
**ARCADIA GUIDE SPECIFICATION FOR CLEANING AND
MAINTENANCE OF PAINTED & ANODIZED ALUMINUM
EXTRUSIONS AND GLAZED DOOR & WINDOW PANELS**

1. SCOPE

This recommendation covers procedures for the cleaning and maintenance of painted and anodized aluminum extrusions and glazed panels. The procedures are intended for application with painted and anodized architectural aluminum extrusions such as window frames, door frames, railings, trims, sashes, glazed window and door panels as well as curtain wall panels, column covers, spandrels, mullions, louvers, vertical trim, etc.

2. PURPOSE

These recommendations are intended to assist architects, contractors, owners, building managers, et al., who are concerned with the care and maintenance of painted and anodized architectural aluminum. The information contains suggested methods as an aid in establishing safe and sound maintenance procedures.

3. GENERAL

3.1

Organic coatings on aluminum do not normally show an appreciable amount of dirt collection. In many atmospheres dirt or soil would not indicate a detrimental risk to the coating, but cleaning and surface care may be desirable for the sake of appearance. Cleaning may become desirable in areas where heavy industrial deposits have dulled the surface, where materials from construction processes have soiled the surface or where cleaner run-down from other surfaces should be removed. Local atmosphere conditions as well as building location within a geographical area quite naturally can affect cleanliness. Very often, rainfall may be sufficient to keep exterior surfaces appearing clean and bright. These factors coupled with owner attitude regarding surface appearance probably would determine cleaning schedules. Areas that are in direct sight at lower levels would more likely be cleaned. Less obvious areas would be less frequently cleaned or in some instances, hardly at all. Cleaning of painted or anodized aluminum may be scheduled with other cleaning. For example, glass and painted aluminum components can be cleaned at the same time.

3.2

Cleaning will be more often required in areas of low rainfall (i.e. Los Angeles) or in heavily industrialized areas. Foggy coastal regions with frequent cycles of condensation and drying may tend to exhibit a buildup of atmospheric salts and dirt. In any climate, sheltered areas such as overhangs, may become soiled because of lack of rain washing. Thorough rinsing is especially important after cleaning of these sheltered areas.

3.3

If automatic wall cleaning equipment is to be used on a building, a test should be made early in equipment design to insure that the cleaning solutions, brushes, as well as the frequency of cleaning should be taken into consideration to insure that there is no detrimental effect on the coating.

4. CLEANING PROCEDURES AND CARE AFTER INSTALLATION

Construction soils, including concrete or mortar, etc., should be removed as soon as possible. The exact procedure for cleaning will vary depending on the nature and degree of soil. Try to restrict cleaning to mild weather. Cleaning should be done on the shaded side of the building or ideally on a mild, cloudy day. Method of cleaning, type of cleaner, etc., of one component of the building must be used with consideration for other components such as glass, sealants, painted surfaces, etc.

4.1

The simplest procedure would be to apply the water rinse with moderate pressure to dislodge the soil. If this does not remove the soil, then a concurrent water spray with brushing or sponging should be tested. If soil is still adhering after drying, then a mild detergent will be necessary.

4.2

When a mild detergent or mild soap is necessary for removal of soil, it should be used with brushing or sponging. The washing should be done with uniform pressure, cleaning first with horizontal motion and then with vertical motion. Apply cleaners only to an area that can be conveniently cleaned without changing position. The surface must be thoroughly rinsed with clean water. It may be necessary to sponge the surface. The rinsed surface is permitted to air dry or is wiped dry with a chamois, squeegee or lint free cloth.

4.3

Run down of cleaner (from any operation) to the lower portions of the building should be minimized and these areas should be rinsed as soon as and as long as necessary to lessen streaking, etc. from unavoidable run down, lower areas should be kept wet or flooded with water. Do not allow cleaning chemicals to collect on surfaces or to "puddle" on horizontal surfaces, crevices, etc. These should be flushed with water and dried. Always clean coated surfaces down from the top to bottom and follow with a thorough rinsing with clean water. (With one story or low elevation buildings, it is recommended to clean from bottom up and rinse from top down).

4.4

Mild Detergents – Mild soaps or detergents ruled 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 rubber gloves, long handled brushes, etc. With any, the finish should be thoroughly rinsed with clean water and dried. Some mild cleaning solutions, which would comprise of selected wetting agents in water solutions, are available for automatic building washing machines.

5. CLEANING OF MEDIUM TO HEAVY SOIL**5.1**

Some type of mild solvent such as mineral spirits may be used to remove grease, sealant or caulking compounds. Stronger solvent or solvent containing cleaners may be deleterious or have a softening effect on paints. To prevent harm to the finish, these types of solvent or emulsion cleaners should be spot tested and preferably the coating manufacture should be consulted. Care should be taken to assure that no marring of the surface is taking place in this manner since this could give an undesirable appearance at certain viewing angles. Cleaners of this type are usually applied with a clean cloth and removed with cloth. Remaining residue should be washed with mild soap and rinsed with water. Use solvent cleaners sparingly. It may be possible for solvents to extract materials from sealants, which could stain the painted surface or could prove harmful sealants; therefore, these possible effects must be considered. Test a small area first.

5. CLEANING OF MEDIUM TO HEAVY SOIL..... continued

5.2

If cleaning of a heavy surface soil has been postponed or in the case of an especially tenacious soil, stubborn stains, etc., a more aggressive cleaner and technique may be required. Cleaner and technique should be matched to the soil and painted finish. Some local manual cleaning may be needed at this point. Always follow the recommendation. Test clean small area first. Cleaners should not be used indiscriminately. Do not use excessive abrasive rubbing as such may alter surface texture or may impart a “shine” to the surface.

5.2.1

Concrete spillage that has dried on the painted surface may become 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, however, a test area should be tried first, and proper handling precautions must be exercised for safety reasons. Also, effective proprietary cleaners for concrete and mortar staining are available. See supplier sections for reference companies under 8.1.

5.3

Never Mix Cleaners – The mixing of cleaners may not be ineffective, but also very dangerous. For example, mixing of chlorine containing materials such as bleaches, with other cleaning compounds containing ammonia, can result in poison gas emission.

5.4

Always rinse after removal of heavy surface soil

6. SUMMARY OF GENERAL CLEANING TIPS

6.1

Over cleaning or excessive rubbing can do more harm than good.

6.2

Strong solvents or strong cleaner concentrations can cause damage to painted surfaces.

6.3

Avoid abrasive cleaners. Do not use household cleaners that contain abrasives on painted and anodized surfaces.

6.4

Abrasive material such as steel wool, abrasive brushes, etc., can wear and harm finishes.

6.5

Avoid drips and splashes. Remove run downs as quickly as possible.

6.6

Avoid extreme temperatures. Heat accelerates chemical reactions and may evaporate water from solution. Extremely low temperature may give poor cleaning effects. Cleaning under adverse conditions may result in streaking or staining. Ideally, cleaning should be done in shade at moderate temperature.

6.7

Do not substitute a heavy duty cleaner for a frequently used mild cleaner.

6. SUMMARY OF GENERAL CLEANING TIPS continued

6.8

Do not scour painted surfaces.

6.9

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.

6.10

Follow manufacturers recommendations for mixing and diluting cleaners.

6.11

Never mix cleaners. (See 5.3 for precautions).

6.12

To prevent marring, make sure cleaning sponges, cloth etc., are grit free.

6.13

“An ounce of prevention is worth a pound of cure.”

7. GENERAL INSPECTION AND PRECAUTIONS**7.1 Inspection**

It is suggested that the building owner provide a qualified inspector who will see that the desired effect is being obtained with the use of sound procedures. Inspections should commence early in the cleaning procedure.

7.2 Building Surroundings

Consideration must be given to possible effects of run down on shrubbery, personnel, equipment, etc., located below. These factors may require consideration toward methods of timing.

8. GENERAL MAINTENANCE AND OPERATION INSTRUCTIONS SPECIFIC TO ALUMINUM SLIDING WINDOWS & DOORS

Arcadia Horizontal Sliding Windows and Doors are integrated systems that have been designed to withstand the rigors of today's modern architecture. Proper use and maintenance of these windows and doors will assure optimum performance for years to come!

8.1

Operation

Once installed and adjusted, the windows and doors are ready for day to day operation with little maintenance; however this does not mean no maintenance. During the daily operation, the windows and doors should roll smoothly and not bind through their range of motion. Should binding occur, stop operation and check to make sure the track is clear of all debris and that the track is smooth and lubricated. Additionally, make sure the weathering provided for the windows and doors is undamaged and in its proper location. Should any of these items be evident, please contact a glazing professional for the remedial correction of this product. It is not unusual that the effort to operate the windows and doors when new may seem excessive; over time the effort should diminish. It is normal during times of heavy rainfall and/or high winds that water may appear inside the windows and doors sill tracks. The windows and doors are designed to accept this water infiltration and drain it back to the exterior.

8. GENERAL MAINTENANCE AND OPERATION INSTRUCTIONS SPECIFIC TO ALUMINUM SLIDING WINDOWS & DOORS.....continued

Annual Maintenance (These items should be checked at least twice a year to assure optimum performance)

8.2

Check Weatherstripping - make sure that the weathering is in good shape with no tears or kinks and that it is making contact with the opposing surface. If any evident damage is detected, the weatherstripping must be replaced

8.3

Check Glazing Gasket – make sure that the corners of the exposed rubber along the glass edge do not have any gaps. Over time the elastomer may relax and pull away from the corners. Should this occur, apply a high quality glazing sealant to fill this gap.

The following information concerns the proper care of our roller and locking mechanism hardware

8.4

Rollers & Locking Mechanism Maintenance- Our hardware is expected to give trouble free operation throughout the life of the window or door it is mounted on. Arcadia has gone to great lengths to ensure the hardware provided will stand up to the tests of time. All of the hardware supplied by Arcadia is protected or enhanced by special coatings and lubricants. These protective coatings and lubricants can be damaged or removed by common household products. If the hardware is properly cared for it will outlast the window and door it is applied to. If the steps outlined below are followed, the hardware on your windows and doors should give years of dependable service.

8.4.1

Cleaning

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

We recommend the window or door hardware be inspected 4 times a year (more if necessary) and cleared of dirt and grime buildup. Particular attention should be given to cleaning dirt from slides in hinges.

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 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

8. **GENERAL MAINTENANCE AND OPERATION INSTRUCTIONS SPECIFIC TO ALUMINUM SLIDING WINDOWS & DOORS..... continued**

8.4.2

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, Re-lubricate 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 drives such as operators and locks. Best choice due to waterproofness.

WD40 or CD2: Use on all sliding 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 and 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 lubricant to avoid staining and/or damage to window and door parts. Since lubricants only work if present, periodic checks should be done to ensure the function of the hardware.

8.5

Check window and door seals – check to make sure the sealant within the windows and doors are intact and has not pulled away from the surfaces. If this occurs, remove the old sealant and clean the surfaces with a solvent such as isopropyl alcohol and reapply a high quality silicone sealant.

8.6

Check perimeter sealant joint – check the sealant joint between the windows, doors and the surrounding installed conditions. There are many installation techniques and materials used in building construction today. Verify the conditions and construction details as well as sealant materials prior to performing any remedial work to this area.

8.7

Check that operating panel(s) are level and plumb- a panel that is not level and plumb may be hard to operate, allow excessive air and water infiltration, not contact the weatherstripping correctly and will look unsightly. In maintaining the window and door in a level and plumb manner will alleviate many problems and insure a long and useful life.

8. **GENERAL MAINTENANCE AND OPERATION INSTRUCTIONS SPECIFIC TO ALUMINUM SLIDING WINDOWS & DOORS..... continued**

8.8

If the glazed panels have insulated glass and fog or condensation appears inside the insulated unit, the entire unit must be replaced. Insulated glass units cannot be repaired. Insulated glass units usually carry a 5 or 10 year replacement warranty directly from the glass manufacturer.

8.9

Cleaning

Cement, plaster, terrazzo and other alkaline and acidic-based materials used to clean masonry can damage aluminum finishes. If these materials come into contact with the aluminum finish, immediately flush plenty of water and a mild soap to minimize staining. Prior to cleaning the aluminum, spot test the cleaning agent in an inconspicuous area before using on the aluminum or glazed surfaces. – See sections 4,5 and 6 for special cleaning instructions.

SPECIAL CARE AFTER INSTALLATION OF ANODIZED ALUMINUM

Extreme Care of Anodized Aluminum products installed within 1 mile of any sea coastline due to corrosion – The following care instructions must be adhered to very carefully & frequent cleaning with fresh water and mild soap is required to minimize the corrosion of the anodized aluminum finishes

Building owners and managers, along with the architects who have designed their 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 proper.

The Architectural Aluminum 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, AAMA 609.1-1977.” 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 that 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 on 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

GENERAL CONSIDERATIONS..... continued

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 discolorations.

Cleaning work should start at the top of the building and proceed to the ground level in a continuous drop. Using a forceful water spray, an area the width of the stage or scaffolding should be rinsed as cleaning proceeds from the top down.

Because surface soils may be light or heavy, several progressively stronger cleaning procedures may be employed depending of the severity and tenacity of the soil. Only trial and simplest procedure to remove the soil is the one that should be used.

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, than 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 materials, 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.

Removing heavy surface soils 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 lint-free 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 environments. 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 and wiping on a surface protectant every few years. In applying this protectant it is very important that the manufacturer's recommendations be carefully followed.

Many waxes are available for application to anodized finishes, but they are best used on interior items such as handrails, doors, and decorative metals. It is generally not practical to use these materials on high-rise portions of a building.

EQUIPMENT AND PRODUCTS

Equipment and products needed for cleaning and maintaining anodized aluminum finishes are listed in Section 7 of AAMA 609.1-1977. These include mild soaps, detergents, non-etching cleaners, abrasive cleaning pads and cleaning machines. AAMA, however, has not evaluated these materials nor does its listing constitute an endorsement. This list is included only as an aid to potential users in identifying the materials.