

# KYMAX<sup>®</sup>

## **KYNAR<sup>®</sup> MODIFIED FLUOROPOLYMER ROOF COATING** **Technical Data**

### **PRODUCT DESCRIPTION**

KYMAX is an innovative technology based on Kynar Aquatec PVDF fluoropolymer resin, designed to deliver the proven durability and performance of traditional Kynar PVDF coatings. However, rather than requiring high temperature baking, it is an air-dry finish that cures at ambient temperatures. KYMAX is a low build elastomeric finish coating that provides the ultimate in reflectivity, color stability, algae resistance and weatherability over new or existing roof surfaces. Although it is highly flexible, it exhibits a tough, enamel-like finish that resists abrasion, biological growth, dirt, acid rain and all types of weather extremes.

### **BASIC USES**

KYMAX was specifically designed for application as a thin-build finish coat over UNITED'S KYMAX Basecoat. It can also be used over other acrylic top-coats, such as **Roof Mate**, **Roofshield**, **Sunshield**, **Diathon** or **Acron 60**. KYMAX can also be applied over UNITED'S **Elastuff 310** polyurea basecoat, or directly over approved substrates such as metal or specific single-ply membranes, to rejuvenate color, and/or increase reflectivity, dirt pick-up and algae/mildew resistance.

Typical substrates include metal roofs, sprayed-in-place polyurethane foam, modified bitumen, PVC, TPO, Hypalon and EPDM. KYMAX is recommended whenever exceptional weatherability and/or reflectivity are required, whether the threat is algae, mildew, dirt or industrial fallout. It also provides exceptional UV and color stability, even in bright colors.

KYMAX is an excellent barrier to plasticizer migration, and is also effective in preventing asphalt bleed-through. The natural fire retardancy of the film provides long-term protection, eliminating the need for additional additives that migrate from the film.

### **COLORS**

KYMAX is available in standard White, which is certified to meet ENERGY STAR<sup>®</sup>, Cool Roof Rating Council (CRRC) and LEED reflectance and emissivity criteria, as well as California Title 24 requirements. All other colors are custom matched by UNITED for the specific application. Color chips or samples must be furnished to UNITED for all customer colors.

### **TYPICAL PROPERTIES**

1. **Soids by Weight:** 52% (±2%) [ASTM D1644]
2. **Solids by Volume:** 36% (±2%) [ASTM D2697]
3. **Weight per Gallon:** 11.0 lbs/gal (1.32 kg/l) [ASTM D1475]
4. **Dry Time for Water Resistance:** 6 hours @ 75°F (24°C) at 5 wet mils (127 microns)
5. **VOC:** 185 g/l (coating) [per EPA 23]
6. **Tensile Strength** – 1,000 psi (±100) (6.9 MPa) [ASTM D2370] After 1,000 Hours Accelerated Weathering – 1,050 psi (7.2 Mpa)
7. **Elongation:** 120% (±20) [ASTM D2370] After 1,000 Hours Accelerated Weathering – 150%
8. **Tear Resistance:** >200 PLI (14.4 kN/m) [ASTM D1004]
9. **Abrasion Resistance:** 30 l/mil Falling Sand Test [ASTM D968]
10. **Water Absorption:** 5.2% = Pass [ASTM D570]
11. **Permeance:** >3 @ 3 mils Dry Film Thickness [ASTM D1653]
12. **Accelerated Weathering:** 4,000 Hours = Pass [ASTM D4798/G155 or G154 UVB 313]
13. **Florida Weathering G7 – 1 Year: Gloss Retention:** >80% [ASTM D523]; **Fade:** ΔE<3.0 CIE units [ASTM D2244]; **Chalking:** 9 minimum [ASTM D4214]; **Adhesion:** 100% [ASTM D3359]
14. **Flexibility:** Passes ¼" (6 mm) mandrel bend @ -15°F (-26°C [ASTM D6083 / ASTM D522]
15. **Hail Resistance:** Passes FMRC moderate hail
16. **Code Approvals:** UL 790 Class A tested & listed

### **WARRANTY**

UNITED'S Standard Warranty, issued to the Building Owner, is available in 15-year and 20-year periods at no cost. Warranties are available for direct-applied finish coat applications as well as full waterproofing applications. Refer to separate Application Instructions sheet for minimum thickness requirements to qualify for warranty programs.

System Warranty programs are also available at an additional cost. Consult UNITED'S System Warranty Explanation Form and separate Application Instructions for details.

# ADVANTAGES OF KYMAX

## HIGH REFLECTIVITY/ EMISSIVITY:

KYMAX has been tested and certified by the Cool Roof Rating Council to have a Solar Reflectance of 87% and a Thermal Emittance of .89. An independent test report performed by Atlas Material Testing Solutions calculated the Total Emittance at .94. The Solar Reflectance Index is 110 per ASTM E1980, which is among the highest of any roof coating system.

## REDUCED ENERGY COSTS:

KYMAX has the unique ability to repel dirt, biological growth, pollution fallout and other contaminants, as well as resist degradation from UV and weather exposure. This enables the white topcoat to effectively reflect the sun's heat over long-term exposure, unlike dark-colored roofing materials that retain heat and are subject to ultraviolet degradation. Roof temperatures can be reduced in excess of 70°F (40°C), which significantly reduces air conditioning loads and lowers electricity costs. Independent studies show a reduction of over 20% in air conditioning use.

## MICROBIOLOGICAL RESISTANCE:

KYMAX was independently tested for fungal resistance as per ASTM G21-96. After exposure to *Aspergillus niger*, *Aureobasidium pullulans*, *Chaetomium globosum*, *Penicillium funiculosum* and *Trichoderma virens* for 4 weeks at 28°C, the KYMAX test panels showed no growth.

## COLOR & GLOSS STABILITY:

KYMAX is manufactured using Kynar® Aquatec resin, which is based on proven Kynar 500® technology. This PVDF homopolymer is universally known as the world's most weatherable coating resin, and is virtually immune to UV degradation. The mixed metal oxide pigments used for tinting KYMAX provide ultimate color stability and gloss retention, and are able to provide relatively high reflectivity values even in darker colors.

## CODE APPROVALS:

KYMAX is UL classified as a Class "A" Fluid Applied Coating System, as outlined in the UL Roofing Materials & Systems Directory and UL website. It is also certified to meet ENERGY STAR, Cool Roof Rating Council (CRRC), LEED and California Title 24 reflectance and emissivity criteria.

## CHEMICAL RESISTANCE

KYMAX exhibits excellent chemical resistance to airborne pollutants and acid rain. It was independently tested as per ASTM D471, which measures percent absorption over a 30 day period, with the following results:

<u>SPECIFIC EXPOSURE</u>	<u>% CHANGE IN MASS</u>
DI Water (25C) . . . . .	0.08
DI Water (75C) . . . . .	-0.55
Sea Water . . . . .	2.36
50% Ethanol . . . . .	0.59
Hand Soap . . . . .	2.04
10% Dishwashing Detergent . . . . .	9.12
Vegetable Oil . . . . .	2.59
NaOH N/2 (Alkali) . . . . .	3.74
5% HCL (Acid) . . . . .	2.22
Calcium Chloride . . . . .	2
Antifreeze . . . . .	10.45
Motor Oil . . . . .	-1.86
Diesel Oil . . . . .	11.1
Transmission Fluid . . . . .	0.09
Brake Fluid . . . . .	77.79
Hydrogen Peroxide . . . . .	-0.96
Bleach . . . . .	2.71
10% Acetic Acid . . . . .	2.71
10% Oxalic Acid . . . . .	0.5
10% Sulfamic Acid . . . . .	3.4
10% HCL Acid . . . . .	3.08
5% Nitric Acid . . . . .	3.57
10% Nitric Acid . . . . .	2.33
10% Phosphoric Acid . . . . .	3.28
5% Sulfuric Acid . . . . .	-1.7
10% Sulfuric Acid . . . . .	-1.24
10% Sodium Hydroxide . . . . .	10.64
20% Sodium Hydroxide . . . . .	23.85
28% Ammonium Hydroxide . . . . .	7.98
Lighter Fluid . . . . .	1.35
Oxygenated Gasoline . . . . .	8.57
Jet Fuel . . . . .	1.81
Acetone . . . . .	Degraded
Butyl Acetate . . . . .	Degraded
Methanol . . . . .	11.9
Xylene . . . . .	Degraded
MEK . . . . .	Degraded



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