



MAINTENANCE OF AAMA POWDER COATINGS

Aluminum surfaces coated with TCI architectural coating products need to be maintained properly to optimize the appearance and performance of the coating during the product service life. Proper coating maintenance is needed to keep coating warranty protection in force. Coating maintenance involves regular monitoring, cleaning and damage repair. Surface cleaning removes accumulated materials that can affect the appearance and/or undermine the integrity of the coating. Preventing corrosion of the aluminum substrate is key to preserving coating integrity in the field.

CORROSION

Chemical and electrochemical reactions are involved in the corrosion of metals. Strongly acidic and basic materials can be highly corrosive to aluminum. Aluminum also corrodes rapidly when exposed to seawater. Surface compositional variation, stresses, and morphological structure are factors leading to contiguous areas on a metal surface with different electrode potentials. In the presence of a conductive solution (electrolyte) these areas function as the anode and cathode in a galvanic cell. In this situation the anode will corrode because it has the lower potential. Two dissimilar metals with different electrical potential behave similarly. The anodic metal with the lower potential corrodes. This behavior can be observed on multi-metal assemblies, for example when fasteners with a higher potential are used on aluminum the aluminum will corrode around the fastener.



For the protection of aluminum the coating must have good barrier characteristics with regard to water, salt and other corrosive chemicals. The coating must also have sufficient wet adhesion to resist the displacement forces of water which permeates the film profile. For coatings to obtain good wet adhesion the substrate must be prepared prior to application of the coating. The powder coating, of course, has to be applied and cured as prescribed by TCI. Properly prepared substrate is (1) free of dirt, grit, oils and other soils, salts, and oxidation products, and (2) pretreated with a proven chrome or non-chrome pretreatment system.

MAINTENANCE

Powder coated architectural aluminum surfaces must be properly maintained in service to keep the powder coating product performance warranty valid. An effective preventive maintenance program is the responsibility of the warranty. Program effectiveness depends on cleaning the coated surface often enough to keep it substantially free of harmful agents. Regular cleaning will increase coating longevity. The required cleaning frequency is determined by the types and amounts of corrosive materials actually accumulating on the coated aluminum. Coated surfaces in the field must be inspected often until a satisfactory cleaning schedule is established for the application. For coastal installations the cleaning frequency may need to be as often as once a month. Furthermore, significant events like storms may necessitate unscheduled cleanings.



AAMA Specification 609 & 610-02 Cleaning and Maintenance Guide for Architecturally Finished Aluminum gives detailed information on methods, equipment and materials applicable for cleaning and maintenance and can be found at www.aamanetstore.org. Maintenance program effectiveness also depends on prompt damage repair. Damage to the coating which exposes the substrate eliminates the barrier protection the intact coating provides. Resistance to corrosion at the damaged area is then dependent only on the coating metal/interface and wet adhesion properties. Any areas damaged during transportation, installation or service use should be repaired according to procedures found in the repair section of the TCI AAMA Users Guide.

Maintenance activities need to begin as part of the installation process. Construction soils should be removed as soon as possible, and any film damage should be repaired promptly. The types and accumulation rates of any corrosive materials should be documented and used for developing the cleaning frequency schedule. Minimum required maintenance cleaning is once a year (twice a year in high exposure environments) with documentation of dates, cleaning agents used and method of application.

Methods for cleaning the coating depend on the characteristics any of surface soil. Use water and mild soap or detergent with a soft brush or sponge for light surface soils. For medium to heavy soils a mild solvent, such as mineral spirits, can be used for removal of grease, sealants or caulking compounds. Spot testing should be performed first to ensure there is no coating damage or staining from cleaning materials. Aggressive cleaners can be used only sparingly after spot testing. Strong solvents, abrasive cleaners or hard pads and brushes can cause film damage.

It is preferable for cleaning and repair procedures to be performed when coated surfaces are not hot from sun exposure. Avoid rundown of cleaning materials to other portions of the building or application area. Rinse the surface thoroughly after each cleaning.



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