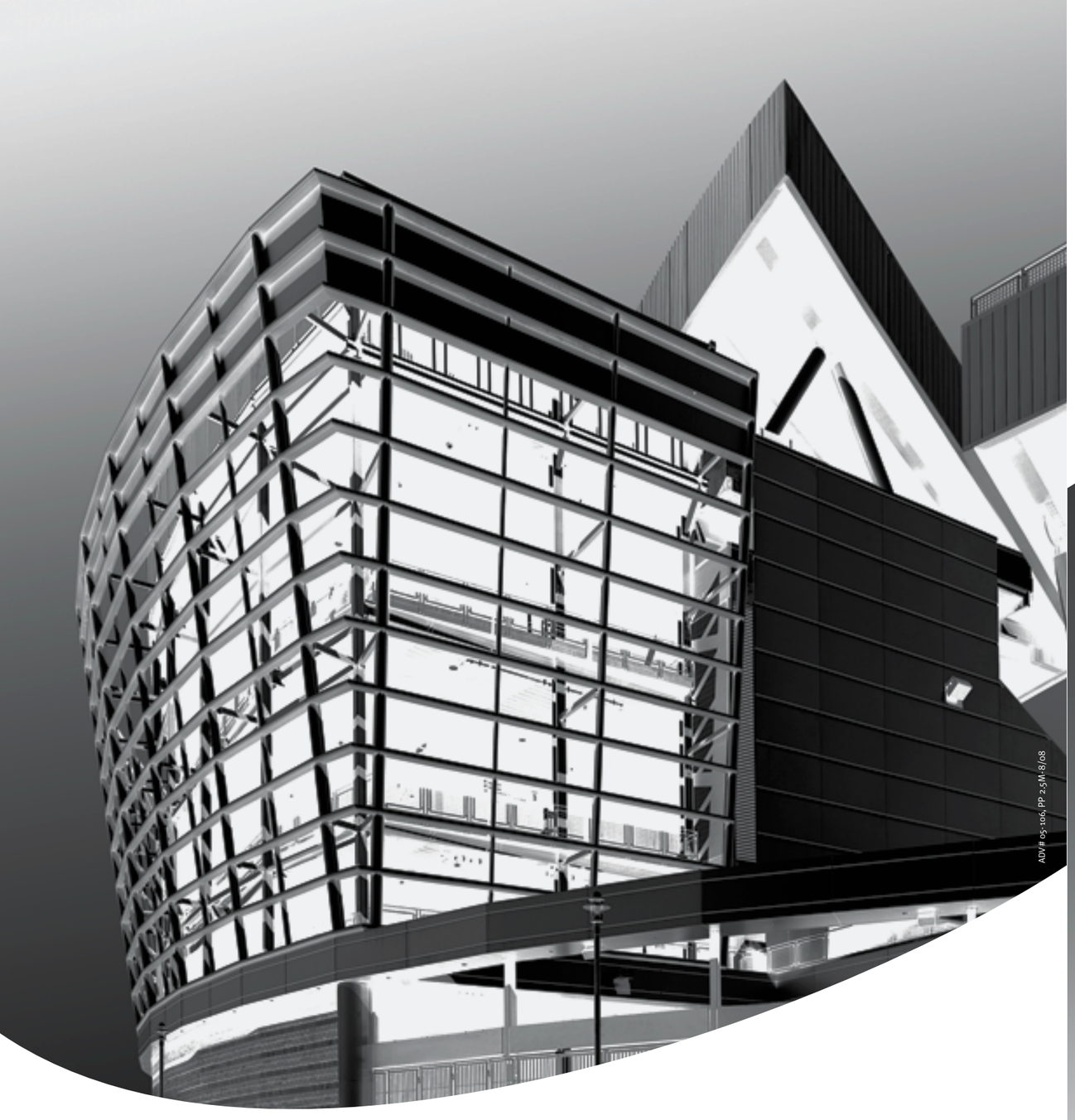

ADV# 05-106, PP 2.5M-8/08

Arkema Inc.
2000 Market Street
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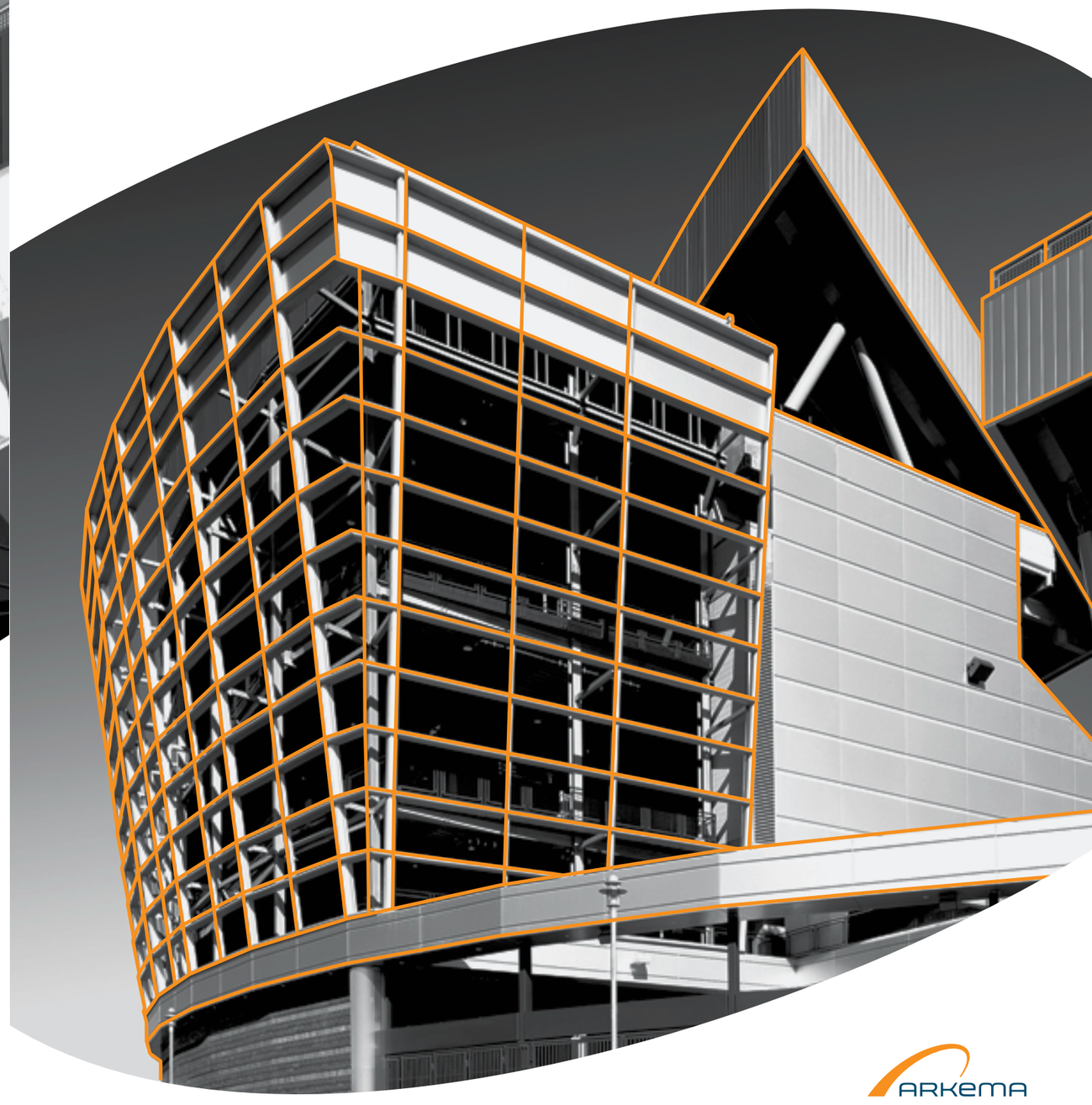
www.kynar500.com

KYNAR 500®

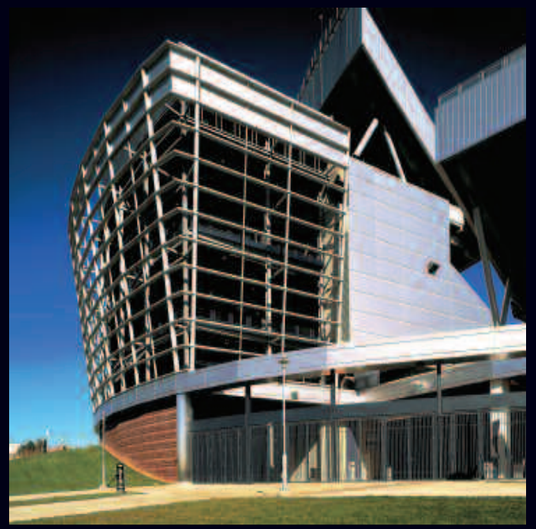
PVDF RESIN-BASED METAL COATINGS



KYNAR 500®

THE ARCHITECT'S FIRST CHOICE.

Today, Kynar 500® PVDF resin-based metal coatings provide billions of square feet of protection against weathering, aging and pollution on commercial, industrial, institutional and residential buildings around the globe. The capability of Kynar 500 resins to deliver long-term durability is unparalleled in the industry. Introduced in 1965, Kynar 500 resin-based coatings were the original high performance finishes for architectural metal. According to a recent survey, Kynar 500 finishes are still the architect's first choice.*



Kynar 500 resin-based coatings: vivid color, weatherability, and maintenance-free reliability for all architectural metal.

Metal has rapidly become the material of choice for exterior use due to its rugged durability, design versatility and aesthetic possibilities. However, for all its bravado and beauty, metal doesn't necessarily have a tough skin and is only available in a single color. To be both functional and decorative, metal must be coated with a finish that beautifies with color and doesn't chalk, won't lose its color and sheen, and won't pit, chip, or age before its time.

Architects around the world specify Kynar 500® PVDF resin-based coatings to protect aluminum, galvanized steel and aluminized steel. Other coating systems cannot withstand the rigors of nature and time like those based on Kynar 500 resins. This high-performance fluoropolymer resin, with its extraordinary capability to retain color and gloss, keeps painted metal looking vibrant and appealing.

Kynar 500 resin-based finishes are available worldwide through a strict licensing program. This licensed distribution ensures the quality, consistency and high performance of Kynar 500 resin-based coatings.

WHY SPECIFY KYNAR 500?
QUALITY, DURABILITY AND HIGH PERFORMANCE.

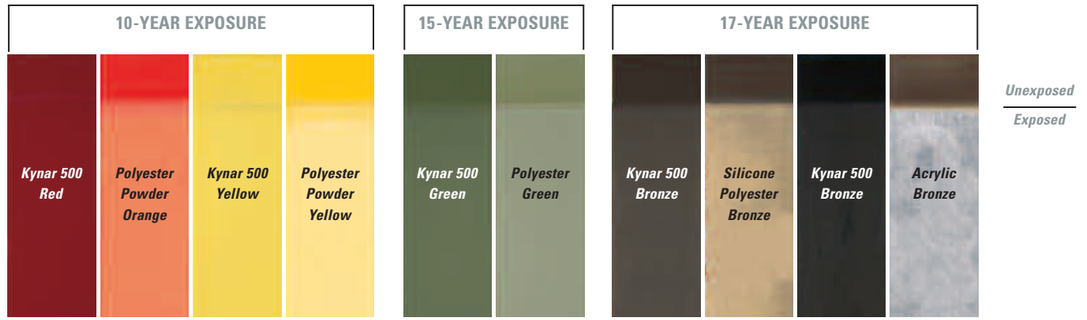
METAL UNBOUNDED.

Architects are using metal in all kinds of new and bold ways. Why? One reason is the high-performance chemistry behind Kynar 500® PVDF resin-based finishes. This performance can be used in many diverse applications, allowing architects to design in colorful palettes without losing color and gloss. Components, extrusions and preformed shapes can be bent, crimped and twisted to maximize form and function in defiance of blistering sun, humidity, urban grime, acid rain, corrosive salt and abrasion.

Metal forms and Kynar 500 resin-based coatings to accommodate every culture, every taste, every design.

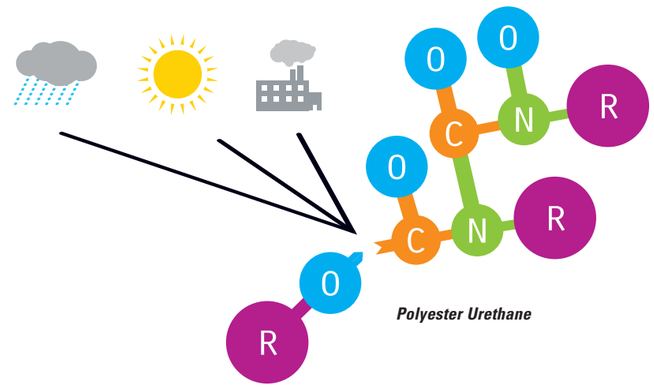
OUTLASTS THE COMPETITION.

These panels, exposed at an independent test-fence facility in Southern Florida, clearly demonstrate the outstanding weatherability of Kynar 500® PVDF resin-based coatings over other finishes. Note the lack of fading with the panels coated with Kynar 500 resin-based finishes.



HOW COATINGS FAIL.

Most coatings break down under the effect of sun, rain and pollutants. Kynar 500 resists the chemical breakdown that occurs as coatings age.



WHAT COLOR DO YOU WANT TO PAINT THE WORLD TODAY?

Color issues a statement, creates a mood and makes that desired first impression quickly and more effectively than almost any other architectural component. But color's beauty can be fleeting. Sunlight, with harsh ultraviolet rays, can quickly turn brown to tan, red to pink, or a deep blue to sky blue. Kynar 500® PVDF resin is transparent to ultraviolet rays, and when combined with durable pigments, creates a coating system that resists color fade. Kynar 500 resin-based coatings are available in a rainbow of textures, sheens and colors, including metallics and pearlescents.

Be bold for years to come. Kynar 500 based coatings come in bright, vivid, long-lasting colors.

GOING GREEN

SUSTAINABLE BUILDING DESIGN – TAKING INTO ACCOUNT THE WHOLE BUILDING'S IMPACT ON THE ENVIRONMENT, ON THE OCCUPANTS, AND ON THE ECONOMIC ASPECT NOW AND IN THE FUTURE – IS AT THE CORNERSTONE OF THE BUILDING CONSTRUCTION INDUSTRY. MORE THAN HALF OF ALL ARCHITECTS AND DESIGNERS ARE CONSIDERING SUSTAINABILITY IN SOME ASPECT OF NEW BUILDING PROJECTS. THE USE OF A COOL KYNAR 500® RESIN-BASED PREPAINTED METAL ROOF CAN LOWER THE CARBON FOOTPRINT OF A BUILDING BY SIGNIFICANTLY REDUCING THE SOLAR HEAT GAIN INTO THE ATTIC OR LIVING SPACE BELOW THE ROOF. THE COOL KYNAR 500 RESIN-BASED PAINT SYSTEMS MAINTAIN THEIR COOL PROPERTIES FOR DECADES BY RETAINING THE INITIAL SOLAR REFLECTANCE.
– SCOTT KRINER, NOTED COOL ROOFING INDUSTRY EXPERT

COOL ROOFS.
SMART CHOICE.

As energy codes become more rigorous, smart builders are choosing cool Kynar 500® based prepainted metal roofs to increase energy efficiency and sustainability in their green designs. Cool metal roofs can reduce cost for the building owner and decrease green house gas emissions at the power plant. And with Kynar 500 PVDF's advanced resistance to UV degradation and over 70% solar reflectance, less heat is transferred into the building, reducing ambient air temperatures to improve air quality and limit the urban heat island effect.

Unlike conventional products, which are regularly damaged by UV energy, heat and moisture, Kynar 500 PVDF resin-based coatings offer superior long-term color retention, maintaining rich, vibrant hues over the lifetime of a building. In addition, the architectural appeal, variety of profiles, texture and color, flexibility and long-term durability make Kynar 500 resin-based painted metal roofs well suited for residential projects. And with the decrease in required restoration and reconstruction, lower amounts of VOCs are emitted into the atmosphere, further lessening the overall environmental impact.

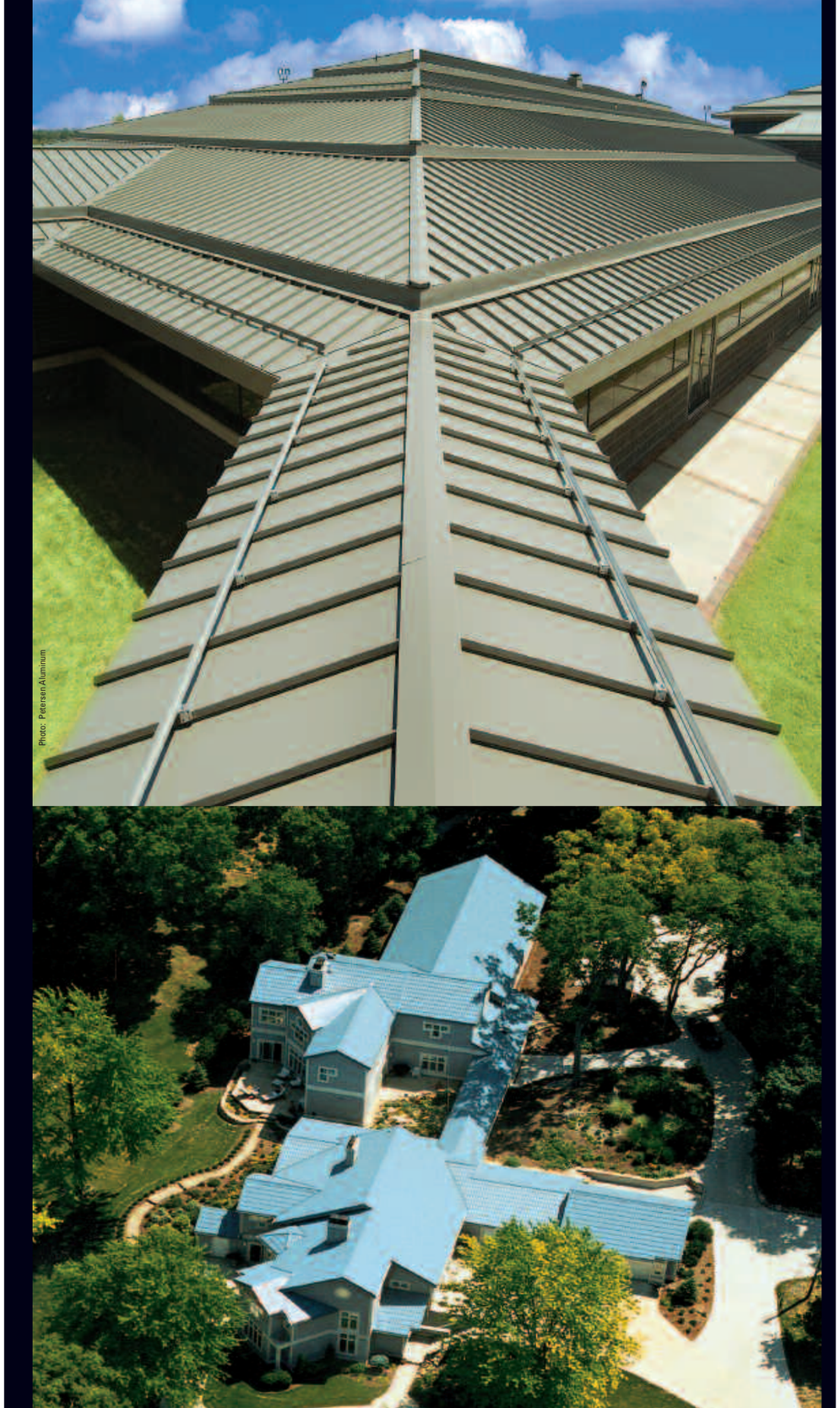


Photo: Petersen Aluminum

Kynar Aquatec®
ENHANCE. SUSTAIN. PRESERVE.

Kynar 500 PVDF technology now delivers Kynar Aquatec®, a new long-lasting fluoropolymer emulsion resin that sets the standard for field-applied sustainable green building applications. This innovative resin allows paint formulators to manufacture premium weatherable water-based coatings with long-term color retention, high initial and long-term TSR (Total Solar Reflectance), and high emissivity. These coatings can be applied to a wide variety of substrates — including steel, aluminum, PVC, SBS, asphaltic emulsion, TPO, EPDM, plastics, wood, concrete and textiles — to enhance performance and extend useful life.

With the longest TSR retention of all paint systems tested, Kynar Aquatec® based paints enhance the sustainable design of a building via reduced heat absorption and subsequent energy load. Even dark roofs with low reflectance can be converted in the field, achieving high reflectance and substantial energy savings. In addition, Kynar Aquatec® based paints contain low VOC levels compared to solvent-borne systems and reduce the need for recoating, further minimizing VOC emissions over the life of the substrate.

www.kynaraquatec.com

Photo: Englert Inc.

SUSTAINABILITY NEVER LOOKED SO GOOD.

When evidence began to accumulate that fluorosurfactants – a family of manufactured chemicals not otherwise found in nature – might be persistent in the bloodstreams of animals, the U.S. EPA began to look at this matter more closely. By the time the EPA asked for the cooperation of manufacturers and users of fluorosurfactants in eliminating emissions of these chemicals into the environment, Arkema had already begun to reduce its emissions of fluorosurfactants used in the production of Kynar 500® PVDF.

Through innovative thinking and determined effort, Arkema's scientists succeeded in doing what 20 years ago would have been thought impossible – develop a process for production of Kynar 500 that uses no fluorosurfactants. In alignment with worldwide "Green" initiatives, we are pleased to offer a fluorosurfactant-free Kynar 500 PVDF – identical to the Kynar 500 you've known for over 40 years, with the same long-term durability you've come to expect and rely on from Kynar 500 resin-based paints.

CONSISTENCY IS YOUR KEY TO SUCCESS. FOR MORE THAN 40 YEARS.

Kynar 500® PVDF resin is marketed through a strict licensing program that ensures consistency, quality and availability on a worldwide basis. To become an authorized licensee, paint companies participate in a two-year development program and must use nothing less than 70% Kynar 500 resin [of the total binder weight] in their coating formulation. The minimum 70% Kynar 500 resin establishes the base performance for licensed Kynar 500 resin-based coatings that the construction industry has trusted for more than 40 years.

THE VERSATILITY
TO DO MORE.

POWDER COATING

Kynar 500® PVDF powder coatings provide superior physical properties. The coating film hardness yields better mar resistance, as well as long-term corrosion resistance and color and gloss retention. The Kynar 500 powder coatings meet or exceed the performance criteria established by the AAMA 2605 ten-year specification guidelines.

SIDING

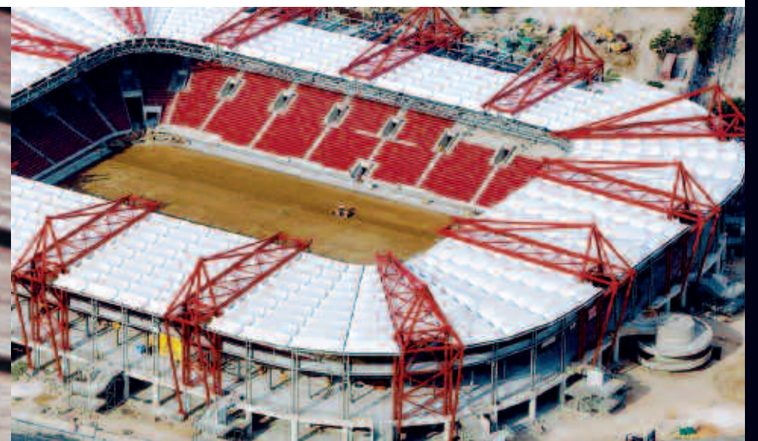
Kynar 500 PVDF resin-based films are premium quality factory-applied films which retain their uniform appearance through many years of service and weathering. Kynar 500 is featured over residential vinyl siding for long-term color retention, dirt shedding and overall durability.

AUTOMOTIVE

Kynar 500 PVDF resin-based films exhibit high chemical and chip resistance, excellent thermal stability, are impervious to UV radiation, and are resistant to creep under mechanical stress and load. The films can be found on molded automotive parts such as bumpers, mirror housings and rocker panels.

FLEXIBLE FABRIC

The Kynar 500 PVDF resin technology is used as a topcoat for architectural textiles. The Kynar 500 PVDF resin-based topcoat offers resistance to UV degradation and atmospheric chemical attack. The Kynar 500 resin-based topcoats also offer resistance to algae and fungal attack.

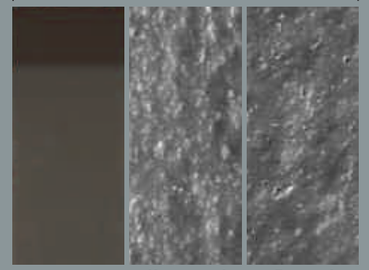


THE TEST OF A COATING IS ITS ABILITY TO RESIST WEATHERING.

Weather destroys things. Over time, sunlight, air and water will break down any and all construction material. In the case of polymeric coatings for metals, the deterioration is evident in the loss of color, gloss, adhesion and the appearance of chalking.

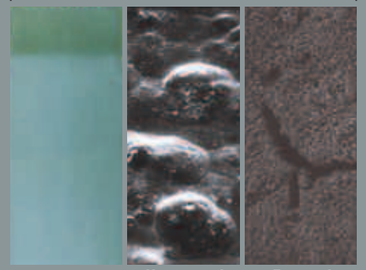
The following photomicrographs [1000x magnification] of test panels dramatically depict how Kynar 500® PVDF resin-based coatings resist degradation caused by photoinitiated oxidation and hydrolysis when exposed to a subtropical environment from 60 to 160 months.

KYNAR 500 BRONZE



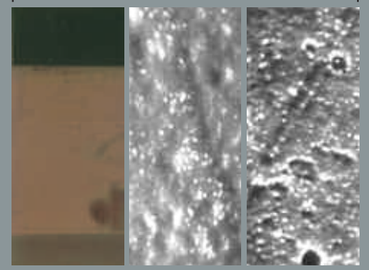
Unexposed *Exposed 160 months*

VINYL PLASTISOL BLUE



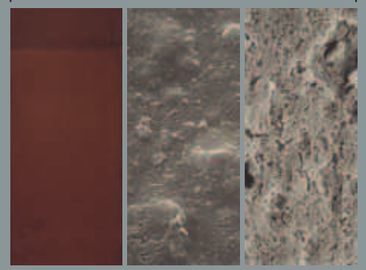
Unexposed *Exposed 60 months*

SILICON POLYESTER BRONZE



Unexposed *Exposed 160 months*

PVF



Unexposed *Exposed 152 months*

HIGHER PERFORMANCE OF KYNAR 500® PVDF RESIN-BASED COATINGS.

In all critical measures of performance, Kynar 500 resin-based finishes deliver dramatically higher performance than other coating products. The charts below show relative performance based on published evaluations of generic coatings and the opinions of leading coating formulators.

WEATHERING PROPERTIES	Kynar 500	Acrylic	Silicone Polyester	Polyester	Vinyl Plastisol	Urethane	Anodized
Color Retention	5	3	4	2	2	3	3
Gloss Retention	5	3	4	2	2	3	3
Chalk Resistance	5	3	4	2	2	3	3
Humidity Resistance	4	4	4	4	4	4	2

PHYSICAL PROPERTIES	Kynar 500	Acrylic	Silicone Polyester	Polyester	Vinyl Plastisol	Urethane	Anodized
Abrasion Resistance	5	3	3	2	3	4	3
Impact Resistance	5	3	3	3	5	3	3
Film Flexibility	5	2	2	3	5	4	2
Hardness	3	5	4	5	3	4	4
Mar	3	4	4	4	3	3	4

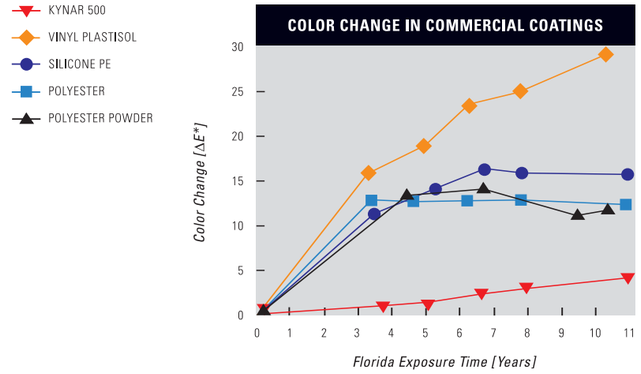
CHEMICAL RESISTANCE	Kynar 500	Acrylic	Silicone Polyester	Polyester	Vinyl Plastisol	Urethane	Anodized
Acids & Alkalies	5	3	3	3	5	3	2
Oil Stain	4	3	4	4	4	3	3
Water Immersion	5	3	3	3	4	3	4

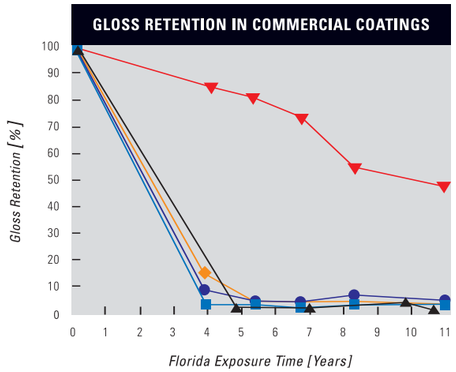
5 = Highest Performance 1 = Lowest Performance

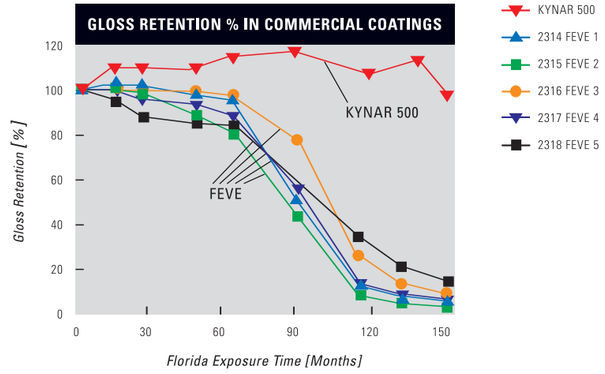
NOTHING WORKS BETTER LONGER.

In applications worldwide, Kynar 500® PVDF resin-based metal coatings have demonstrated superior performance and outstanding resistance to film degradation. These coatings will withstand extended exterior exposure to water, humidity, temperature, ultraviolet rays, oxygen and atmospheric pollutants.

The performance comparisons to the right were compiled by an independent, accredited testing laboratory and are based on actual exposure time in Southern Florida as required by high performance, organic coating specifications AAMA 2605.







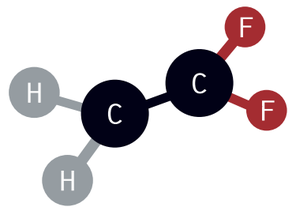
FLUORINE CONTENT OF FORMULATED COATINGS

FLUOROPOLYMER / CORESIN RATIO	WEIGHT % FLUORINE	
	KYNAR 500	FEVE [TYPICAL]
100/0	59	26
90/10	53	24
80/20	48	21
70/30	42	18

In typical formulations [see shaded areas], Kynar 500 resin-based coatings contain higher fluorine levels than FEVE-based coatings, resulting in greater resiliency, color and gloss retention.

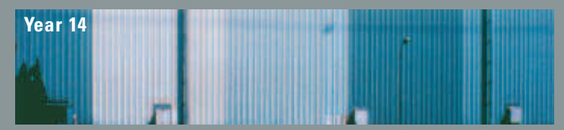
KYNAR 500® PVDF RESIN-BASED COATINGS OUTPERFORM FEVE.

Tests show that Kynar 500 resin-based finishes outperform coatings based on the fluoropolymer resin commonly known as fluorinated ethylene vinyl ether [FEVE]. The reason: coatings formulated with FEVE claim to be 100% fluoropolymer resin, but actually contain far less fluorine than Kynar 500 resin-based coating formulations. Because the C-F bond is one of the strongest bonds known, the higher percentages of fluorine content in a coating results in superior, long-term protection. The charts on this page show the fluorine content and the Florida weathering performance of the two technologies.



CASE STUDY: TAIYO STEEL

Taiyo Steel of Funabashi, Japan, made a test fence out of the south wall of a new plant they were building. They wanted to test the weatherability of Taiyo Steel's precoated metal products. Fourteen years later, Kynar 500 resin-based coating was the only system that kept its original appearance.



KYNAR 500® PVDF RESIN-BASED COATING SPECIFICATION GUIDE.

The final coating for aluminum, galvanized steel or aluminized steel shall be a factory-applied, oven-baked finish based on Kynar 500® polyvinylidene fluoride resin. This finish shall be a dispersion coating based on Kynar 500 resin as formulated by an Arkema Kynar 500 licensee. This finish shall be in strict accordance with the formulator's specification and applied by an applicator approved by the formulator. This finish, based on Kynar 500 resin, shall meet the performance criteria of AAMA 2605 specification and be certified by the formulator as containing Kynar 500 resin manufactured by Arkema.

SPECIFICATION PERFORMANCE DATA FOR VARIOUS BUILDING COMPONENTS

Components to be Finished	*Performance Requirements*	*Specification*
Spandrel Panels, Wall Panels, Curtain Walls, Roofing Systems, Store Fronts, Column Covers, Entranceways, Louvers, Mullions, Fascia, Highway Signs	Best Durability, Longest Color Life, Best Corrosion Resistance, Flexibility, Sand Abrasion, Chemical Resistance	AAMA 2605
Replacement Windows for Retrofit Projects, High-Rise Apartments, Condominiums, Office Buildings	Better Chalk and Fade Resistance, Longer Life, Low Maintenance	AAMA 2605
Primary Windows, Doors and Handrails for Institutions, Condominiums, Commercial Buildings, Other High-Exposure Areas	Corrosion Resistance, Better Chalk and Fade Resistance	AAMA 2605
Van, Bus and Truck Windows, Tubular Furniture, Post-Formed Extruded Parts	Color Retention and Chalk Resistance, Excellent Flexibility	AAMA 2605

PERFORMANCE TEST	AAMA 2605
Min. Film Thickness	1.2 mils
Crosshatch Adhesion	Dry, wet and boiling 100%
Direct Impact Resistance	0.1 inch deformation Minor crack / No pick-off
HCl Resistance [10%]	15-minute spot No blister or color change
Mortar Resistance	24-hour surface contact No adhesion or residue
Detergent Resistance	72-hour immersion No change or loss of adhesion
Humidity Resistance	4000 hours 100% humidity #8 blister size maximum
Salt Spray Resistance Scribed	4000 hours 5% solution Min. 7 on scribe, 8 on field
Metal Pretreatment Req.	40 mg/ft^2 chrome
Pencil Hardness	F [minimum]
Abrasion Resistance [1/mil]	40 [minimum]
Nitric Acid Vapor Resistance	30-minute exposure < 5 ΔE color change
Window Cleaner Resistance	24-hour spot test No visual change
Weathering	10 yrs Florida: 5 ΔE maximum color change 50% gloss retention min. 8 chalk min. [6 on whites] 10% film erosion max.

Kynar 500 resin-based finishes meet or exceed the physical test performance criteria of the AAMA 2605 specifications for superior performance of organic coatings on architectural extrusions and panels.

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For environmental, safety and toxicological information, contact our Customer Service department at [800] 466-2800 to request a Material Safety Data Sheet. Arkema Inc. believes strongly in responsible care as a public commitment.

*Details of the survey of architects' preferences are available at www.kynar500.com.

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