

DIATHON®

ADVANCED ACRYLIC ELASTOMERIC WATERPROOFING
Exceeds ASTM D6083 Standards

Application Instructions

PRODUCT DESCRIPTION

DIATHON is a advanced acrylic elastomer coating that combines high solids emulsion polymers, reinforcing laminar pigments, biocides and non-migrating fire retardants for superior durability, weatherproofing, mildew resistance, ultraviolet resistance and fire resistance. The fire-retardant chemicals are permanently locked into the cured coating. **DIATHON is unique among acrylic elastomers in that elongation and tensile strength properties are each maintained at lower temperatures.**

Refer to separate literature entitle **DIATHON Technical Data** for physical properties and advantages.

BASIC USES

DIATHON was specifically developed for protecting sprayed polyurethane foam insulation from degradation caused by normal weathering, aging and ultraviolet exposure. **DIATHON** is used for the protection of sprayed polyurethane foam on new roofs, existing roofs, and hot or ambient storage tanks.

COLORS

DIATHON is available in standard **White, Tan, Light Tan** and **Light Gray** colors, which are certified to meet ENERGY STAR®, Cool Roof Rating Council (CRRC) and LEED reflectance and emissivity criteria. **White** and **Light Tan** also meet California Title 24 requirements. It is also available in standard **Medium Gray**. All other colors are custom matched by UNITED for the specific application. Color chips or samples must be furnished to UNITED for all custom colors. It is recommended that dark colors be tinted in **KYMAX** topcoat only.

DIATHON color concentrate is available to create a **Dark Gray DIATHON**, if required, to achieve a faster dry time at lower temperatures. If a white topcoat is desired, **DIATHON** is available in a **Quick-Set** version (**Diathon QS**). The **Quick Set** formulation sets up, or congeals, faster than standard **DIATHON** so that it will achieve resistance to wash-off from a light rain or dew in a shorter period of time.

WARRANTY

UNITED's **Standard Warranty Programs** guarantee that the **DIATHON** coating over sprayed polyurethane foam will not leak water due to deterioration as a result of ordinary weather conditions. These Standard Warranties are available for 5-year, 10-year or 15-year periods. All Standard Warranties are provided by United at **no cost**.

UNITED's basic requirements for issuance of a **Standard Warranty** to the Building Owner are as follows:

A properly completed Warranty Request Form* from the Contractor, certifying the application to be in accordance with UNITED's current published application instructions, must be submitted to UNITED's headquarters.

1. For issuance of a **5-Year Standard Warranty**, **DIATHON** shall be applied at a minimum rate of 3 gallons per 100 sq. ft. (1.2 l/m²) in a minimum of 2 separate coats. The actual total dry film thickness required at any location shall be 22 dry mils (559 microns).
2. For issuance of a **10-Year Standard Warranty**, **DIATHON** shall be applied at a minimum rate of 3½ to 4 gallons per 100 sq. ft. (1.4 to 1.6 l/m²) in a minimum of 3 separate coats. The actual total dry film thickness required at any location shall be 28 dry mils (711 microns).
3. For issuance of a **15-Year Standard Warranty**, **DIATHON** shall be applied at a minimum rate of 4½ to 5 gallons per 100 sq. ft. (1.8 to 2.0 l/m²) in a minimum of 3 separate coats. The actual total dry film thickness required at any location shall be 34 dry mils (864 microns).

*These documents are attached to the Warranty.

WARRANTY (continued)

DIATHON also qualifies for UNITED's **5-Year, 10-Year and 15-Year System Warranty Programs**. Issued to the Building Owner, these guarantee the total roof/membrane system (sprayed polyurethane foam, coating and labor) against water leakage as a result of deterioration from ordinary weathering. The thickness requirements are 28 mils (711 microns) for the 5-Year Warranty, 34 mils (889 microns) for the 10-Year Warranty and 40 mils (1,016 microns) for the 15-Year Warranty. A warranty fee and independent inspection are required for issuance of these System Warranties. Consult UNITED's System Warranty Explanation Form for details.

FOAM REQUIREMENTS

Polyurethane foam components shall be metered and sprayed in accordance with the Foam Manufacturer's directions and specifications. Polyurethane foam should **not** be sprayed during inclement weather or when the following conditions exist:

1. If surface temperature is above 120°F (49°C) or below 35°F (2°C), or when the dew point is less than 5°F (3°C) above the surface temperature. Temperature shall be measured with a surface thermometer. For surface temperatures between 35°F and 50°F (2°C and 10°C), special catalyzed foam with short cream time must be used.
2. If surface moisture is present, or where moisture meter readings are in excess of 10% (this may vary slightly depending on geographic location).
3. If wind velocity is above 12 miles per hour (unless adequate windscreens are provided).
4. If relative humidity is above 80%.

The finished surface texture of the applied polyurethane foam shall range from a smooth to a medium "orange peel" finish. **Surface textures defined as "popcorn" or "tree bark," or surfaces that exhibit crevices, voids or pinholes are not acceptable.** The finished surface shall not have any soft or spongy areas, or areas of improperly proportioned material.

Foamed-in-place cants and crickets shall be smooth and uniform to allow for positive drainage. Filleting of foam to parapet walls, vents, roof mounted equipment, etc., shall provide a relatively smooth transition to the roof deck and be of uniform cross sectional thickness.

If uncoated polyurethane foam is exposed to ultraviolet light for an extended length of time, a fine powder (oxidation) will form on the surface of the foam. **Applying DIATHON within 72 hours of the foam application will eliminate this potential problem.** Not all polyurethane foams have the same ultraviolet stability. Some will require topcoating in less than 72 hours. Should oxidation of the polyurethane foam occur, the foam insulation surface shall be brushed with a stiff bristle broom, mechanically scarified or sanded. A light pass of foam must then be applied to reseal the surface.

PACKAGING & MIXING

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

DIATHON may appear well mixed, but upon standing will settle into a two-stage suspension. Thoroughly mix the contents of all containers using a power mixer for a minimum of five (5) minutes prior to application.

When **Dark Gray DIATHON** is required, mix four (4) 100-gram units of color concentrate into one (1) 55-gallon (208 liter) drum of standard **Medium Gray DIATHON** or seven (7) 100-gram units of color concentrate into one (1) 55-gallon (208 liter) drum of standard **White DIATHON**. **DIATHON** shall be thoroughly mixed before and after color concentrate is added to ensure color uniformity.

Use a $\frac{3}{4}$ horsepower or larger electric or air operated 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

DIATHON, properly mixed, is easily pumped and sprayed at material temperatures of 60°F (16°C) or greater. **Thinning or reducing the mixture is not recommended.** The addition of water reduces the rich thixotropic nature of **DIATHON** and decreases its ability to achieve a heavy film build with excellent vertical hold.

SPRAY EQUIPMENT

DIATHON has been 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. The following minimums are recommended:

PUMP: 1 gallon per minute (3.8 l/minute) output and 2,000 psi (13,790 kPa) pressure capability.

GUN: Any airless hand gun compatible with pump used.

SCREEN SIZE: Filter screens should be 30 mesh or larger.

TIP SIZE: A reversible, self-cleaning tip with orifice size .027" to .039" (.69 to .99 mm) and a fan angle of 40° or 50°.

FLUID HOSE: $\frac{3}{8}$ " (1 cm) minimum inside diameter, nylon high-pressure type hose for lengths up to 75 ft. (23 m) from pump. From 75 ft. to 200 ft. (23 to 51 m), use $\frac{1}{2}$ " (1.3 cm) inside diameter hose added to pump side of existing $\frac{3}{8}$ " (1 cm) hose to maintain pressure and delivery. Over 200 ft. (51 m), use $\frac{5}{8}$ " to $\frac{3}{4}$ " (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 which **DIATHON** may be pumped.

COATING APPLICATION

DIATHON may be applied by conventional or airless spray equipment. Brush or roller may be used for touch-up and edging work, or for small areas that are not practical for spray application.

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

Any physical damage to the polyurethane foam shall be repaired before coating application commences. All oxidized polyurethane foam shall be repaired or replaced. Do not coat directly over polyurethane foam that has been mechanically scarfed or sanded.

Each coat of **DIATHON** shall be applied in a direction perpendicular to the previous coat. Edges of flat roof areas shall be precoated in a "picture frame" configuration.

DIATHON must be applied in two or more separate coats to ensure proper coverage and cure rate, and to achieve a pinhole-free continuous film. **All surfaces must be uniformly coated and free from voids, pinholes or blisters.**

Each coat of **DIATHON** must be dry and cured before an additional coat is applied.

DIATHON applied at the rate of one gallon per 100 sq. ft. (.4 l/m²) will theoretically yield 8.8 dry mils (244 microns).

To qualify for UNITED's **5-Year Standard Warranty Program**, the following requirements shall be adhered to:

1. **DIATHON** shall be applied in a minimum of two (2) separate coats at a minimum total of 3 gallons per 100 sq. ft. (1.2 l/m²).
2. It is recommended that no more than 1½ gallons per 100 sq. ft. be applied on the basecoat. Depending upon weather conditions at the time of application, three (3) separate coats may be necessary.
3. This coverage rate will theoretically result in 25.9 dry mils (658 microns). The actual minimum total dry film thickness required at any location to qualify for UNITED's **5-Year Standard Warranty** shall be 22 dry mils (559 microns).

To qualify for UNITED's **10-Year Standard or 5-Year System Warranty Program**, the following requirements shall be adhered to:

1. **DIATHON** shall be applied in two (2) or three (3) separate coats at a minimum total of 3½ to 4 gallons per 100 sq. ft. (1.4 to 1.6 l/m²). It is recommended that no more than 1¾ gallons per 100 sq. ft. (.7 l/m²) be applied per coat.
2. This coverage rate will theoretically result in 30 to 35 dry mils (762 to 889 microns). The actual minimum total dry film thickness required at any location to qualify for UNITED's **10-Year Standard or 5-Year System Warranty** shall be 28 dry mils (711 microns).

To qualify for UNITED's **15-Year Standard or 10-Year System Warranty Program**, the following requirements shall be adhered to:

1. **DIATHON** shall be applied in a minimum of three (3) separate coats at a minimum total of 4½ to 5 gallons per 100 sq. ft. (1.8 to 2.0 l/m²). It is recommended that no more than 1½ gallons per 100 sq. ft. (.6 l/m²) be applied per coat.
2. This coverage rate will theoretically result in 39 to 43 dry mils (991 to 1,092 microns). The actual minimum total dry film thickness required at any location to qualify for UNITED's **15-Year Standard or 10-Year System Warranty** shall be 34 dry mils (864 microns).

To qualify for UNITED's **15-Year System Warranty Program**, the following requirements shall be adhered to:

1. **DIATHON** shall be applied in a minimum of four (4) separate coats at a minimum total of 5½ to 6 gallons per 100 sq. ft. (2.2 to 2.4 l/m²). It is recommended that no more than 1½ gallons per 100 sq. ft. (.6 l/m²) be applied per coat.
2. This coverage rate will theoretically result in 47 to 52 dry mils (1,994 to 1,321 microns). The actual minimum total dry film thickness required at any location to qualify for UNITED's **15-Year System Warranty** shall be 40 dry mils (1,016 microns).

DIATHON shall be extended up and over all polyurethane foam on vent pipes and parapets, and terminated a minimum of 2" (5 cm) above the foam, creating a self-terminating flashing.

If any form of dirt, sand or pollution fallout is detected on the surface of **DIATHON**, it is necessary to remove this material before applying an additional coat of **DIATHON**. Surfaces should be washed using a biodegradable cleaner such as UNITED's **United Cleaning Concentrate (UCC)**, only after the **DIATHON** film has fully cured. Rinse thoroughly with clean, fresh water to remove all traces of the chemical cleaner and allow to dry.

When **DIATHON White** is specified for the finish color, it is recommended that **Light** or **Medium Gray** be applied for the first coat, thus making it easier to visually control the application of the second coat in **White**. For three (3) coat work, it is recommended that alternating coats of **Medium Gray**, **Light Gray** and/or **White** be used.

If faster dry and cure times are required under cool temperatures or high humidity, it is suggested that **Medium gray** and/or **DIATHON QS** be used. There is sufficient color contrast between the dry and wet films in the **Medium Gray** color to visually control the application.

DIATHON color concentrate is available to create a **Dark Gray DIATHON** if required to speed the drying and curing process at temperatures between 50°F and 70°F (10°C and 21°C). **Dark Gray DIATHON** should not be applied at more than 16 wet mils (406 microns) per coat, or in warmer temperatures.

COATING APPLICATION (cont'd)

Adequate curing of basecoat(s) must take place before applying topcoat(s). Initial cure or dry time to achieve resistance to rain or overnight dew will normally take several hours. Total cure to achieve long term resistance to ponded water will usually take 24 to 72 hours, depending on weather conditions.

Roofs subject to heavy maintenance traffic should have walk pads or granules installed in the walkways.

As work proceeds, the Applicator must periodically check the wet mil application rate and the number of gallons used compared to square feet coated. If adequate mils or gallons have not been applied according to UNITED's warranty requirements and/or project specifications, adjust accordingly and apply additional material to previously coated area(s).

The sprayability of **DIATHON** will depend on the combination of proper equipment and temperature of the coating at the time of application. **DIATHON** is a true acrylic elastomer containing no plasticizers. Because of this rubber characteristic, **DIATHON** is very cohesive in the container and difficult to spray at **material temperatures** below 60°F (16°C).

In hot temperatures, partially full containers of **DIATHON** may surface-skin. Examine before mixing and remove skin (if present). To prevent skinning in partially full containers or during application in hot weather, cover container with polyethylene sheeting **after** mixing.

DIATHON has excellent dirt releasing ability. Its tight, smooth, low sheen surface resists penetration of soil and contaminants, allowing the surface to be readily cleaned.

Use water and **United Cleaning Concentrate** or other similar detergent to thoroughly flush equipment. Purge the water from the system using Mineral Spirits or Glycol Ether. Leave the solvent in the lines and equipment until next use. It is not recommended practice to leave **DIATHON** in the pump or hoses.

Application of a granular surface is achieved through the addition of an extra coat of **DIATHON** that is sprayed over the minimum coverage required for the specified warranty. The ceramic roofing granules are then broadcast into the wet film of this additional coat.

LIMITATIONS & PRECAUTIONS

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

DIATHON will freeze and become unusable at temperatures below 32°F (0°C), or when there is a possibility of temperatures falling below 32°F (0°C) within a 24-hour period after application.

DIATHON 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, fog or freezing temperatures occur.** Do not apply in the late afternoon if heavy moisture condensation may appear during the night.

DIATHON is slippery when wet, as are loose roofing granules. Exercise caution when walking on a roof under these conditions.

Avoid breathing of vapor or spray mist. For exterior applications, approved (MSHA/NIOSH) chemical cartridge respirator must be worn by Applicator and personnel in vicinity of application. Check filters frequently to ensure proper protection. If used indoors, provide mechanical exhaust ventilation. During indoor spray operations, air line masks or positive pressure hose masks must be worn. Avoid contact with eyes and contact with skin.

Adequate precautions must be taken when applying **DIATHON** to occupied buildings to ensure that air conditioners and ventilation units are turned off and covered to prevent vapors from entering the building. Windows should also be kept closed. Signs should be posted around the area to advise building occupants or visitors of the spray activity.

It is good roofing practice to schedule an annual cleaning of the roof surface. This will eliminate the accumulation of leaves, dirt, debris and other contamination. It will also alert the Owner to any mechanical damage or other problems that may compromise the integrity of the roofing system. Roofs subject to a high degree of traffic or pollution fallout may require more frequent cleanings.

For specific information on safety requirements, refer to OSHA guidelines and **DIATHON** Material Safety Data Sheet.



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