



EPS 2000 Product Application Guide

EcoPolySeal spray foam must be installed by an authorized spray foam installer. Each spray foam job is different with multiple variables that need to be taken into consideration prior to the start of the job. Consult the EcoPolySeal team for recommendations. We take customer satisfaction seriously and take a team view approach to every job.

Application guidelines:

Equipment: Follow the spray foam equipment manufacturer's safe operation guidelines. Each spray unit is different and it is critical that you adjust your primary heater and hose temperatures accordingly for each polyurethane foam system. Adjust the processing pressures to a 1 to 1 ratio.

Chemical preparation:

The chemical drums should be stored and maintained between 59F and 77F before processing at the job site. If the drums are bulging due to excessive heat, do not open the drums. Cool the drums for approximately 24 to 48 hours to allow the reacted blowing agent, 245fa, to return to a liquid state. Other means of cooling the drums on site may be necessary. Contact the EcoPolySeal technical team for more information.

Substrate preparation:

All surfaces must be free of oil, grease, waxes, rust scale, loose dirt and water. In addition, the substrate must be structurally sound. The moisture content of wood substrates must not exceed 19% before the foam is applied. Some metal surfaces may require sandblasting and priming prior to the foam spraying to ensure strong adhesion. Consult a EcoPolySeal technical team member for additional information and guidance. When in doubt, build a test panel prior to spraying the job.

Applying to Concrete:

- Concrete must be fully dry and cured.
- No oils, salt or calcium deposits
- Clean with Muriatic acid and/or detergents and allow to dry.

Applying to galvanized steel:

- No oils, passivators or grease.
- Clean with solvents (not hydrocarbon), abrasives, detergents and wipe or blast until dry.
- Bonding primers for galvanized metal once clean can be used.

Applying to Painted surfaces:

- Sand or rough the surface and clean.
- Must be fully dry.

Applying to steel/metal:

- Remove all rust scales and corrosion with a wire brush and abrasive material.
- Surface must be roughed for application.
- Surface must be dry and clean.

Applying to Aluminum:

- Remove all oils and clean with solvent. Never use a caustic solution and prime with a strong bonding primer made for aluminum.
- Surface must be dry and clean.

Applying to Glass:

- Remove all oils and clean with detergent.
- Rough the surface and use an appropriate primer as needed.
- Surface must be dry and clean.

Applying to Asphalt and Tar:

- Surface must be dry and clean.

Applying to Rigid Polyurethane Foam:

- Surface must be rough, clean and dry.

Applying to Polypropylene, polyethylene, silicone and ceramic surfaces:

- Spray foam may not adhere to these surfaces. Add functional support braces as needed.

PRIMARY HEATERS - The primary heaters should be resistance controlled, direct contact heating rods, either submersible, mass block and tube style or combination of direct heating contact rods and mass block (hybrid heater). The primary heaters should be controlled through independent controllers, separated from the hose heat to ensure an accurate setpoint temperature. EPS 2000 may not be consistently sprayed in conformance with the written specification if the combination of the proportioner's pumping capacity, the primary heat capability and spray gun discharge rate (mixing chamber size) is out of balance. Contact the EcoPolySeal Technical Service Department for further guidance.

Distributed by:

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HEATED HOSE - EcoPolySeal recommends the use of heated spray hoses rated at 2000 psi. Use moisture resistant hoses specifically designed for isocyanate. The heated spray hose should be able to maintain temperatures up to 190°F (88°C) and should be heated using an electrical element with an independent temperature sensor. The heated hose should also be adjusted and monitored separately from the A and B primary heaters, and should be capable of maintaining the temperature from the A and B primary heaters all the way to the spray gun.

FLUSHING/CHANGING FROM ANOTHER CHEMICAL TO EPS 2000

Follow the published flushing procedure on the EcoPolySeal website. Never flush water through the A-side (iso side). Failure to properly flush will result in off-spec foam and does not comply with the ICC Evaluation Service Report and does not qualify for the EcoPolySeal Limited Lifetime Warranty.

FOAM APPLICATION

In preparation for spraying, an off-target test spray should be performed to verify the processing pressure, primary heater and hose temperature settings. The "initial setpoint temperatures" listed below and on the Technical Data Sheet are suggested general starting parameters; it's important to observe the foam and the reaction time of the reacting mass and make additional adjustments throughout the day as needed to maintain proper cell structure, adhesion, cohesion and general foam quality.

RECOMMENDED PROCESSING CONDITIONS*		
Initial Primary Heater Setpoint Temperature	Summer 100 - 105°F Winter 95 - 100°F	Summer 38 - 47°C Winter 35 - 38°C
Initial Hose Heat Setpoint Temperature	Summer 100 - 105°F Winter 95 - 100°F	Summer 38 - 47°C Winter 35 - 38°C
Initial Processing Setpoint Pressure	1200 - 1400 psi	8274 - 9653 kPa
Substrate & Ambient Temperature	Summer > 50°F Winter > 10°F	Summer > 10°C Winter > -12°C
Moisture Content of Substrate	19%	19%
Moisture Content of Concrete	Concrete must be cured, dry and free of dust and form release agents.	

*Foam application temperatures and pressures can vary widely depending on temperature, humidity, elevation, substrate, equipment and other factors. While processing, the applicator must continuously observe the characteristics of the sprayed foam and adjust processing temperatures and pressures to maintain proper cell structure, adhesion, cohesion and general foam quality. It is the sole responsibility of the applicator to process and apply EPS 2000 within specification.

One proven method of applying EPS 2000 is to spray perpendicular (90 degree angle) to the substrate, holding the gun 18 - 24" away from the substrate. This technique also helps minimize over spray. EPS 2000 should be applied by spraying vertically or horizontally to the substrate while overlapping the passes 60 - 80%. Apply by spraying into the gelling material (wet line) as it is rising. If the processing parameters are set too high, the pattern may be uncontrollable, the mixing chamber may clog often, the wet line will not be as pronounced and the surface characteristics will be rough. When the parameters are too low the foam may spray in a direct stream and remain un-reacted for several seconds.

Always spray perpendicular to the surface in 1" to 2" lifts. Applicators should limit the application of this product to no more than a thickness of 2" (50mm) per pass (after expansion) to avoid fire hazards (including spontaneous combustion) resulting from excessive heat generation. A second 2" (50mm) layer may be applied immediately after the first one has fully risen. If subsequent passes are needed, applicators should wait until the core temperature of the foam has dropped below 100°F to allow any reaction heat to dissipate from the prior applications before attempting to reapply the product. It is recommended to use a 0 - 220°F pocket sized, self-penetrating thermometer to ensure that the foam has cooled before additional layers can be applied. Spraying sections too thick, too fast may result in charring of the foam, or in extreme conditions a fire may result. Thin foam layers often result in poor physical properties, reduced coverage and poor chemical reaction due to low exothermic heat generated from the chemical reaction, which is needed to create proper closed cell formation. When multiple layers are necessary to achieve the proper R-value, cross-hatching should be done. This technique aids in proper cohesion of passes.

The temperature of the substrate has a major effect on the foam density and adhesion. Certain compromises are necessary to spray in cold weather. The "COLD WEATHER PROCESSING" section offers more information on this topic. If in doubt about the substrate or the ambient conditions, a trial application should be done to check foam quality and spray performance. Water on the substrate from rain, fog, condensation, etc. will react chemically with the isocyanate, adversely affecting the physical properties, performance and adhesion of the foam. EPS 2000 should never be applied when the relative humidity is above 80%, as high relative humidity can adversely affect the physical properties of the foam.

INTERIOR/EXTERIOR FOAM APPLICATION

Climatic conditions are an important factor that should be considered when preparing to apply foam to the interior of a structure. Ambient and substrate temperatures should be monitored. Foam should only be applied when ambient and substrate temperatures are inside the range for the foam system being used. Foam should only be applied to substrates with less than 19% moisture content. It is best to apply foam when the humidity is less than 80% and the wind is less than 10 mph to maintain proper adhesion. Pay close attention to the temperature of the substrate when applying foam to the interior of a structure.

Use windscreens downwind, the foam can travel long distances because the particles may separate when airborne. Windscreens can also be configured around scaffolding and man-lifts. It may also be necessary to enclose and preheat the area to the acceptable temperature range for the foam system being used. In preparation for spraying, a test spray should be performed to ensure that the proper processing temperatures and pressures are set. The specified settings per the TDS are general starting parameters, it is important to observe the foam and the reaction time of the reacting mass and make additional adjustments as needed.

Always spray perpendicular to the surface in 1" to 2" lifts. Applicators should limit the application of this product to no more than a thickness of 2" (50mm) per pass (after expansion) to avoid fire hazards (including spontaneous combustion) resulting from excessive heat generation. A second 2" (50mm) layer may be applied immediately after the first one has fully risen. If subsequent passes are needed, applicators should wait until the core temperature of the foam has dropped below 100°F to allow any reaction heat to dissipate from the prior applications before attempting to reapply the product. It is recommended to use a O - 220°F pocket sized, self-penetrating thermometer to ensure that the foam has cooled before additional layers can be applied. Spraying sections too thick, too fast may result in charring of the foam, or in extreme conditions a fire may result. Thin foam layers often result in poor physical properties, reduced coverage and poor chemical reaction due to low exothermic heat generated from the chemical reaction, which is needed to create proper closed cell formation. When multiple layers are necessary to achieve the proper R-value, cross-hatching should be done. This technique aids in proper cohesion of passes. Successive passes should overlap 60 - 80% to ensure a smooth surface free of ridges. The thickness of the insulation should be measured with a depth gauge. A final pass should be applied to cover the holes made by the depth gauge and thermometer.

COLD STORAGE APPLICATIONS

Cold storage facilities require vapor barriers. Vapor barriers are typically applied to the warm side of the insulation system. EPS 2000 applied at a thickness of or greater than 1.25" is classed as a vapor barrier. Use 1" (25mm) lift passes, thicker passes in deep freezers can lead to severe cracking. Freezers require 2 lb foam, using lower density foam or an over catalyzed foam can also lead to severe cracking. Proper surface preparation may be necessary prior to the application of EPS 2000 in cold storage applications. Contact the EcoPolySeal Technical Service Department for more information about cold storage applications.

Materials used to construct refrigerated rooms are affected by temperature changes, like all common building materials. Gradual lowering of the temperature is designed to eliminate problems stemming from these temperature changes while at the same time withdrawing construction moisture, and testing the vapor barrier and mechanical system.

COLD STORAGE FACILITY COOL DOWN SCHEDULE

TIME PERIOD	MAX. TEMP. REDUCTION	MIN. ROOM TEMP
First 24 hours	-	75°F (24°C)
Second 24 hours	15°F (-9°C)	60°F (16°C)
Third 24 hours	15°F (-9°C)	45°F (7°C)
Fourth 24 hours	10°F (-12°C)	35°F (2°C)
Until room is dry (watch moisture on coils as an indicator)	0°F (-18°C)	35°F (2°C)

TEMPERATURE REDUCTION AFTER ATTAINING DRY STATE

TIME PERIOD	MAX. TEMP. REDUCTION	MIN. ROOM TEMP
First 24 hours	5°F (-15°C)	30°F (-1°C)
Second 24 hours	10°F (-12°C)	20°F (-7°C)
Third 24 hours	10°F (-12°C)	10°F (-12°C)
Fourth 24 hours	10°F (-12°C)	0°F (-18°C)
Fifth 24 hours	10°F (-12°C)	-10°F (-23°C)

HOW TO AVOID OVER SPRAY

Over spray with closed cell foams occurs for a variety of reasons such as spraying the product too cool, applying the product to a substrate that is too cold, not spraying perpendicular to the surface, and high wind conditions. Flash coating to warm the surface is not a recommended practice and may create unwanted over spray. Flash coats are very thin and may not have enough exothermic reaction present to properly cure. Excessive over spray may lead to blisters or delaminating of additional passes of foam or coating. Over spray can travel long distances and may adhere to objects left unprotected such as windows, buildings and automobiles. Protect anything that should not get foamed.

LIMITATIONS OF USE

EPS 2000 is a combustible material with a maximum continuous service temperature of 180°F (82°C). EPS 2000 should not be used in direct contact with chimneys, flues, steam pipes, recessed lighting or heat emitting devices. Consult the listing or label of such materials for clearance to combustibles. A minimum clearance of 3" (76mm) should be maintained when applying around recessed lighting, and it's important to avoid spraying inside electric outlets or junction boxes. Properly prep the job.

COLD WEATHER PROCESSING

The substrate and ambient temperature for EPS 2000 (summer) is > 50°F (10°C).

The substrate and ambient temperature for EPS 2000 (winter) is > 10°F (-12°C).

Low temperatures affect the foaming process in two ways.

1. Chemical reactions can be slowed due to reduced exothermic energy within the expanding mass, which could lead to poor cell structure, dripping and voids from slow plastic formation
2. This reduced temperature often leads to reduced yield.

The temperature and type of substrate has a greater influence on the quality of the foam than the temperature of the air because the rate of heat transfer from liquid to air is much slower than the rate from liquid to substrate. If the substrate temperature is too low, or it is a highly conductive material such as metal or concrete, the heat produced by the chemical reaction may be drawn into the substrate so rapidly that plastic formation and cell generation becomes very slow, thus reducing yield. It is not a good practice to use the heated chemicals to warm the surface (flash coat). Instead, if the substrate to be sprayed is too cold to produce proper foam, the substrate should be heated using an indirect fired heater or the foam should be sprayed on a warmer substrate on a warmer day. No open flame or direct heating is permitted during the spraying process.

THERMAL AND UV PROTECTION

Like all foam plastics, EPS 2000 must be separated from the living space by a 15 minute thermal barrier in accordance with applicable codes.

This product must not be used when the continuous service temperature of the substrate or foam is below -60°F (-51°C) or above 180°F (82°C).

EPS 2000 must be protected from direct exposure to sunlight; incidental exposure during construction may cause surface discoloration but will not degrade the performance of the foam.

VENTILATION

Ventilate during spray foam application and for a minimum of 24 hours following the application or until no objectionable odor remains. If not adequately ventilated during and shortly after application, the odors can be absorbed in adjacent materials such as fibrous insulation, wood framing and household or stored items. Sheet plastic should be placed over any absorbent material that cannot be removed during the spray and ventilation operation.

CHEMICAL STORAGE

EPS 2000 B-side resin is packaged in totes or in closed-head metal drums. EPS A-ISO is packaged in totes or in closed-head metal drums.

Store the B-side resin at temperatures between 59°F (15°C) and 77°F (25°C). Store the A-side isocyanate at temperatures between 50°F (10°C) and 100°F (38°C). Keep away from direct sunlight. Remove the transfer pump and tightly close the bungs of the EPS A-ISO and B-side drum after use. EPS 2000 B-side resin has a 6 month shelf life when stored within the acceptable storage temperatures and the drum is in its original condition with the bungs having never been removed. See EPS 2000 B-side SDS for additional product information.

FOR MORE INFORMATION

Visit www.EcoPolySeal.com or call 800-713-1646 for more information on health, safety and environmental protection with respect to polyurethane chemicals.

Disclaimer: The information herein is to assist customers in determining whether our products are suitable for their applications. We request that customers inspect and test our products before use and satisfy themselves as to contents and suitability. Nothing herein shall constitute a warranty, expressed or implied, including any warranty of merchantability or fitness, nor is protection from any law or patent inferred. All possible patent rights are reserved. The foam product is combustible and must be protected in accordance with applicable codes. Protect from direct flame and spark contact, around hot work for example. The exclusive remedy for all proven claims is replacement of our materials