



PRODUCTS FOR OUR ENVIRONMENT

TECHNICAL DATA SHEET

ERS-Ecothane Basecoat and ERS-Ecothane Topcoat

P/N: 020-0055
020-0060

For Professional Use Only

PRODUCT DESCRIPTION:

ERS-Ecothane Basecoat/Topcoat is a coating system made up of high solids, moisture-catalyzed, single component, polyurethane components. The system consists of ERS-Ecothane Basecoat (an aromatic polyurethane) and ERS-Ecothane Topcoat, a UV-resistant, 100% aliphatic polyurethane. This combination provides an excellent balance of tensile strength, elongation and hardness, resulting in long term flexibility and impact resistance. High abrasion resistance results in protection from maintenance traffic and severe weather conditions. Non-migrating fire retardant chemicals are permanently locked into the coating, ensuring long-term fire retardance.

The ERS-Ecothane System is a permanently flexible "breathing" membrane, allowing moisture vapor from within the substrate or building interior to escape through the coating, while remaining impervious to mass water penetration from the exterior.

The ERS-Ecothane products are single-component elastomers, which are catalyzed through exposure to moisture in the air. They are designed for application through standard airless spray equipment, as well as by brush or roller.

RECOMMENDED USES:

The ERS-Ecothane System is designed for protecting a wide range of substrates from the effects of weathering and moisture intrusion. It is particularly effective as a protective membrane over polyurethane foam on new or existing roofs, and hot or ambient storage tanks. It provides a barrier to the effects of degradation caused by normal weathering, aging and ultraviolet exposure. This system also achieves excellent adhesion to primed concrete, masonry, metal and wood surfaces. ERS-Ecothane Topcoat is very effective when used alone in a wide variety of applications requiring a tough, abrasion resistant membrane.

ADVANTAGES:

- UL-790 Class "A" Systems:** ERS-Ecothane Basecoat/Topcoat is UL-790 Class "A" Classified over spray applied polyurethane foam. Refer to UL Building Materials Directory for foam manufacturers and types, foam thicknesses and densities, inclines and coating requirements of rated roof systems.
- Building Code Acceptance:** These UL-790 Class "A" roofing systems are accepted by all major model building code authorities for class "A" construction. The code authorities include the Uniform Building Code (UBC), Building Officials and Code Administrators (BOCA), and Southern Building Code Authority (SBCA).
- Resistance to Accelerated Weathering:** Test panels were placed in the QUV Accelerated Weathering Tester. Cycling is set at 4 hours of ultraviolet radiation, during which time temperatures reach approximately 135°F (57°C), and 4 hours with no U.V. radiation. A water bath at the bottom of the unit is maintained at 100°F (38°C) to create a constant high humidity condition. After 3,000 hours of continuous testing, the ERS-Ecothane System showed no surface checking or cracking, no delamination, no loss of flexibility and no chalking. Tested in accordance with ASTM G53.
- Resistance to Freeze-Thaw:** ERS-Ecothane Basecoat/Topcoat test panels were exposed to freeze/thaw cycles under complete immersion in deionized water. Cycles consisted of 16 hours at 0°F (-18°C) and 8 hours at 70°F (21°C). After 4 complete cycles, the physical integrity of the coating remained unaffected. There was no loss of adhesion, and no blistering or softening.
- Water Absorption:** 3" (7.5 cm) free film discs were immersed in deionized water at 70°F (21°C). After 7 days immersion, ERS-Ecothane Basecoat showed less than 1% weight gain, while ERS-Ecothane Topcoat showed less than 2.5% weight gain. No visual effect was observed and all elastomeric properties were retained. Tested in accordance with ASTM D543.
- High Temperature Stability:** Tested in thermostatically controlled heat chamber— ERS-Ecothane Basecoat/Topcoat will not age harden or slump at temperatures up to 200°F (93°C). ASTM D794.
- Resistance to Salt Spray:** Coated polyurethane foam test panels were placed in the Harshaw Salt Spray Cabinet and maintained at a temperature of 95°F (35°C), utilizing a fog solution of not less than 5% sodium chloride by weight. After **500 hours** of continuous testing, the ERS-Ecothane Basecoat/Topcoat System had no loss of adhesion, no blistering or softening and no loss of flexibility. ASTM B 117.

8. **Low Temperature Flexibility:** The ERS-Ecothane Basecoat/Topcoat System is capable of withstanding 180° bends over a 1/8" (3 mm) mandrel @ -7°F (-22°C). Federal Test Method No. 141 a-6221.
9. **Bond Strength:** Instron Universal Testing Instrument—50 to 60 lbs./sq. inch (.34 to .41 MPa) breaking strength. There was no adhesive failure between the ERS-Ecothane Basecoat and the polyurethane foam substrate. ERS-Ecothane Basecoat remained totally bonded to the polyurethane foam under all stress conditions. Breaking point occurred within the polyurethane foam itself. ASTM C297.
10. **Impact Resistance:** Steel Ball Drop Procedure using a 12 ounce (340 gram), 1¾" diameter (4.45 cm) steel ball dropped from a height of 20 ft. (6.1 m) onto 2.7 lb./cu. ft. polyurethane foam coated with the ERS-Ecothane System. No surface cracks or breaks were observed in the coating. Test is adapted from National Bureau of Standards "Falling Hailstone Test".
11. **Cold Temperature Impact:** Steel Ball Drop Procedure using a 4.6 ounce (130 gram), 1¼" diameter (3.18 cm) steel ball dropped from a height of 5 feet (1.5 m) onto 2.7 lb./cu. ft. polyurethane foam coated with ERS-Ecothane Basecoat. Temperature of test panels was maintained at -12°F (-25°C). No surface cracks or breaks were observed in the coating. Test is adapted from National Bureau of Standards method.
12. **Ponded Water Adhesion:** A 5" (12.7 cm) high column of water was established over polyurethane foam coated with the ERS-Ecothane System. After 30 days of continuous testing, the ERS-Ecothane System had no significant loss of adhesion. No blistering or other deleterious effects were observed. There was no migration of water into the polyurethane foam substrate.

FOAM REQUIREMENTS:

Polyurethane foam components shall be metered and sprayed in accordance with 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. Temperatures 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 (19 km) 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 medium "orange peel" finish. **Surface textures defined as "popcorn" or "tree bark", or surfaces which 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. Polyurethane foam shall be a minimum of 1" (2.5 cm) thickness and 2.5 lbs. (1.1 kg) density. Foamed-in-place cants and crickets shall be smooth and uniform to allow positive drainage. Filleting of foam to parapet walls, vents, roof mounted equipment, etc., shall provide a smooth transition to the roof deck and be of uniform 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 ERS-Ecothane Basecoat 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 or mechanically scarified or sanded. A light pass of foam must then be applied to reseal the surface.

INSTALLATION:

Surface Preparation: Thoroughly mix all containers of ERS-Ecothane Basecoat and ERS-Ecothane Topcoat with an air-driven power mixer for a minimum of 5 minutes prior to application. Avoid sucking air into the coating while mixing. Once the booster unit is added to the ERS-Ecothane Topcoat, the pot life will be 3 to 5 days depending upon ambient conditions. Previously opened containers, or containers that have been stored for an extended length of time, may develop a skin on top of the coating. This should be removed prior to mixing. Thinning the material is not recommended. Store ERS-Ecothane components in a dry area between 40°F and 90°F (5°C and 32°C).

Application: The ERS-Ecothane System is best suited for application through airless spray equipment. Utilize a pump with a minimum output of 2 gallons (7.6 l) per minute and 2,500 psi (17,241 kPa) pressure capability. A natural bristle brush or a medium nap roller may be utilized 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.

Each coat of ERS-Ecothane Basecoat shall be applied in a direction perpendicular to the previous coat. Edges of flat roof areas shall be precoated in a "picture frame" configuration. The ERS-Ecothane System must be applied in two or more separate coats to ensure proper coverage and cure rate, and a pinhole-free continuous film. ERS-Ecothane Basecoat must always be

applied as the first coat over polyurethane foam. ERS-Ecothane Topcoat can be used with or without ERS-Ecothane Basecoat over properly primed wood, metal or concrete. All surfaces must be uniformly coated and free of voids, blisters and pinholes.

ERS-Ecothane Topcoat shall be applied over ERS-Ecothane Topcoat within a 48 hour period following application of the ERS-Ecothane Basecoat. Successive coats of the ERS-Ecothane products should be applied as soon as the previous coat has dried sufficiently to allow the applicator to walk on. This can normally be accomplished on the next working day, but in any event before contamination occurs. If contamination in the form of dirt, dust, pollution fallout, etc. does occur on the basecoat surface, it must be pressure washed before an additional coat of ERS-Ecothane Basecoat or ERS-Ecothane Topcoat is applied.

The ERS-Ecothane System should not be applied when the ambient temperature is below 50°F (10°C), or if rain is anticipated within 4 hours of application. Store material for a sufficient length of time in a warm area prior to application to bring material temperature to 70°F (21°C). The sprayability of the product(s) will depend on the combination of proper equipment and temperature of the coating at time of application.

COVERAGE:

ERS-Ecothane Basecoat applied at the rate of one gallon per 100 sq. ft. (.4 l/m²) will theoretically yield 12.8 dry mils (325 microns). ERS-Ecothane Topcoat will theoretically yield 9.3 dry mils (236 microns). The following minimum coverage rates and dry film thickness will qualify for Ecology's warranty programs:

To qualify for Ecology's 5-Year Standard Warranty Program, ERS-Ecothane Basecoat shall be applied in one or two coats to a minimum total 1¼ gallons per 100 sq. ft. (.5 l/m²). The actual minimum dry film thickness required at any location shall be 14 mils (356 microns). ERS-Ecothane Topcoat shall be applied in one or two coats to a minimum total of 1¼ gallons per 100 sq. ft. (.5 l/m²). The actual minimum dry film thickness required at any location shall be 10 mils (254 microns). The actual minimum total dry film thickness for the ERS-Ecothane System at any location is 24 mils (610 microns).

To qualify for Ecology's 10-Year Standard Warranty or 5-Year System Warranty Programs, ERS-Ecothane Basecoat shall be applied in one or two coats to a minimum total of 1½ gallons per 100 sq. ft. (.6 l/m²). The actual minimum dry film thickness required at any location shall be 17 mils (432 microns). ERS-Ecothane Topcoat shall be applied in one or two coats to a minimum total of 1½ gallons per 100 sq. ft. (.6 l/m²). The actual minimum dry film thickness required at any location shall be 13 mils (330 microns). The actual minimum total dry film thickness for the ERS-Ecothane System at any location is 30 mils (762 microns).

To qualify for Ecology's 10-Year System Warranty Program, ERS-Ecothane Basecoat shall be applied in one or two coats to a minimum total of 2 gallons per 100 sq. ft. (.8 l/m²). The actual minimum dry film thickness required at any location shall be 22 mils (559 microns). ERS-Ecothane Topcoat shall be applied in two coats to a minimum total of 1¾ gallons per 100 sq. ft. (.7 l/m²). The actual minimum dry film thickness required at any location shall be 16 mils (406 microns). The actual minimum total dry film thickness for the ERS-Ecothane System at any location is 38 mils (965 microns).

The ERS-Ecothane System shall be extended up and over all polyurethane foam on vent pipes and parapets and extended 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 ERS-Ecothane Basecoat, it is necessary to remove this material before applying an additional coat. Surfaces should be washed using a chemical cleaner only after the ERS-Ecothane Basecoat film has fully cured. Rinse thoroughly with clean, fresh water to remove all traces of the chemical cleaner, and allow to dry.

As work proceeds, the applicator must check the number of gallons (liters) used compared to area coated. If adequate material has not been used according to Ecology's warranty requirements or project specifications, adjust accordingly and apply additional material to previously coated area(s).

Clean equipment with MEK or Methylene Chloride. Do not leave Methylene Chloride in fluid hoses or pumps for prolonged periods. It can cause swelling and deterioration of hoses and corrosion in the pump.

PACKAGING:

ERS-Ecothane Basecoat and ERS-Ecothane Topcoat are single component, ready-to-use materials available in 5-gallon (18.9 liter) pails and 55-gallon (208.19 liter) drum. ERS-Ecothane Topcoat is supplied with a separate booster unit that must be added to ensure proper cure and adhesion.

ERS-Ecothane Basecoat is available in standard Light Gray color only. ERS-Ecothane Topcoat is available in a standard White version. All other colors are custom matched for the specific application and will incur additional costs and require minimum quantity orders. Color chips or samples must be furnished to Ecology Roof Systems for all custom color orders.

STORAGE LIFE:

Six (6) months from date of shipment when stored in unopened, original container.

PRECAUTIONS:

ERS-Ecothane components are affected by moisture and must be protected from moisture contamination. Keep all containers tightly closed during storage. Containers are factory sealed with an inert gas to prevent contamination. For further storage after opening, containers must be purged with nitrogen gas or dry air and tightly sealed to protect from moisture contamination.

Solvents in the ERS-Ecothane components are flammable. Use only in a well ventilated area. Keep away from heat, sparks, open flames or lighted cigarettes. Use explosion-proof application equipment, which has been grounded and bonded.

ERS-Ecothane components are 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) 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 ERS-Ecothane components to occupied buildings to ensure that air conditioners and ventilation units are turned off and covered to prevent solvent 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.

For additional information, refer to OSHA guidelines and ERS-Ecothane Basecoat and/or ERS-Ecothane Topcoat Material Safety Data Sheets.

PHYSICAL PROPERTIES:

Property	ERS-Ecothane Basecoat Typical Value	ERS-Ecothane Topcoat Typical Value	Test Method
Solids by Weight	82% (±2)	68% (±2)	ASTM D 2369
Solids by Volume	80% (±2)	58% (±2)	ASTM D 2697
Flash Point	75°F (24°C)	75°F (24°C)	ASTM D 3278
Dry Time to Walk On (at 70°F (21°C), 50% R.H.)	6 – 8 hours @ 24 wet mils	8 – 12 hours @ 16 wet mils (with booster)	N/A
Tensile Strength	1,000 psi (±100)	2,500 psi (±200)	ASTM D 412
Elongation	500% (±50)	400% (±50)	ASTM D 412
Tear Strength	125 lbs. per inch (±20)	285 lbs. per inch (±25)	ASTM D 1004
Hardness	65 – 70 Shore A	90 – 95 Shore A	ASTM D 2240
Abrasion Resistance	Less than 35 milligrams weight loss using CS-17 abrasive wheels and 1000 gram weights after 1000 cycles on Taber Abraser.		ASTM D 4060
Low Temperature Flexibility	Passes 180° flex over 1/8" (3mm) mandrel at -7°F (-22°C), Federal Test Method No. 141a-6221.		N/A
Low Temp Impact Resistance	No surface cracks or breaks when impacted with 130 gram, 1-1/4" steel ball dropped from a height of 5' at -12°F (-25°C).		N/A
Temp Limits for Normal Service Conditions	Tested from -30°F to 200°F (-34°C – 93°C)		N/A
Fire Resistance	UL-790 Class "A" listed system over spray applied polyurethane foam. Consult UL Building Material Directory for specifics.		

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