

KYMAX[®]

KYNAR[®] MODIFIED FLUOROPOLYMER ROOF COATING

Technical Data & Application Instructions

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 and weather resistance over new or existing roof surfaces. Although it is highly flexible, it exhibits a tough, enamel-like finish that resists abrasion, biological growth, dirt, oil 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 topcoats, such as **Roof Mate**, **Roof Mate LP**, **Roofshield**, **Sunshield**, **Diathon**, or **Acron**. 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 dirt pick-up resistance and reflectivity.

Typical substrates include standing seam and corrugated 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[®], 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. **Cure Time:** Approximately 6 hours @ 75°F (24°C) at 4 wet mils (102 microns)
2. **Density:** 11.0 lbs/gal (1.32 kg/l)
3. **Flash Point:** None
4. **VOC per EPA24:** 185 g/l (coating)
5. **Viscosity:** 200 cps [ASTM D2196]
6. **Weight Solids:** 52% (±2%) [ASTM D1644]
7. **Volume Solids:** 36 (±2%) [ASTM D2697]
8. **Elongation:** 250% (±50%) [ASTM D2370]
300% (±25%) [ASTM D412]
9. **Tensile Strength** – 1,600 psi (±150) (11.0 MPa) [ASTM D2370]
2,200 psi (±25%) (15.2 MPa) [ASTM D412]
10. **Final Elongation after 1,000 hours accelerated weathering:**
>100% = Pass [ASTM D2370]
11. **Permeance:** >3 @ 2 mils Dry Film Thickness [ASTM D1653]
12. **Water Swelling:** <10% = Pass [ASTM D471]
13. **Accelerated Weathering:**
4,000 Hours = Pass [ASTM D4798]
14. **Wet Adhesion:** >2.0 pli (350 N/m) [ASTM D903]
15. **Fungi Resistance:** Zero Rating [ASTM G21]
16. **Tear Resistance:**
>250 lbf/in (87.5 kN/m) [ASTM D624]
17. **Flexibility:** Passes 1/8" (3 mm) mandrel bend @ -15°F (-26°C) [ASTM D522]
18. **Hail resistance:** Passes FMRC moderate hail
19. **Fire Retardancy:** UL 790 Class A tested & listed.
20. **Abrasion Resistance:** 30 l/mil Falling Sand Test [ASTM D968]
21. **Extended Accelerated Weathering:** 4,000 hours = Pass [ASTM D4798/G155 or G154 UVB-313]
22. **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]

WARRANTY

UNITED'S Standard Warranty, issued to the Building Owner, is available in 15-year and 20-year periods at no cost. Refer to section entitled Application Instructions 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 section entitled Coating Application for details.

PACKAGING & MIXING

KYMAX is a single-component, ready-to-use material available in 1-gallon (3.8 liter) cans, 5-gallon (19 liter) pails and 55-gallon (208 liter) drums.

KYMAX may appear well mixed, however, all containers should be thoroughly mixed using a power mixer for a minimum of five (5) minutes prior to application.

Use a ¾ horsepower or larger mixer with a blade capable of uniformly mixing the entire container. For 5-gallon (19 liter) pails, use 3" (7.5 cm) minimum diameter mixing blades. For 55-gallon (208 liter) drums, use 6" (15 cm) minimum diameter mixing blades.

THINNING OR REDUCING

KYMAX, properly mixed, is easily pumped and sprayed at material temperatures of 60°F (16°C) or higher. Thinning or reducing the mixture is not recommended. The addition of water reduces the consistency and vertical hold of **KYMAX** and decreases its ability to achieve a uniform film build.

SPRAY EQUIPMENT

KYMAX can be applied over a wide variety of substrates utilizing many different brands, types and sizes of conventional and airless equipment.

Airless spray equipment is best suited for field applications, although rollers can be used as necessary if overspray is a concern. The following minimums are recommended for commercial applications:

PUMP: ¾ gallon (2.8 l) per minute output and 1,500 psi (10,345 kPa) pressure capability.

GUN: Any airless spray gun compatible with pump used.

SCREEN SIZE: Filter screens should be 60 mesh or larger.

TIP SIZE: A reversible, self-cleaning tip with orifice size of .015" to .021" (.38 to .53 mm) and a fan angle of 40° to 50°.

FLUID HOSE: ¾" (1 cm) minimum inside diameter, nylon high-pressure type hose for lengths up to 75 ft. (23 m) from pump, in conjunction with a 3 to 6 ft. (1 to 2 m) whip before the spray gun. From 75 ft. to 200 ft. (23 to 51 m), use ½" (1.3 cm) inside diameter hose added to pump side of existing ¾" (1 cm) hose to maintain pressure & delivery. Over 200 ft. (51 m), use ⅝" to ¾" (1.6 to 1.9 cm) inside diameter hose added to pump side of existing hose.

Larger equipment will increase production capabilities. Larger diameter spray hoses will extend distances and heights to which **KYMAX** can be pumped.

SURFACE PREPARATION

Whether **KYMAX** is direct applied to metal or a single-ply membrane, or used as a topcoat over an acrylic, polyurea or polyurethane basecoat, all surfaces must be clean, dry, structurally sound, stable and well secured. All roof surfaces shall allow positive drainage and be free of excessive ponding water. Moisture content of the existing substrate, insulation or deck shall not exceed 15%. Any cracks, splits, tears, seams, holes, protrusions, blisters, drains, scuppers, vertical/horizontal interfaces, etc. must be reinforced using **Roof Mate Mesh** or **Uni-Tape**, as per Roof Mate Master Guide Specifications for each individual substrate.

BUILT-UP & MODIFIED BITUMEN – Any loose gravel or granules shall be removed by power sweeping and/or vacuuming. Remaining gravel shall be power spud to achieve the smoothest surface possible. Any areas of unsound roof, i.e. blisters, delamination, deterioration, moisture saturation, etc., shall be repaired or replaced. Power sweep, vacuum or blow down roof to remove remaining dirt, dust and other contaminants prior to coating application. New asphalt shall be exposed to ambient conditions for 45 to 60 days prior to coating, or use **Roof Mate LP** as a basecoat. Under cold, cloudy and/or rainy conditions a longer period of time may be required.

CONCRETE – All concrete surfaces must be dry, clean, and free of dirt, oil, soapy films, surface chemicals or other foreign contaminants. Concrete surfaces that are contaminated with oil, grease, dirt, etc., shall be cleaned using a biodegradable chemical cleaner such as **UNITED'S UCC Cleaner**. Rinse thoroughly with clean water to remove all traces of the chemical cleaner. Thoroughly sweep, vacuum or blow down roof to remove remaining dirt, dust and other contaminants prior to commencing with coating application. All surfaces shall be primed with **Uniseal** penetrating, water-based epoxy prior to coating.

METAL ROOFING – All metal surfaces must be dry, clean and free of any dirt, oil, rust, surface films or other contamination that could interfere with proper adhesion. Deteriorated or badly corroded metal shall be replaced. All seams must be tight & flush, and all mechanical fasteners must be tightened or replaced as necessary. Loose fasteners shall be replaced using a larger diameter fastener. Prior to commencing with coating application, thoroughly wash roof surfaces with **UCC** or other biodegradable cleaner. Rinse thoroughly using fresh water under high pressure to remove all traces of the chemical cleaner. Rusted areas shall be mechanically abraded to remove all loose rust and then primed with **Acrylex 400** high-grade rust-inhibitive primer.

SINGLE-PLY MEMBRANES – Sheet goods, such as PVC, Hypalon, TPO and EPDM must be clean and dry, and free of any dirt, dust, gravel, oil, surface chemicals or other contaminants that may interfere with optimum adhesion. Clean all surfaces using a biodegradable cleaner such as **UNITED'S UCC**, rinsing thoroughly with clean water to remove all traces of the chemical cleaner. Remove and reinstall any mechanical fasteners that are backed out. EPDM surfaces must be primed using **Adhere-It** followed by **Roof Mate Light Gray** as a basecoat.

COATING APPLICATION

DIRECT APPLICATION

KYMAX can be applied directly to galvanized or pre-finished metal surfaces, as well as select single-ply membranes, to rejuvenate or change the color, and provide color uniformity or graphics, algae/mildew resistance and corrosion protection. The existing substrate must be clean, dry and sound, and all surface preparation must be completed prior to application of the **KYMAX** finish.

UNITED offers 15 and 20-Year Warranties, to the Building Owner, guaranteeing that the **KYMAX** finish will maintain its color and uniformity under normal weathering conditions for the term of the warranty.

For a **15-Year Standard Warranty**, apply a single coat of **KYMAX**, using airless spray, at the minimum rate of 200 sq. ft. per gallon (4.9 m²/l). The minimum dry film thickness required at any location for a 15-Year Standard Warranty is 2 mils (51 microns).

For a **20-Year Standard Warranty** or **15-Year System Warranty**, apply 2 separate coats of **KYMAX** at the minimum rate of 300 sq. ft. per gallon (7.3 m²/l) per coat. The minimum dry film thickness required at any location for a 20-Year Standard or 15-Year System Warranty is 3 mils (76 microns).

For a **20-Year System Warranty**, apply 2 separate coats of **KYMAX** at the minimum rate of 250 sq. ft. per gallon (6.1 m²/l) per coat. The minimum dry film thickness required at any location for a 20-Year System Warranty is 4 mils (102 microns).

TOPCOAT APPLICATION

KYMAX can be applied as a topcoat over numerous acrylic and polyurea basecoats to provide a water-proof, color stable, highly weather resistant roof coating system over a wide variety of roof substrates.

UNITED offers 15 and 20-Year Warranties, to the Building Owner, guaranteeing that the roof coating system will remain waterproof and free from defects caused by degradation from normal weathering. **KYMAX** topcoat warranty requirements are the same as for direct application.

All surface preparation and detail work must be completed prior to coating application. Refer to individual Technical Data & Application Instruction sheets or Master Guide Specifications for full details on basecoat application. Basic basecoat requirements are as follows:

POLYURETHANE FOAM

Polyurethane foam and adjacent surfaces to be coated must be completely dry and free of any degraded foam, grease, oil, dirt or other contaminants that will interfere with proper adhesion.

KYMAX Basecoat shall be applied in a minimum of 2 separate coats at a minimum total of 2.0 gallons per 100 sq. ft. (.8 l/m²). This coverage rate will theoretically result in 17.3 dry mils (439 microns). The actual minimum dry film thickness required at any location to qualify for UNITED'S Warranty Systems shall be 15 dry mils (381 microns). Once the **KYMAX Basecoat** has dried, apply 1 or 2 coats of **KYMAX** at the required rate to achieve the minimum dry film thickness required for the desired warranty.

BUILT-UP ROOFING

Detail all splits, cracks, gaps, blisters, protrusions, drains, scuppers, vertical/horizontal interfaces, etc., using **Roof Mate Mesh** embedded into **KYMAX Basecoat** or **Roof Mate Butter Grade**, as per Roof Mate Master Guide Specifications. Roofs exhibiting a high degree of splitting and/or degradation will require full fabric reinforcement.

Once the detail work has dried, apply a single coat of **Unibase** over the entire roof at the rate of 200 sq. ft. per gallon (4.9 m²/l) to seal the surface and prevent potential bleed-through. Apply **KYMAX Basecoat** over all roof surfaces at the rate of 1.75 gallons per 100 sq. ft. (.7 l/m²), to yield a minimum of 13 dry mils (330 microns) at any location. Once the **KYMAX Basecoat** has dried, apply 1 or 2 coats of **KYMAX** at the required rate to achieve the minimum dry film thickness required for the desired warranty.

MODIFIED BITUMEN

Detail all splits, cracks, gaps, blisters, protrusions, drains, scuppers, vertical/horizontal interfaces, etc., using **Roof Mate Mesh** embedded into **Roof Mate LP**, as per Roof Mate Master Guide Specifications. Modified Bitumen roofs exhibiting a high degree of splitting and/or degradation will require full fabric reinforcement.

Once the detail work has dried, apply a single coat of **Roof Mate LP** over the entire roof at the rate of 1.75 gallons per 100 sq. ft. (.7 l/m²) to yield a minimum of 13 dry mils (330 microns) at any location. Once the **Roof Mate LP** has dried, apply 1 or 2 coats of **KYMAX** at the required rate to achieve the minimum dry film thickness required for the desired warranty.

CONCRETE

Detail all cracks, control joints, drains, scuppers, gaps, protrusions, vertical/horizontal interfaces, etc. with **Roof Mate Mesh** embedded into **KYMAX Basecoat**, as per Roof Mate Master Guide Specifications. Concrete roofs exhibiting a high degree of cracking will require full fabric reinforcement.

Once the detail work has dried, apply a single coat of **KYMAX Basecoat** over the entire roof at the rate of 1.75 sq. ft. per gallon (.7 l/m²) to yield a minimum of 13 dry mils (330 microns) at any location. Once **KYMAX Basecoat** has dried, apply 1 or 2 coats of **KYMAX** at the required rate to achieve the minimum dry film thickness required for the desired warranty.

EPDM

Once the **Adhere-It** wash conditioner has dried, detail all split seams, holes, splits, protrusions, drains, scuppers, vertical/horizontal interfaces, etc. with **Roof Mate Mesh** embedded into **Roof Mate Light Gray**, as per Roof Mate Master Guide Specifications. EPDM roofs exhibiting a high degree of degradation will require full fabric reinforcement.

Once the detail work has dried, apply a single coat of **Roof Mate Light Gray** over the entire roof at the rate of 1.5 gallons per 100 sq. ft. (.6 l/m²) to yield a minimum of 11 dry mils (279 microns) at any location. Once the **Roof Mate Light Gray** has dried, check for additional splits that may need to be detailed, then apply 1 or 2 coats of **KYMAX** at the required rate to achieve the minimum dry film thickness required for the desired warranty.

COATING APPLICATION (Continued)

HYPALON

Detail all split seams, holes, splits, protrusions, drains, scuppers, vertical/horizontal interfaces, etc. with **Roof Mate Mesh** embedded into **KYMAX Basecoat**, or with **Uni-Tape**, as per Roof Mate Master Guide Specifications. Hypalon roofs exhibiting a high degree of degradation will require full fabric reinforcement.

Once the detail work has dried, apply a single coat of **KYMAX Basecoat** over the entire roof at the rate of 1.5 gallons per 100 sq. ft. (.6 l/m²) to yield a minimum of 12 dry mils (305 microns) at any location. Once the **KYMAX Basecoat** dried, apply 1 or 2 coats of **KYMAX** at the required rate to achieve the minimum dry film thickness required for the desired warranty.

METAL

Detail all vertical and horizontal seams, fastener heads, ridge caps, drains, gutters, vertical/horizontal interfaces, joints at dissimilar substrates, vents, etc. with **Roof Mate Mesh** embedded into **KYMAX Basecoat**, **Uni-Tape** and/or **Roof Mate Butter Grade**, as per Roof Mate Master Guide Specifications. Gaps in ridge cap may need to be sealed using spray-applied polyurethane foam or pre-cut filler material.

Once the detail work has dried, apply a single coat of **KYMAX Basecoat** over the entire roof at the rate of 1.25 gallons per 100 sq. ft. (.6 l/m²) to yield a minimum of 10 dry mils (254 microns) at any location. Once the **KYMAX Basecoat** dried, apply 1 or 2 coats of **KYMAX** at the required rate to achieve the minimum dry film thickness required for the desired warranty.

As work proceeds, the Applicator must periodically check the number of gallons used and compare to square feet (meters) coated. If adequate material has not been used, adjust accordingly and apply additional material to previously coated areas. Allow additional material for roofs exhibiting a rough surface profile or texture.

KYMAX shall not be applied when one or more of the following conditions exist:

1. If ambient and/or surface temperatures are below 45°F (7°C).
2. If relative humidity is in excess of 95%.
3. Threat of rain or freezing temperatures within 4 hours of application.
4. The dew point is less than 5°F (3°C) above the surface temperature.

In addition, caution must be exercised when applying **KYMAX** in dark colors under high heat conditions. Surfaces exposed to direct sunlight should be coated with thin, multiple passes during the morning or late afternoon hours. Application of dark colors under extreme direct sunlight can cause blistering and/or excessive cellular structure within the cured coating film.

Partially full containers of **KYMAX** may surface skin under hot conditions. Examine before mixing and remove skin (if present). To prevent skinning during application in hot weather or in partially full containers, pour a thin layer of water on surface after mixing and/or cover the container with plastic sheeting.

APPLICATION TIPS

Due to the thin film build requirements of the **KYMAX** finish, it is recommended that it be applied using airless spray equipment, although roller or brush application can be used for touch-up or confined areas, or where spray application is not possible. Care must be taken when spraying under windy conditions to avoid overspray. Use windscreens and do not spray under excessive wind conditions. **KYMAX** overspray may not wet into the surface, particularly in high temperatures, which will create a rough surface texture that will collect dirt.

OTHER APPLICATIONS

KYMAX is an excellent choice for use on exterior walls, over a wide variety of new or existing substrates. It can be used to effectively change color or provide color uniformity over new or existing painted surfaces. Due to the superb color stability of **KYMAX**, it is an excellent choice for use in areas requiring bright colors, and/or areas that are difficult to coat, such as amusement rides, theme parks, high-rise buildings, etc.

KYMAX also makes an excellent UV resistant topcoat over industrial urethane or polyurea basecoats exposed to exterior weathering, such as tank exteriors, rails, piping, etc.

LIMITATIONS & PRECAUTIONS

KYMAX should generally not be used over cold storage tanks or buildings where a vapor barrier coating is required. **KYMAX** shall not be used for interior applications in place of a thermal barrier.

KYMAX will freeze and become unusable at temperatures below 32°F (0°C). Do not ship or store unless protection from freezing is available.

KYMAX requires complete evaporation of water to cure. Cool temperatures and high humidity retard cure. Do not apply if weather conditions will not permit complete cure before rain, dew or freezing temperatures occur. Do not apply in the late afternoon if heavy moisture condensation can appear during the night.

Do not apply **KYMAX** at temperatures below 45°F (7°C), or when there is a possibility of temperatures falling below 32°F (0°C) within a 4-hour period after application.

KYMAX is slippery when wet. Exercise caution when walking on roof under these conditions.

For additional information, refer to OSHA guidelines and **KYMAX** Material Safety Data Sheet.

 **UNITED
COATINGS**
LONGEVITY BY DESIGN®
A Subsidiary of Quest Specialty Chemicals™
19011 E. Cataldo Ave. • Spokane Valley, WA 99016
(509) 926-7143 • Fax: (509) 928-1116
(800) 541-4383 • www.unitedcoatings.com

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