaces may be permitted to air dry or may be wiped dry with a chamois, squeegee or lint-free cloth.

Cleaner run-down should be minimized and those areas subject to run down should be rinsed immediately, and as long as necessary, to lessen the probability of streaking.

Cleaning chemicals must not be allowed to collect on surfaces, to "puddle" on horizontal surfaces or to collect in joints and crevices. These surfaces, joints and crevices should be thoroughly flushed with water and dried.

Mild detergents and soaps, which are safe for bare hands, should be safe for coated aluminum. Stronger detergents, such as some dishwasher detergents, should be carefully spot tested. Some of the latter would necessitate using rubber gloves and long handled brushes. Some mild cleaning solutions are available for automatic building washing machines.



removed with a clean cloth. Remaining residue should be washed with mild soap and rinsed with water. Use solvent cleaners sparingly.

Since solvents may extract materials from sealants which could stain the painted surface or could prove harmful to sealants, their possible effects must be considered. Test a small area first.

If cleaning heavy tenacious surface soil or stubborn stains has been postponed, a more aggressive cleaner and technique may be required. Cleaner and technique should be matched to the soil and the painted finish. Some local manual cleaning may be needed at this point. Always follow the recommendations of the cleaner manufacturer as to proper cleaner and concentration. Test clean a small area first. Cleaners should not be used indiscriminately. Do not use excessive, abrasive rubbing since it may alter surface texture or impart a "shine" to the surface.

Dried concrete spillage on the painted surface may be quite stubborn to remove. Special cleaners and/or vigorous rubbing with non-abrasive brushes or plastic scrapers may be necessary.

Diluted solutions of Muriatic Acid (under 10%) may be effective in removing dried concrete stains and effective proprietary cleaners for concrete and mortar staining are available; however, a test area should be tried first and proper handling precautions must be exercised for safety reasons.

Mixing cleaners may not only be ineffective, but also very dangerous. For example, mixing chlorine containing materials such as bleaches with other cleaning compounds containing ammonia, can produce poison gas.

Always rinse the surface after removing heavy surface soil.

### SUMMARY OF CLEANING TIPS

- Overcleaning or excessive rubbing can do more harm than good.
- Strong solvents (MEK for example) or strong cleaner concentrations can cause damage to painted surfaces.
- Avoid abrasive cleaners. Do not use household cleaners that contain abrasives on painted surfaces.
- Abrasive materials such as steel wool, abrasive brushes, etc., can wear and harm finishes.
- Avoid drips and splashes. Remove run-downs as quickly as possible.
- Avoid temperature extreme. Heat accelerates chemical reactions and may evaporate water from solution. Extremely low temperature may give poor cleaning results. Cleaning under adverse conditions may result in streaking or staining. Ideally, cleaning should be done in shade at moderate temperature.
- Do not substitute a heavy duty cleaner for a frequently used, mild cleaner.
- Do not scour painted surfaces.
- Never use paint removers, aggressive alkaline, acid or abrasive cleaners. Do not use trisodium phosphate or highly alkaline or highly acid cleaners. Always do a test surface.
- Follow manufacturers recommendations for mixing and diluting cleaners.
- Never mix cleaners.
- To prevent marring, make sure cleaning sponges, cloth etc., are grit free.
- "An ounce of prevention is worth a pound of cure."
- In addition to the foregoing, consideration must be given to the effects run-down may have on shrubbery, personnel, equipment and other items located below. Such considerations may affect the timing in the cleaning schedule.

### INSPECTION

It is suggested that the building owner or manager provide a qualified inspector to see that the cleaning operations are carried out in accordance with the recommended procedures.

If the above steps are followed, the hardware and finish on your windows should give years of dependable service. If you have any questions on cleaning or lubricating of Sussman products, please call the Technical Service Department of J. Sussman, Inc. at 718-297-0228

<sup>i</sup> Truth/Anderberg Tech Notes #10 1996

<sup>ii</sup> Reprinted from AAMA CW10 1997