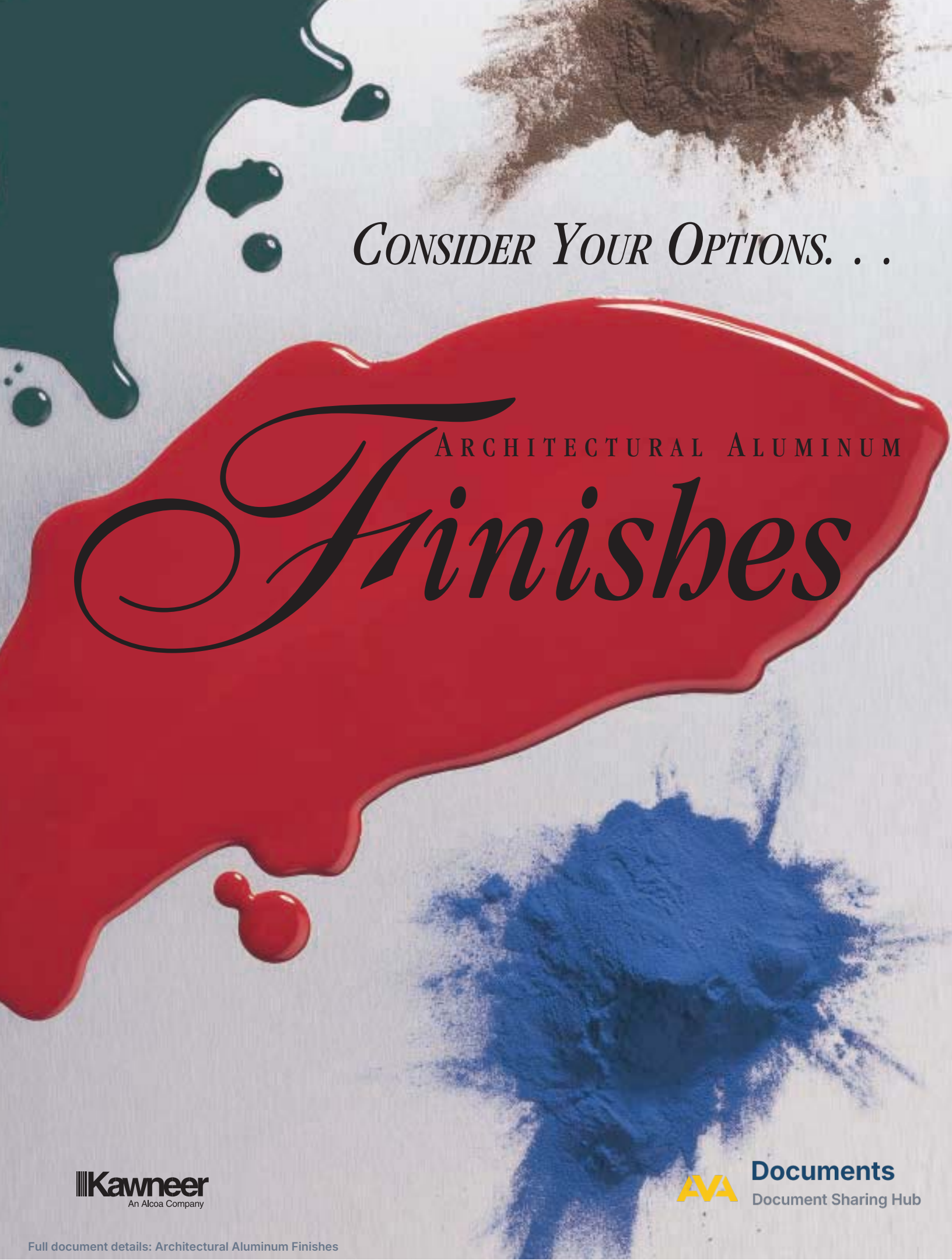




CONSIDER YOUR OPTIONS. . .

ARCHITECTURAL ALUMINUM

Finishes

PAINTED FINISHES (ORGANIC COATINGS)	2
Liquid Paint.	3
Powder Coatings.	5
Specifications — Painted Finishes.	6
Comparative Performance.	7
ANODIZED FINISHES.	8
Production Process.	9
Class I or Class II Designations.	11
Designations for Anodized Aluminum Finishes.	11
Specifications — Anodized Finishes.	11
Organic Dyes.	11
QUICK GUIDE	12
CARE • CLEANING • INSPECTION	14
General Cleaning — Painted and Anodized Finishes	16
Painted Finishes — Removal of Stains and Mildew	17
Anodized Finishes — Removal of Stains	17
— Removal of Non-Water Soluble Deposits	18
Protective Coatings.	19
Insulating Coatings.	20
Rework Procedures for Painted Finishes.	20
Field Touch-Up Procedures for Painted Finishes.	20
Inspection	21
Reference Publications	21
ENVIRONMENTAL CONSIDERATIONS.	22
Painted Finishes	23
Anodized Finishes	24
WARRANTIES.	25



. . . *That Enhance, Protect and Endure*

The market for architectural aluminum products demands a greater variety of finish types and colors than ever before.

The many reasons include:

- the competitive need to distinguish buildings
- aesthetic and design requirements
- new technology that results in higher performance and durability
- owner demands for cost effectiveness
- the need to protect the building owner's investment against the elements, pedestrian traffic and environmental contaminants
- public awareness of environmental concerns
- the increase in consumer sophistication and awareness of finish types and colors

Today's paint and powder finish types and colors challenge the anodizing processes that have dominated the architectural aluminum industry for many years. This brochure is designed to assist you in your choice of architectural aluminum finishes by presenting and reviewing the various types and explaining ways to maintain them for the longest possible life.

1

Painted

2



Documents

Document Sharing Hub

Market demand for a variety of colors and types has resulted in increased use of painted finishes — also known as organic coatings. Although anodizing remains the most frequently specified finish for architectural aluminum, substantial improvements in paint technology provide long-term performance and durability in a wide range of climates and environments.

Finishes

(Organic Coatings)

A comparison chart representing different types of organic coatings and their performance characteristics is included on page 13 for reference.

Liquid Paint

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

Fluoropolymer coatings generally contain between 50 and 70 percent by weight fluoropolymer resin called polyvinylidene fluoride or PVDF. Two companies manufacture the majority of PVDF used in the United States: Elf Atochem North America, Inc., and Ausimont USA, Inc., who manufacture KYNAR 500® and HYLAR 5000™, respectively. These resin manufacturers allow paint manufacturers to use the Kynar 500 and Hylar 5000 brand names only if they incorporate a minimum of 70 percent by volume weight into the paint system. Pigment is then added to provide color.



(Left) Reciprocating paint spray gun

(Far left) Bone White Painted Finish
Center for Environmental Sciences and Technology Management (CESTM), State University of New York (SUNY) at Albany, New York
Architect: Cannon & Associates, Grand Island, New York



Documents

Document Sharing Hub

Performance

Kawneer's 50 percent fluoropolymer paint systems meet the AAMA 2604 paint specification for high performance while the 70 percent fluoropolymer finishes also meet the superior performance of the AAMA 2605 specification (see pages 6-7). Both paint systems provide 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.

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 cool, it forms a continuous, physically locked finish.

Fluoropolymer paints are extremely durable because the PVDF resin is essentially 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. Textured "metallic" flake fluoropolymer finishes add increased performance and durability.

The cost of fluoropolymer paints will vary depending upon the color selected. Standard colors provided by most manufacturers will generally be considerably less expensive than custom colors. Typically, 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 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, textured metallic finishes and fluoropolymer coatings with greater pencil hardness provide increased abrasion resistance and toughness.

(For more specific performance information, see our separate Fluoropon®, Permadiize® and Acroflur™ color cards)

Application

To apply fluoropolymer finishes during the manufacturing process, at least six steps are necessary (see diagram below). First, a multi-stage chemical pre-treatment 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, then the fluoropolymer **finish** is sprayed on to 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.

A clear topcoat may be necessary when the material is painted with certain "metallic" flake fluoropolymer coatings. 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 physically abused by pedestrian traffic or where exotic pigments are used. It is important to note that there may be a slight color difference when applying clear coat to light colored pigments such as Bone White.

Clean ► Primer ► Flash ► Finish ► Flash ► Bake

Documents

Topcoat ► Flash ► Bake Document Sharing Hub

Powder Coatings



Sometimes known as "dry paint," Powder Coatings are solvent free and emit no volatile

organic chemicals (VOCs) into the atmosphere. These environmentally friendly "green" 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. Powder paints may incorporate TGIC (triglycidyl isocyanurate), 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 specification. 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 the 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 performance information, see our separate **Interpon® D2000** color card.)

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.

Clean ► Finish ► Bake

5



Pre-treatment cleaning processes

Documents

Document Sharing Hub





Criteria	AAMA 2603	AAMA 2604	AAMA 2605
Minimum Coating Thickness	.8 mils	1.2 mils	1.2 mils
Pre-treatment	None required	Multi-stage cleaning with chemical conversion coating 30mg/ft ² min.	Multi-Stage cleaning with Chrome Phosphate conversion coating 40mg/ft ² min.
Abrasion Resistance	No requirements	Falling sand test - Abrasion coefficient of 20 min.	Falling sand test - Abrasion coefficient of 40 min.
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 exposure	5 years South Florida exposure (Max 5Δ E)	10 years South Florida exposure (Max 5Δ E)
Gloss Retention	No requirements	Minimum of 30% after 5 years, South Florida exposure	Minimum of 50% after 5 years, South Florida exposure
Corrosion Resistance	1,500 hr. Humidity/Salt Spray	3,000 hr. Humidity/Salt Spray	4,000 hr. Humidity/Salt Spray
Chalking Resistance	No requirements	No more than #8	No more than #8 for colors (#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 exposure	Less than 10% after 5 years, South Florida exposure

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



Testing thickness and color quality of painted finish

Specifications - Painted Finishes

The American Architectural Manufacturers Association (AAMA) has developed three specifications to assist in the selection of an organic coating for a given application:

AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Extruded Aluminum.

This specification is intended for paints that are applied to a large variety of products, including residential sliding doors, storm doors, siding and light commercial applications.

AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Architectural Extrusions and Panels.

This specification covers high performance organic coatings, which are used on exterior architectural products manufactured by Kawneer and other manufacturers of high quality products.

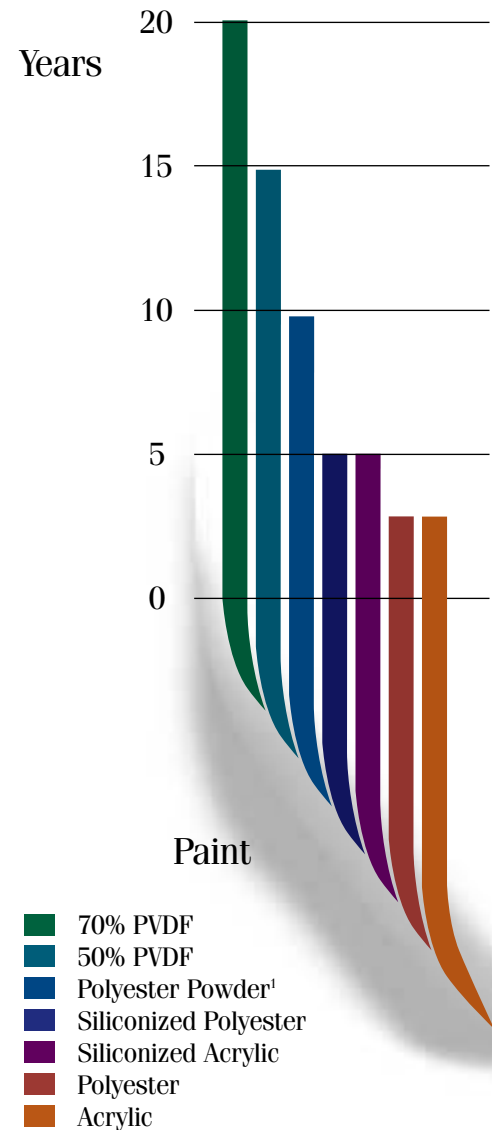
AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

This specification covers superior performance organic coatings which are used on exterior architectural products manufactured by Kawneer and other manufacturers of high quality products.

The chart highlights important differences between these three specifications:



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.

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.

¹ Polyester Powder that meets AAMA 2605.

*Banner Red Painted Finish
Just for Feet, Fort Lauderdale, Fla.
Architect: Mark L. Saltz Architects, Inc., Fort Lauderdale, Fla.*