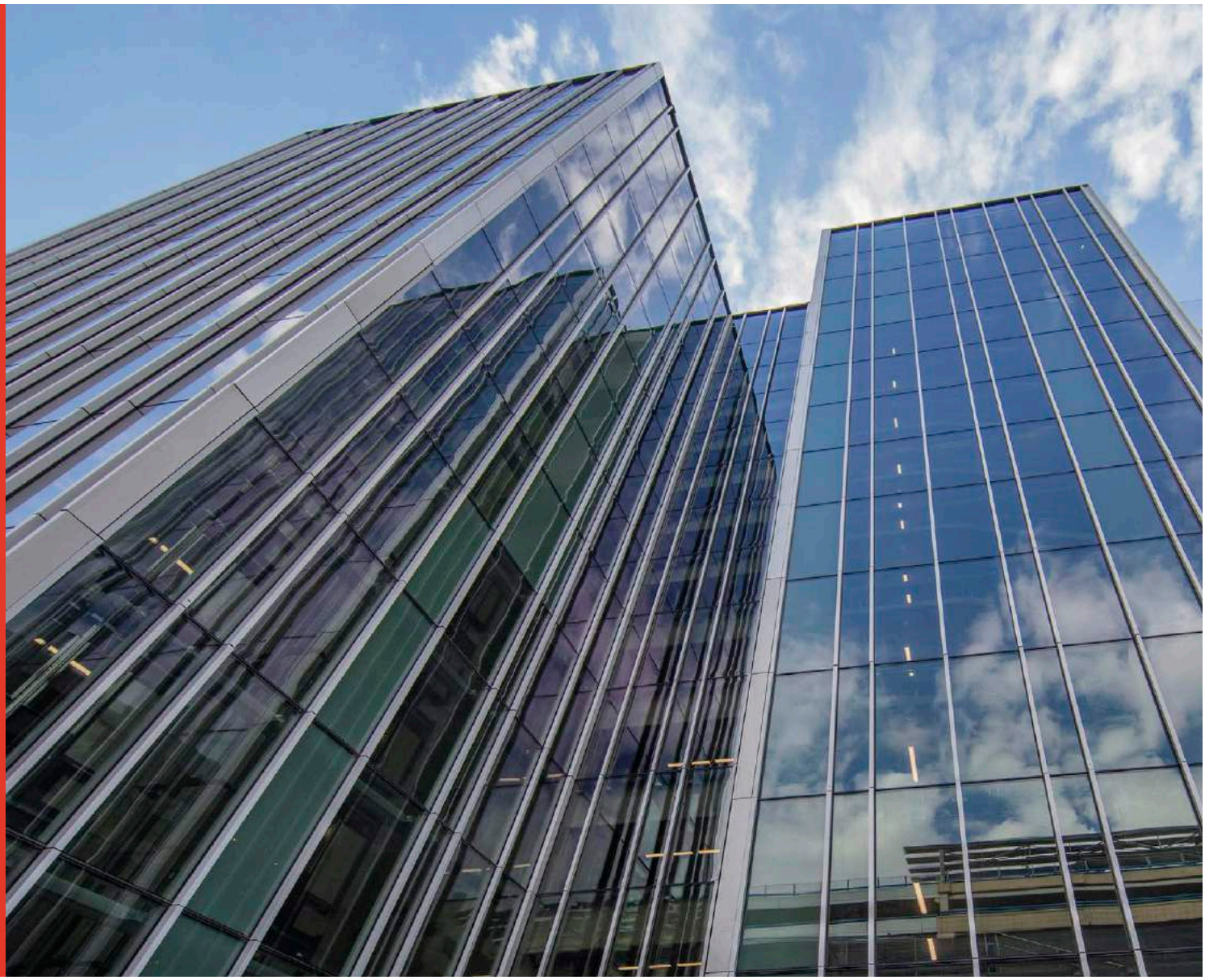
Building Legacies

ARCHITECTURAL ALUMINUM FINISHES

Consider Your Options….
That Enhance, Protect and Endure.



KAWNEER

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PAINTED FINISHES

Market demand for a variety of colors and types has resulted in increased use of painted finishes — also known as organic coatings.

Although anodized finishes remain a frequently specified choice for architectural aluminum, substantial improvements in paint technology provide long-term performance and durability in a wide range of climates and environments. Regardless of which paint type is selected, specifiers need to be sure the metal supplier either is, or has used, one of the paint manufacturer's approved applicators.

A comparison chart representing different types of organic coatings and their performance characteristics is included in the specifications section for reference.

PAINTED FINISHES

LIQUID PAINT

Liquid paints are typically sprayed on commercial architectural aluminum products and might include acrylic, polyester, or fluoropolymer. Both acrylic and polyester finishes can be modified with silicone to further enhance performance.

Fluoropolymer coatings generally contain between 50 and 70 percent fluoropolymer resin known as polyvinylidene fluoride (PVDF) by weight. Kynar 500®FSF® and Hylar® 5000S are two common brands associated with fluoropolymer resins. Pigment is added to provide color.

PERFORMANCE

Kawneer's 50 percent fluoropolymer paint systems meet the AAMA 2604 paint specification for high performance, while the 70 percent fluoropolymer finishes meet the superior performance of the AAMA 2605 specification. Both paint systems provide medium-to-low gloss color with high performance and durability. For this reason, Kawneer and other high-quality architectural aluminum product manufacturers recommend the use of fluoropolymer coatings for architectural projects.

When fluoropolymer finishes are baked, the resin particles, which look like balls of spaghetti, melt, uncoil and intermingle. Upon leaving the bake oven, the painted material is still "wet." Once cooled, it forms a continuous, physically locked finish.

Fluoropolymer paints are extremely durable because the PVDF resin is chemically inert. Modifiers must be added to give the fluoropolymer the required adhesion properties. A formulation based on 70 percent fluoropolymer resin has been found to give the optimum mixture for proper adhesion characteristics and weatherability.

Mica and metallic flake may be added to fluoropolymer finishes.

The cost of fluoropolymer paint will vary depending upon the color selected.

Standard colors provided by most manufacturers will generally be considerably less expensive than custom colors. Typically, liquid fluoropolymer paint systems require a primer, and some utilize as many as three or four coats, including barrier and clear coats.

Ideal applications for fluoropolymer coatings include entrances, storefronts, windows, window walls and curtain walls.

Buildings with special high performance and durability needs, such as monumental projects with severe exposure to the sun's UV rays, are ideal candidates for fluoropolymer finishes. For high-traffic areas, metallic finishes and fluoropolymer coatings with greater pencil hardness provide increased abrasion resistance and toughness.

See our separate color cards for Permafluor®, Permadize®, and Permacoat® for more specific performance information.

APPLICATION

At least six steps are necessary to apply fluoropolymer finishes during the manufacturing process (see diagram on the right). First, a multi-stage chemical pretreatment produces a surface with a chemical conversion coating to clean the metal, promote primer adhesion and provide corrosion resistance. Second, the aluminum is coated with an acrylic or epoxy primer according to the paint manufacturer's instructions. These primers adhere to the pretreated surface and intermingle with the fluoropolymer topcoat during the baking process. A flash step follows to evaporate the solvents, and then the fluoropolymer finish is sprayed onto the aluminum. Another flash procedure is followed by baking for approximately 10 minutes until the aluminum surface reaches a temperature of 450 °F. Additional clear fluoropolymer topcoat, flash and bake steps are optional.

When certain metallic flake fluoropolymer coatings are applied to the material, a clear topcoat may be required. The clear topcoat seals in the metallic flakes and prevents them from corroding. Kawneer also recommends a clear topcoat application for storefront framing and entrance areas where the finish may be exposed to extreme wear and tear from heavy pedestrian traffic or where exotic pigments are used. It is important to note that there may be a slight color difference when applying a clear coat to light colored pigments like Bone White.

PRODUCTION

POWDER COATINGS

Sometimes known as dry paint, powder coatings are solvent-free and emit no volatile organic chemicals (VOCs) into the atmosphere. These powder paint systems require less energy to apply and reduce waste in application, as overspray can be reclaimed and reused.

Like liquid paint systems, powder paint systems are applied electrostatically to the metal substrate in vertical or horizontal application lines. Powder coatings may incorporate polyester, acrylic, fluoropolymer or epoxy for additional performance and durability.

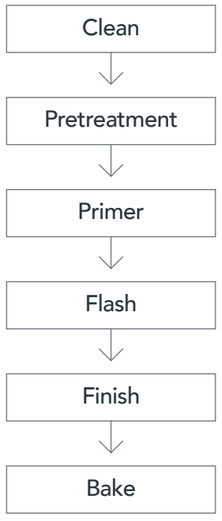
PERFORMANCE

There are new polymer systems that allow some powder coatings to meet the performance requirements of the AAMA 2604 and 2605 specifications. Many also comply with most environmental regulations imposed by governments recognizing the need to preserve natural resources by imposing stricter safety and emission regulations. Powder coatings provide a solution to environmental concerns while offering high performance, durability and a wide variety of colors.

Some powder coatings demonstrate very good color retention and provide optimal corrosion resistance. Excellent durability, mechanical properties and abrasion resistance make these coatings ideal for high-traffic entrances and storefront framing. Standard offerings may be available in a variety of gloss levels.

For more specific information, see our separate Permacoat® color card.

PRODUCTION



APPLICATION

Powder coatings are applied in a similar manner to fluoropolymer paints with a few exceptions; a primer is usually not required, the flash steps are eliminated since these coatings contain no solvents, and the finish cures at lower oven temperatures.

INDUSTRY SPECIFICATIONS FOR PAINTED FINISHES

The American Architectural Manufacturers Association (AAMA) has developed three specifications to assist architects in the selection of an organic coating for a given application. This allows the specifier to choose the quality of product needed for any specific application.

AAMA 2603

Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels. This specification is intended for paints that are applied to a wide variety of products, including residential sliding doors, storm doors, sliding and light commercial windows. This is recommended for use on interior architectural profiles only.

AAMA 2604

Voluntary Specification, Performance Requirements and Test Procedures for High-Performance Pigmented Organic Coatings on Aluminum Extrusions and Panels. This specification covers high-performance organic coatings, which are used on products produced by the Kawneer Company and other manufacturers of high-quality products.

AAMA 2605

Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Pigmented Organic Coatings on Aluminum Extrusions and Panels. This specification covers superior organic coatings, which are used on products produced by the Kawneer Company and other manufacturers of high-quality products.

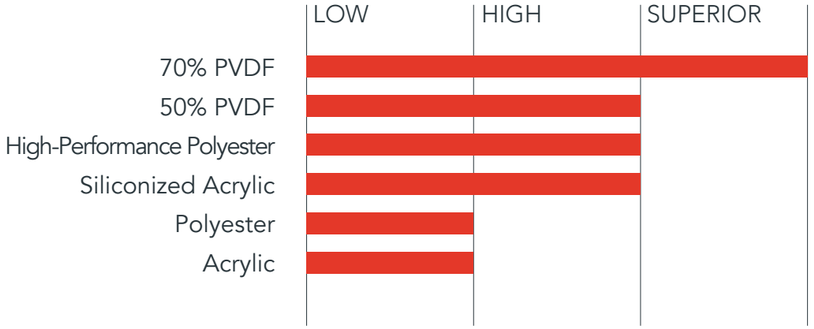
Testing thickness and color quality of painted finish.

The chart highlights important differences between these three specifications:

ITEM	AAMA 2603	AAMA 2604	AAMA 2605
COATING THICKNESS	0.8 mils	1.2 mils	1.2 mils
PRETREATMENT	Multi-Stage Cleaning with Chemical Conversion Coating	Multi-Stage Cleaning with Chemical Conversion Coating	Multi-Stage Cleaning with Chemical Conversion Coating
ABRASION RESISTANCE	No Requirements	Falling Sand Test - 20L/mil	Falling Sand Test - 50L/mil
CHEMICAL RESISTANCE	Muriatic Acid/Mortar Resistance Test	Muriatic Acid/Mortar Resistance/Nitric Acid Fumes Test	Muriatic Acid/Mortar Resistance/Nitric Acid Fumes Test
COLOR RETENTION	1 Year South Florida	5 Year South Florida (Max. 5ΔE)	10 Years South Florida (Max. 5ΔE)
GLOSS RETENTION	No Requirements	Minimum of 30% after 5 Years South Florida	Minimum of 50% after 5 Years South Florida
CORROSION RESISTANCE	1000 hr cyclic corrosion	1500 hr cyclic corrosion	2000 hr cyclic corrosion
CHALKING RESISTANCE	No Requirements	No more than #8	No more than #8 (#6 for Whites)
FILM ADHESION	Dry Adhesion/Wet Adhesion	Dry Adhesion/Wet Adhesion Boiling Water Adhesion	Dry Adhesion/Wet Adhesion Boiling Water Adhesion
EROSION RESISTANCE	No Requirements	Less than 10% after 5 Years South Florida	Less than 10% after 10 Years South Florida

INDUSTRY SPECIFICATIONS FOR PAINTED FINISHES

COMPARATIVE PERFORMANCE - CHALK & COLOR RETENTION*



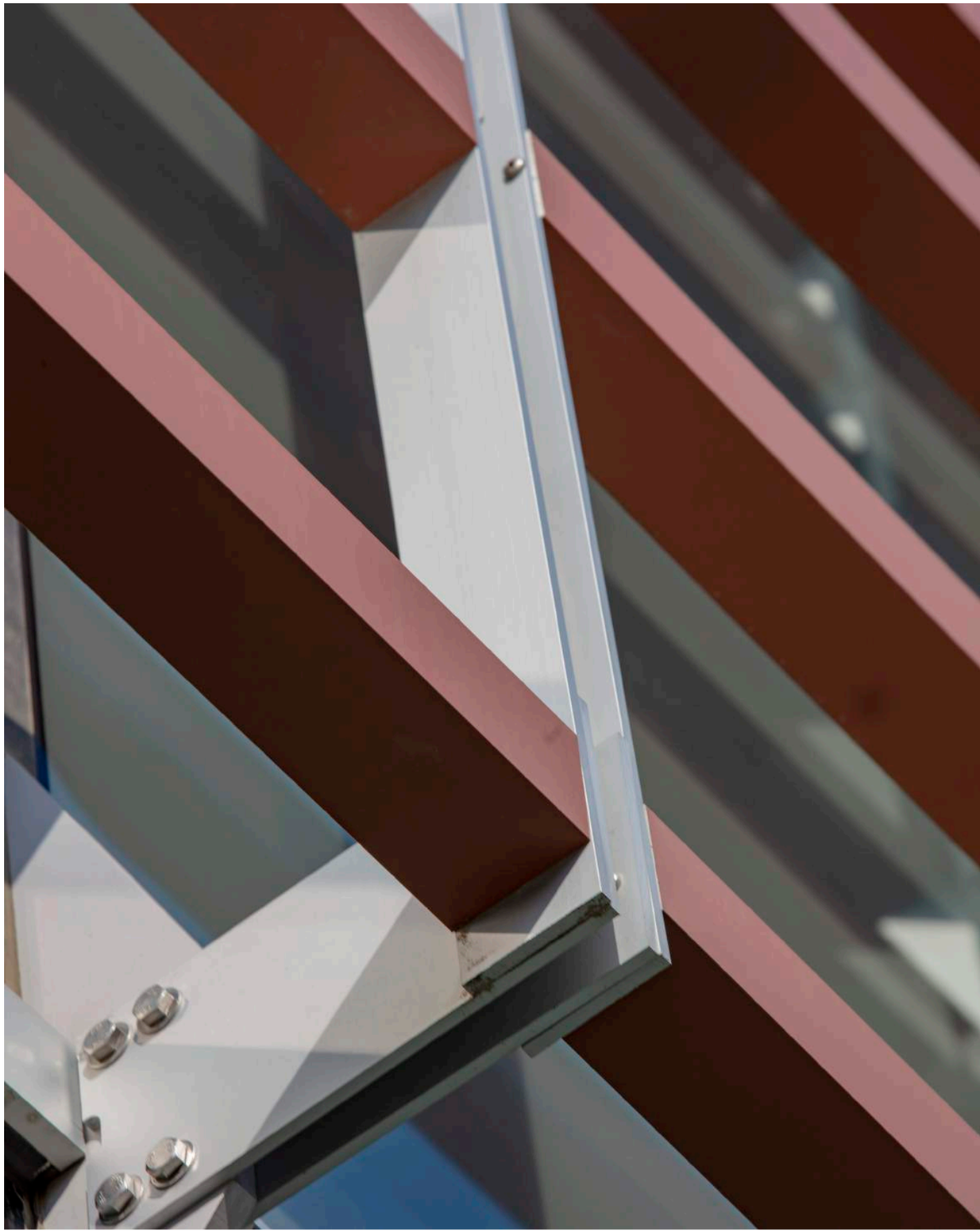
* Chalk and color retention performance varies considerably depending on paint type, pigment, building location and maintenance of the finish.

This chart represents an overall comparison only of chalk and color retention based on the limits specified within AAMA 2605.

The white and light pigmented colors of some lower-cost paint finishes may exceed these values. High performance PVDF coatings of certain pigments or multiple coats may also exceed these values.

For more specific performance data and warranty information, consult your paint manufacturer.

For further information or for abbreviated specification suggestions for painted finishes, contact your Kawneer regional sales office or your local representative.



ANODIZED FINISHES

Anodizing is a general term that describes the process of converting the surface of aluminum to aluminum oxide. Under carefully controlled conditions, anodizing produces a uniform oxide coating.

PRODUCTION PROCESS

CLEAR ANODIZE

Controlled anodizing requires several operations where aluminum is moved in and out of tanks carrying chemical baths and rinses:

1. A non-etching cleaner removes soil and other organic deposits from the metal.
2. Chemical etching of the aluminum removes a thin layer of metal and eliminates imperfections from the surface while reducing the shine. The etching process itself provides no protection.
3. The aluminum is placed into a solution of acid and water (the electrolyte) and an electrical current is passed through, causing the water molecules to separate into hydrogen and oxygen. Aluminum has an affinity for oxygen and quickly combines to form a layer of aluminum oxide. The length of time the aluminum is submerged, the temperature of the solution, the chemical concentration and the electrical current all control the thickness of the coating to produce an Architectural Class I or Class II finish.
4. Lastly, the finish must be sealed to close the "pores" produced in the anodizing process — an extremely important step that prevents foreign matter from entering the base metal and causing corrosion or staining.

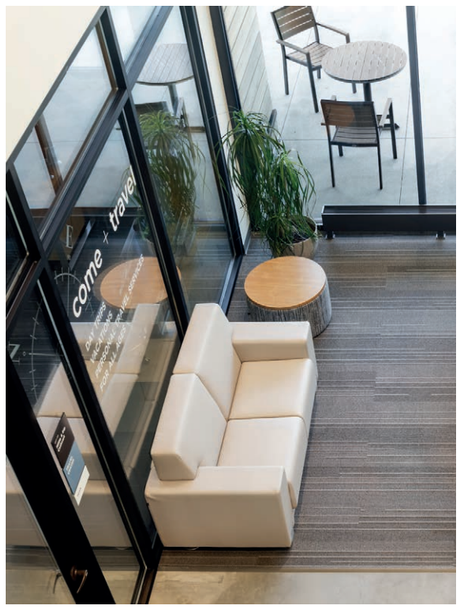
PERFORMANCE

Controlled anodizing produces a coating that protects aluminum from the environment. It is a long-lasting and proven coating that resists scratching, abrasion and corrosion from marine or industrial atmospheres and provides excellent protection from the sun's damaging ultraviolet rays.

ELECTROLYTICALLY DEPOSITED TWO-STEP COLOR PROCESS

The electrolytically deposited two-step color process is the most widely used for anodizing in the United States. The first step uses the same acid electrolyte as the clear finish, resulting in the same colorless oxide coating that is thick, dense and hard. The second step involves submerging the aluminum into a color tank where stable metallic compounds are electrolytically deposited at the base of the "pores" created in the previously formed oxide coating. Dark bronze and black are produced by this method.

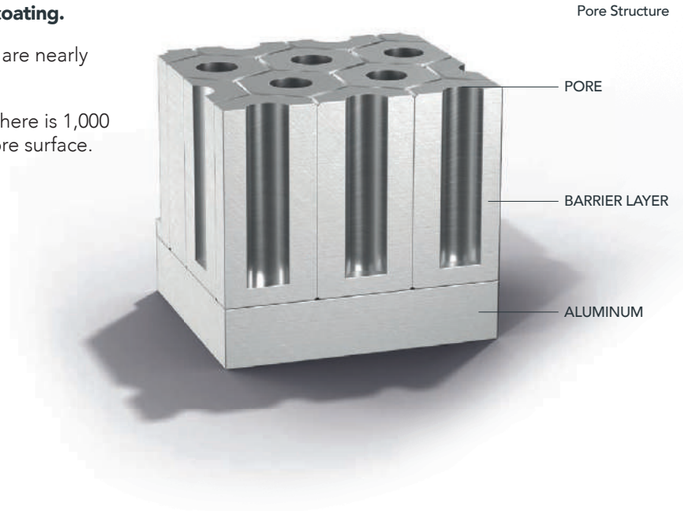
In the production of colored anodic coatings, some variation of color is unavoidable. Some slight color differences will occur among the pieces on a load and from one batch to another because of process variables. It is important that this be recognized as a characteristic of anodized finishes so that the material can be arranged on the job to accommodate the slight color variations and even enhance their appearance.



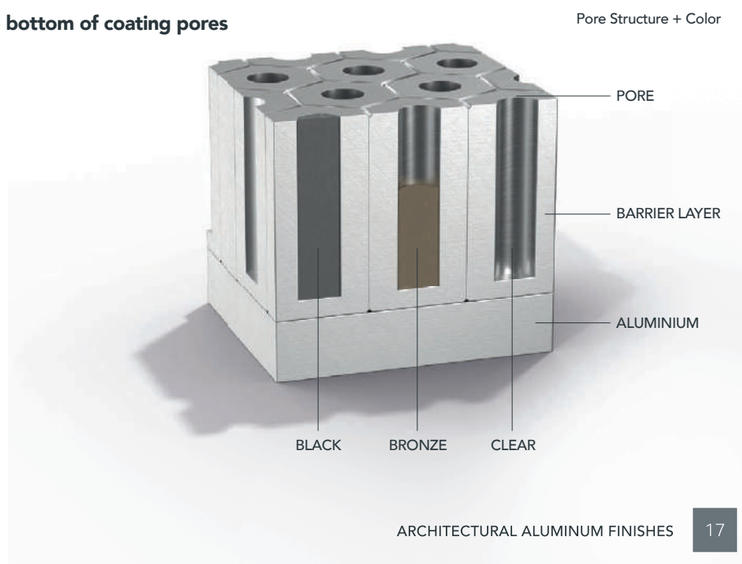
TWO-STEP OXIDE COATING

Step 1. Electrolyte solution coating.

- In one square foot, there are nearly 60 trillion pores.
- Within that square foot, there is 1,000 square feet of internal pore surface.



Step 2. Color added to bottom of coating pores



PRODUCTION PROCESS

THE IMPORTANCE OF ARCHITECTURAL CLASS I OR CLASS II DESIGNATIONS

The designations Architectural Class I and Class II provide the best means of identifying anodized finish thickness, the most important attribute of good finish quality. Other commercial terms can represent any coating thickness, and therefore, any quality level. They only have real meaning when coupled with “Class I” and “Class II” designations.

For the best finish performance, Kawneer strongly recommends an Architectural Class I designation for electrolytically deposited coatings. This thicker coating is less susceptible to weathering and more resistant to corrosion and scratching than the Architectural Class II color coatings. Thus, Kawneer’s Permanodic® Class I process provides the ultimate anodized finish.

KAWNEER FINISH NUMBERS AND DESIGNATIONS FOR ANODIZED FINISHES

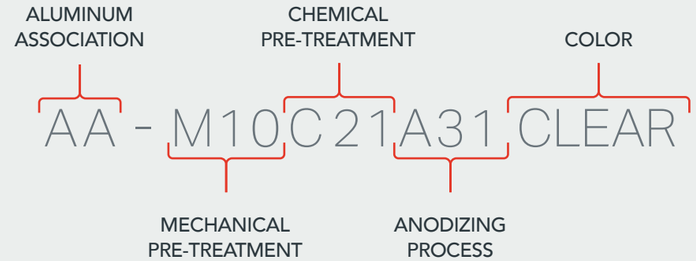
Kawneer recognizes the Aluminum Association Designation System DAF-45, as the industry standard. However, for maintenance of internal records, it has been necessary to assign two-digit numbers for identification of our standard finishes. Kawneer offers the following standard anodic finishes.

As anodizing is translucent, allowing the natural appearance of the metal to show through the coating, the finish is dependent on the aluminum composition as well as the anodizing process itself. Slight differences in the composition and anodizing process can have a significant effect on anodized color. Given that some color variation will exist, Kawneer produces to a target color using AAMA 611 “Voluntary Specification for Anodized Architectural Aluminum” as a production guide for anodizing. This standard allows for a range of 5 DE (CMC) color differences. Each piece of anodized aluminum will be close to this target color but will not be an exact match.

ANODIZED MATERIAL/FINISH CODE IDENTIFICATION

KAWNEER NUMBER	COLOR	PROCESS DESCRIPTION & MATERIAL	ALUMINUM ASSOCIATION SPECIFICATION	OTHER COMMENTS
CLEAR ANODIZED FINISHES				
#14	CLEAR	Anodized Aluminum	AA-M10C21A41	Architectural Class I (0.7 mils minimum)
#17	CLEAR	Anodized Aluminum	AA-M10C21A31	Architectural Class II (0.4 mils minimum)
PERMANODIC® COLOR FINISHES				
#29	BLACK	Anodized Aluminum	AA-M10C21A44	Architectural Class I (0.7 mils minimum)
#40	DARK BRONZE	Anodized Aluminum	AA-M10C21A44	Architectural Class I (0.7 mils minimum)

ALUMINUM ASSOCIATION DESIGNATIONS EXPLAINED



ALUMINUM ASSOCIATION
The first two letters refer to the Aluminum Association.

MECHANICAL PRE-TREATMENT
The letter “M” and two numbers indicate what type of mechanical pre-treatment, if any, is used. M10 means no mechanical finishing is done. Mechanical finishing before anodizing is sometimes performed to eliminate the surface defects produced by poor extrusion practices. Kawneer carefully monitors extrusion practices so that these defects do not occur.

CHEMICAL PRE-TREATMENT
The “C” followed by two numbers indicate what type of chemical pre-treatment is used. C21 means that the surface is chemically acid etched to a fine matte appearance.

ANODIZING PROCESS
The letter “A” followed by two numbers indicates the general anodizing process used. For example, A31 means a clear Class II coating. A41 is a clear Class I coating.

COLOR
The general anodizing process used is followed by the color desired, e.g., Dark Bronze.

PRODUCTION PROCESS

INDUSTRY SPECIFICATIONS ANODIZED FINISHES

Definitions

AAMA has developed a specification to provide performance criteria as well as assist in the selection of an anodized coating for a given application:

AAMA 611
Voluntary Standards for Anodized Architectural Aluminum.

Class I
High performance anodic finishes used in exterior applications receiving periodic maintenance, such as curtain walls.

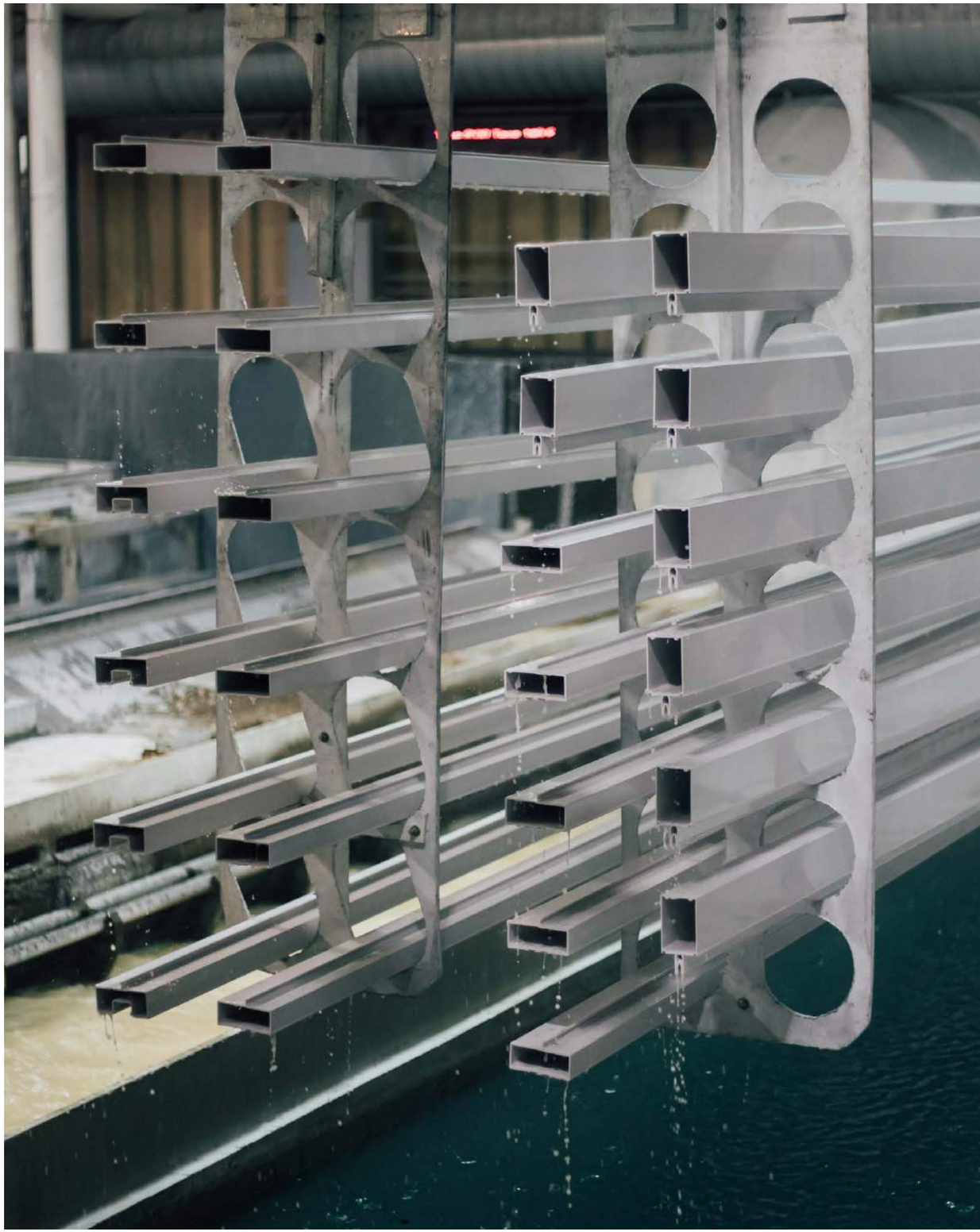
Class II
Commercial anodic finish used in interior applications or exterior applications receiving regularly scheduled cleaning and maintenance, such as storefronts.

COMPARISON CHART

The table below shows properties and performance for Class I and Class II anodized finishes.

CRITERIA	CLASS II ANODIZED FINISH	CLASS I ANODIZED FINISH
Oxide Coating Thickness	0.4 to 0.7 mil	Minimum of 0.7 mil
Oxide Coating Weight	2.40 mg/cm2	4.18 mg/cm2
Apparent Density	2.32 g/cm3	2.32g/cm3
Abrasion Resistance	Not degraded by abrasive paper	Not degraded by abrasive paper
Corrosion Resistance	1,000 hours	3,000 hours
Weathering	10 years, South Florida exposure	10 years, South Florida exposure
Seal Test	Maximum weight loss 40 mg/dm3	Maximum weight loss 40 mg/dm3

For further information or for abbreviated specification suggestions for painted finishes, contact your Kawneer regional sales office or your local representative.



PRODUCTION PROCESS

ORGANIC DYES

Color can also be obtained with organic dyes. In this process, the dye is absorbed into the pores of an unsealed anodic coating. Various shades of red, yellow, blue and green are possible.

However, many of these colors are not lightfast and may fade unevenly depending upon the exposure of different sides of a building. The side exposed to the sun's ultraviolet rays will fade more than the others. Since the color is contained near the surface of the oxide coating, it can be more susceptible to abrasion and weathering. Thus, the process is more appropriate for interior work or for trim pieces on household appliances and has not been widely used for architectural aluminum products requiring long-term color retention and performance.

DUAL FINISH CHOICES

Kawneer offers dual finish capability with many of its products where separate extrusions are used on the interior and exterior profiles. The dual finish option allows architects to select separate colors or finish chemistry on the interior and exterior profiles, allowing for design freedom.

FINISH TYPES QUICK GUIDE

	70% FLUOROPOLYMER (PVDF)	50% FLUOROPOLYMER (PVDF)	LIQUID (HIGH-PERFORMANCE POLYESTER)	POWDER (HIGH-PERFORMANCE POLYESTER)	ANODIZED
SOME TYPICAL APPLICATIONS	Monumental/high performance: Curtain wall and architectural window applications such as high-rise offices, commercial bldgs., hospitals, universities, etc.	Non-monumental Projects: Commercial windows, curtain wall, storefronts and entrance projects, such as shopping centers, low-rise commercial bldgs., schools, etc.	Monumental/high performance or Non-monumental Projects Curtain wall interior applications such as offices, commercial bldgs., hospitals, schools, universities, etc.	Environmentally friendly, non-monumental: Storefront and entrance projects Shopping centers, low-rise commercial bldgs., schools, etc.	Any high- or low-rise application that includes curtain wall, storefronts, entrances or windows.
AAMA Standard	Meets superior performance level of AAMA 2605.	Meets high performance level of AAMA 2604.	Meets high performance level of AAMA 2604.	Meets high performance level of AAMA 2604.	Meets AAMA 611.
CHARACTERISTICS	Superior color and gloss retention, corrosion resistance and color range* Soft paint can scratch or mar more easily than 50% paints or anodizing.	A harder, more durable finish than 70%. Reduces scratches and marring near high traffic entrances. Metallic particle option provides increased abrasion resistance. Slightly less color and gloss retention than 70%. Limited to more earth tones and pastel colors.* Limited in some vivid (red) colors compared to 70%.*	Available in matching colors and with the same coating performance warranty as AAMA 2605 70% PVDF Permafluor® paint (#22 Finish). Gives additional flexibility to meet project delivery dates and positions projects for success.	Environmentally friendly and solvent free. Offers superior abrasion resistance compared to 50% or 70% fluoropolymer paints. Full range of colors available* Slightly less color and gloss retention than 70%. Custom shades available subject to technical approval.	Superior surface hardness, abrasion resistance and scratch resistance. Will not peel or chalk. Inorganic coating is an integral part of the aluminum. Limited color selections (clear, black and bronzes).* Poor resistance to alkaline and acid.
COLOR SELECTIONS*	■■■■	■■■	■■■	■■■	■■
COLOR RETENTION	■■■■	■■■	■■■	■■■	■■■■
ABRASION RESISTANCE	■	■■	■■	■■■	■■■■
ALKALINE/ACID RESISTANCE	■■■■	■■■	■■■	■■■■	■
UNIFORMITY OF FINISH	■■■■	■■■■	■■■■	■■■■	■■■
Max Warranty (up to years)	20	10	10	10	10**

*Please see Kawneer paint color cards or anodized samples for detailed performance information.

**Class II clear (#17) anodized warranty maximum is 5 years.

CLEANING

Whether painted or anodized, architectural aluminum finishes require care before, during and after installation.

Both types of finishes are resistant to corrosion, discoloration and wear. However, harsh chemicals, abuse or neglect can mar aesthetics. In addition, all exterior surfaces collect varying amounts of soil and dirt, depending upon geographic area, environmental conditions, finish and building elevation.

Periodic maintenance inhibits long-term accumulation of soil, which can accelerate weathering of finishes. Frequent cleaning of finished aluminum that is exposed to harsh marine environments is particularly important.

For efficiency and economy, glass and aluminum cleaning should be scheduled at the same time. It is recommended that cleaning of the architectural aluminum be scheduled at least annually and possibly more frequently, depending upon:

- Geographic area
- Industrial vs. rural location
- Rainfall
- Foggy or coastal regions where condensation and drying cycles create atmospheric salt and dirt deposits
- Recessed or sheltered areas lacking rainfall and encouraging condensation that increases soil adhesion

CLEANING

GENERAL CLEANING - 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 harm finishes.
- Excessive abrasive rubbing should not be used since it can damage the finish.
- Avoid drips and splashes and remove rundowns as quickly as possible.
- Consider the effects of rundowns on shrubbery, personnel and equipment and schedule cleaning appropriately.
- Strong cleaners should not be used on window glass or 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.

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 while simultaneously spraying with water should be attempted.
- A five percent solution of industrial or commercial detergent and water should be applied with soft brushes, sponges or cloths 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, Isopropyl alcohol (IPA), MEK or an equivalent solvent is recommended. († See cautions listed under "Removal of Non-Water-Soluble Deposits".

PAINTED FINISHES

Removal of Stains

- 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 Permafluour™ surfaces.
- Limit contact to five minutes. Caution: acid solutions are corrosive and toxic. Flush all surfaces with water immediately after use.
- Ascetic 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.

Removal of Mildew

- 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.

CLEANING

REMOVAL OF NON-WATER-SOLUBLE DEPOSITS

Solvents may be used to remove non-water-soluble deposits such as tar, grease, oil, paint and graffiti on anodizing†.

However, extreme care should be taken 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.

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.

† Extreme care must be exercised when solvents are used since they may damage organic sealants, gaskets and finishes.

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 AND 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 AND 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.

JOB SITE CONSIDERATIONS

PROTECTIVE COATINGS

Architectural aluminum products should be protected from damage at the job site during and following installation. Polyethylene plastic sheeting or other protective coating options are commonly used.

Cement, plaster, terrazzo, and alkaline and acid-based materials used to clean masonry are very harmful to finishes, especially anodizing, and should be removed with water and mild soap immediately, or permanent staining may occur.

Examples of protective coatings include:

Lacquer

It is possible to apply a clear lacquer coating to the surface of anodized aluminum. Although this coating provides additional temporary protection against corrosive chemical attack, this finish has many weaknesses:

- Lacquer changes the appearance of anodized finishes and can accentuate color variations.
- The glossy surface destroys the effect of different colors from different angles, which is often desirable with integral and two-step color.
- The surface appears painted rather than anodized.
- The coat is never completely uniform and as it weathers away; thinly coated areas become bare first, causing a blotchy appearance.
- Adhesion is not perfect and numerous, small white areas appear where there is loss of adhesion, resulting in an undesirable appearance.

Strippable Plastic

Available for years, strippable plastics have not improved sufficiently for general architectural use:

- Most of the materials are polyvinyl chloride based; they are designed with cohesive strength but very low adhesive strength.
- It is difficult to obtain adequate and uniform thickness, and as the film becomes thin, the cohesive strength decreases while the adhesive strength increases.
- Prolonged exposure to the sun tends to make the vinyl film brittle and tenacious.
- Thin coatings must be removed in small pieces.
- Thick coatings are likely to loosen with handling and tend to peel off prematurely.
- When properly applied, these coatings provide good protection, but they are expensive to apply and remove.

Dissimilar Metal & Insulating Coatings

When aluminum is attached directly to steel or other metals, a coating should be applied to serve as an insulator between the two different metals. The most common coatings are zinc-based primers or galvanizing, which should be applied to steel or other metal rather than to aluminum. Zinc pigment provides cathodic protection for the coated metal and the formulation used depends on the vehicle and solvent system.

Where aluminum is installed with direct contact with uncured concrete plaster or other alkaline material, it is advisable to apply a coating to the aluminum to protect it from corrosion. Zinc and clear lacquer are often used for this purpose.

Bituminous paint is also used for insulation. It is an inexpensive asphalt or coal tar derivative with excellent resistance to water as well as salts, acids and alkalines that depend upon water as a carrier for ionization. The low cost encourages users to employ a thick coating which acts as an insulation barrier against galvanic action.

Bituminous paint is readily dissolved by almost any organic solvent, such as gasoline, lacquer thinner, turpentine, kerosene, etc.

JOB SITE CONSIDERATIONS

REWORK PROCEDURES FOR PAINTED FINISHES

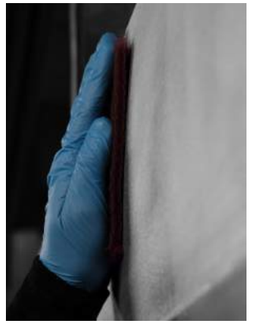
There are currently no set rework procedures for all the possible situations that arise. Whenever reworking on the surface exposes the aluminum substrate, it is safe to assume the pre-treatment of that area no longer exists and special considerations are in order.

When bare aluminum has not been exposed, recoating is generally satisfactory. Touch-up enamel is intended only for scratches and minor defects. If extensive areas need to be replaced or repainted.

INSPECTION

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

FIELD TOUCH-UP FOR PAINTED FINISHES*



1. Surface Preparation

- Surface must be clean, dry and free of foreign contaminants.
- Lightly scuff and sand surface to be recoated, feathering edges at the damaged area.
- Remove sanding dust and other contaminants with solvent dampened lint-free cloth or use tack cloths.
- Areas of bare aluminum must be pretreated with conversion coatings such as Amchems Alumiprep #33 and Alodine 1201, according to label directions given by the manufacturer.
- Immediately prime any bare aluminum with approved component wash primer. Follow label directions closely.

2. Application of the Air-Dry Touch-Up Enamel

- Ambient air temperatures and surface temperatures should be above 50° F for application of the paint and for a reasonable length of the initial drying period (24 hours minimum).
- Application is usually made with air spray equipment. Rolling and brushing does not provide a smooth film due to the drying speed of the touch-up type coatings, although rolling or brushing is possible for small scratches or minor defects.
- A multiple light pass technique to slowly build to the desired 1.0 mil minimum film thickness is recommended.

3. Touch-Up Product Reduction

- Follow specific instructions for the paint product being used.
- Follow paint manufacturers recommendation when selection and applying touch-up paint.

*Follow paint manufacturers recommendation when selecting and applying touch-up paint.

WARRANTIES

Architectural aluminum product manufacturers usually provide warranties covering their finishes. It is important to read this information carefully and make comparisons as part of the decision and specification process. It is important to remember that high-quality finishes that meet AAMA standards are cost-effective in the long-term and frequently offer improved aesthetics.

REFERENCE PUBLICATIONS

Recognizing the need for the aluminum industry to provide information on the care and maintenance of exterior wall finishes, the AAMA has released the following publication:

AAMA 609 & 610 Cleaning and Maintenance Guide for Architecturally Finished Aluminum

These specifications have been summarized in this brochure and outline methods, equipment and materials to clean painted and anodized aluminum after construction and for subsequent, periodic maintenance. The information provided is useful to building owners, managers, architects, contractors and others in the building industry who are interested in the proper care and maintenance of architectural aluminum.

To obtain a copy of these publications, visit
WWW.FGIAONLINE.ORG

FOR MORE INFORMATION

For more information on architectural aluminum finishes, contact your Kawneer regional sales representative or our architectural services team at our toll-free number:

1 877 767 9107

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