

Voluntary Guide Specification for Cleaning and Maintenance of Painted Aluminum Extrusions and Curtain Wall Panels

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VOLUNTARY GUIDE SPECIFICATION FOR CLEANING AND MAINTENANCE OF PAINTED ALUMINUM EXTRUSIONS AND CURTAIN WALL PANELS

1. SCOPE

This recommendation covers procedures for cleaning and maintenance of painted aluminum extrusions and curtain wall panels. The procedures are intended for application with painted, architectural aluminum extrusions such as window frames, door frames, railings and trim 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, architectural aluminum. The information contains suggested methods as an aid in establishing safe, sound cleaning and 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 on 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 atmospheric conditions as well as building location within a geographical area quite naturally have an effect on 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 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 give 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 Removal of light surface soil may be accomplished in several ways. Some testing is recommended to determine the degree of cleaning actually necessary to accomplish the task. Ideally, an initial step of forceful water rinse from the top down is recommended prior to any cleaner application. Low water volume with moderate pressure is much better than considerable volume with low pressure. Physical rubbing with soft, wet brushes, sponges or cloth is also helpful.
- 4.1.1 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 the soil is still adhering after drying, then a mild detergent will be necessary.
- 4.1.2 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 a horizontal motion and then with a 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 while rinsing, particularly if cleaner is permitted to dry on the surface. The rinsed area is permitted to air dry or is wiped dry with a chamois, squeegee or lint free cloth.

- 4.1.3 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 or to “puddle” on horizontal surfaces, crevices, etc. These should be flushed with water and dried. Always clean coated surfaces down from top to bottom and follow through with a thorough rinsing with clean water. (With one storey or low elevation buildings, it is recommended to clean from bottom up and rinse from top down)
- 4.1.4 Mild Detergents - Mild soap or detergents ruled safe for bare hands should be safe for coated aluminum. Stronger detergents and some dishwasher detergent 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 solution, are available for automatic building washing machines. These machines would have built in brush agitation, squeegee, filtration and re-circulation; in some a fresh water connection may be provided.

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 have a deleterious or 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 manufacturer 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 a cloth. Remaining residue should be washed with mild soap and rinsed with water. Use solvent cleaners sparingly.
 - 5.1.1 It may be possible for solvents to extract materials from sealants which could stain the painted surface or could prove harmful to sealants; therefore, these possible effects must be considered. **Test a small area first.**

5.2 If cleaning of a heavy surface soil has been postponed or in the cases 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 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 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.

5.3 Never Mix Cleaners - The mixing of cleaners may not only 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 soil surface.

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 surfaces.

6.4 Abrasive materials 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 temperature extremes. 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.
- 6.8 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 manufacturer's 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. Inspection 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 considerations toward methods of timing.