

EnviroSeal® HFO is an exceptional product and can be used for application to most construction materials including, but not limited to, wood, masonry, concrete, and metal. All surfaces to be sprayed with foam should be clean, dry, and free of dew or frost. All metallic surfaces to be sprayed with foam must be free of oils, grease, mill, scale, rust, etc.

As with all spray polyurethane foam systems, improper application techniques should be avoided. Improper techniques include, but are not limited to, excessive thickness of spray polyurethane foam, off ratio material, and spraying into or under rising foam. The potential results of improperly installed spray polyurethane foam include dangerously high reaction temperatures that may result in fire, and offensive odors that may or may not dissipate.

Improperly installed foam must be removed and replaced with properly installed spray polyurethane foam. It is the responsibility of the applicator to thoroughly understand all equipment, technical information, and the safe operating procedures that encompass a proper spray polyurethane foam application.

Application Guidelines:

Polyurethane foam systems should be processed through commercially available spray equipment designed for that purpose by a qualified professional applicator. The proportioning equipment must be capable of maintaining all designated ratios, temperature settings, etc. as shown in the settings chart. The gun should be of the internal mix type, that provides thorough blending of the two components. The equipment shall be of the heated airless type capable of maintaining 160°F at the gun by use of both primary heaters and heated hoses. The use of 2:1 transfer pumps is recommended for supplying the liquid components to the proportioner. It is the responsibility of the professional applicator to thoroughly understand all equipment, technical information, and the safe operating procedures that encompass a proper a spray polyurethane foam application.

Proper Storage of Raw Materials:

Shelf life is six (6) months from date of manufacture, when stored in original unopened containers at 50°F to 80°F. Store in a dry and well-ventilated area.

Raw materials must be kept warm. Cold chemicals can cause poor mixing, pump cavitation, or other process problems due to higher viscosity at lower temperatures. The material will need to be conditioned between 70°F to 90°F for 48 hours before use. Avoid storing drums on concrete or metal floors in cold (winter) conditions. Do not store in direct sunlight. Keep drums tightly closed when not in use.

Application Parameters

Storage Temperature	50°F – 80°F
In Use Temperature	70°F – 80°F
Ambient Air Temperature	30°F – 120°F*
Substrate Temperature	30°F – 120°F*
Moisture Content of Substrate	Less Than 19%
Maximum Lift Per Pass	Not to Exceed 4"

Mixing Requirements

Resin (B Side)	DO NOT MIX
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Product	Pass	Max Lift
EnviroSeal	Single	4"
HFO	Double	3" + 2.5"

Processing Requirements

All material must be a minimum of 70°F before dispensing.

Equipment Settings

Pre-Heaters: (A) Component - ISO	100°F – 135°F
Pre-Heaters: (B) Component - Resin	100°F – 135°F
Hose Heat	100°F – 135°F
Fluid Pressure	1,000 – 1,500 psi - Dynamic
Mixing Ratio	1:1 By Volume
Recommended Mix Chamber/	10 – 15 Lbs./Minute (i.e.
Module Size:	01-GRACO AR4242)

These are recommended "Initial" Settings. Settings may vary based on the type of equipment used and the substrate temperatures at the time of the application.

Safe Handling Of Liquid Components:

When removing bungs from containers, use caution as contents may be under pressure. Loosen the small bung first to allow any built-up gas to escape before completely removing. Avoid prolonged breathing of vapors. For further information refer to "MDI-Based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal" publication AX-119 published by the Alliance For The Polyurethanes Industry, Arlington, VA.

Proximity To Heat Sources:

Keep a minimum distance of three (3) inches between EnviroSeal HFO and heat sources, such as combustion appliance flues, recessed light fixtures, insulation contact rated (IC) light fixtures, fireplace flues, etc

* For cold weather substrates below 30°F refer to the spray process section on page 3

Material Handling:

Respiratory protection is mandatory, due to the reactive nature of these components. The vapors and liquid aerosols present during application, and for a short period thereafter, must be considered. To minimize potential risks from overexposure through inhalation, skin, or eye contact, appropriate protective measures must be taken. These protective measures include adequate ventilation, safety training for installers and other workers, use of appropriate personal protective equipment, and a medical surveillance program. It is crucial that the applicator read and become familiar with all available information on the proper use and handling of spray polyurethane foam. Additional Information is available at www.quadrantpm.com or by contacting the Quadrant Performance Materials Technical Services or Product Engineering Depts. at 972-542-0072.

Personal Protection Equipment:

Spraying of polyurethane foam results in the atomizing of the components to a fine mist. Inhalation and exposure to the atomized particles must be avoided.

Spraying of polyurethane foam results in the atomizing of the components to a fine mist. Inhalation and exposure to the atomized droplets must be avoided. Applicators must use personal protective equipment recommended by the Center for Polyurethanes Industry for use in high-pressure spray foam application. Precautions include, but are not limited to

- Full-face mask or hood with fresh air source
- Fabric coveralls
- Non-permeable gloves
- Solvent-resistant gloves when handling new materials and cleaning solvents

Applicators must use personal protective equipment recommended by the Center for Polyurethanes Industry for use in high-pressure spray foam application. For additional information on appropriate personal protection equipment selection and use, visit www.spraypolyurethane.org.

Mechanical Ventilation Requirements:

Industry best practices require a mechanical ventilation system to be used in any workplace where EnviroSeal spray polyurethane foam is applied. The requirement for this ventilation system is at a minimum ventilation rate during spray application and for a period of 24 hours after the spray application is complete. The mechanical ventilation system to be used in the workspace needs to be able to exhaust air directly to the exterior of the building at a minimum rate of 0.3 Air Changes per Hour (ACH). The volume of the workspace is needed to determine proper system design. If, for example, the volume of the workspace is 5,000 ft³ then the minimum capacity of the ventilation system equals 5,000 ft³ x 0.3 ACH = 1,500 ft³/h = 25 ft³/min (cfm). Note that 0.3 ACH is a minimum ventilation rate that most commercial ventilation fans can easily achieve, though it is recommended that this level be exceeded. The more ventilation utilized in the workspace, the better.

Further information can be found in the "Guidance on Ventilation During Installation of Interior Applications of High-Pressure Spray Polyurethane Foam" available from the American Chemistry Council and Spray Foam Coalition.

Dissimilar Resins:

When changing the "B" side (resin) to another type of spray polyurethane foam, it is very important that the supply hoses, recirculation lines, and drum pumps are completely drained. Any resin on the drum pump must be completely removed before inserting into the drum of new material. Mixing of dissimilar product types (particularly closed cell into open cell) will contaminate the resin in the new and/or old drum. It is the responsibility of the applicator to follow this guideline to avoid contaminating the resin.

Spray Process:

This spray system should be applied in passes of uniform thickness from a minimum of one half (1/2) inch to a maximum of four (4) inches. Do not spray EnviroSeal HFO at more than 4" in a single pass. If this thickness is exceeded, it will adversely affect the quality and physical properties of the finished product. Additional passes after a double pass will need the recommended cooling time. Allow ten minutes between each pass or until surface temperature reaches 100°F (or ambient) to allow for cooling. Multiple layers can be applied to reach the desired thickness and R-value. The internal temperature building up within the foam may cause charring or thermal degradation. Under certain conditions, applications exceeding this thickness may cause spontaneous combustion of the foam to occur, even hours after product was applied.

For EnviroSeal HFO, you ideally want a .5–1 second brown time when spraying a dot on your substrate. If you spray a dot on the substrate and the chemical hits as white foam, then you are too hot and losing your blowing agent into the air, reducing yield. Turn your temps down in 2–3 degree increments until you have a consistent .5–1 second brown time. If you spray a test dot on your substrate and the chemical hits as brown and runny before turning into white foam, then you are too cold. Bring your temps up in 2–3 degree increments until you have your correct brown time.

As with all spray polyurethane foam systems, avoid improper application techniques including, but not limited to, excessive thickness of spray polyurethane foam, off-ratio material, and spraying into or under rising foam. Potential results of improperly installed spray polyurethane foam include dangerously high reaction temperatures that may result in fire and offensive odors that may or may not dissipate. Spray polyurethane foam that is not applied at the correct equipment settings and application parameters (off-ratio) will result in polyurethane foam with poor physical and adhesion properties. Any spray polyurethane foam applied off-ratio must be completely removed and replaced with properly installed spray polyurethane foam.

It is the responsibility of the applicator to thoroughly understand all equipment technical information and the safe operating procedures that encompass a proper spray polyurethane foam application.

Spray polyurethane foam insulation is a combustible material. High intensity heat sources, such as welding or cutting torches, must not be used in close proximity to any polyurethane foam. Spray polyurethane foam insulation is a combustible material.

High intensity heat sources, such as welding or cutting torches, must not be used in close proximity to any polyurethane foam. Large portions of excess spray polyurethane foam should be removed to an outside safe area, cut into smaller pieces, and allowed to cool before discarding into a trash receptacle.

Environmental And Substrates Conditions:

Applicators must recognize and anticipate climatic conditions prior to spray polyurethane foam application. Ambient air, substrate temperature, and moisture are all critical determinants of foam quality. Variations in ambient air and substrate temperature will influence the chemical reaction of the two components, which directly affects expansion rate, amount of rise, yield, adhesion, and the resultant physical properties of the foam insulation. It is the applicator's responsibility to ensure the spray polyurethane foam system is being applied within physical parameters. Proper applications may require adjustments to one or more of the following: spray techniques, substrate, application, or job site temperature.

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Substrate temperature at the time of the application is recommended to be between 40°F to 120°F. If spraying below 40°F, refer to the spray process section or contact the Quadrant Performance Materials Technical Services Department prior to application. Generally speaking, the warmer the surface, the better the adhesion and yield.

The presence of moisture greatly affects the physical characteristics of spray polyurethane foam. The moisture content of the substrate should not exceed 19%. Polyurethane foam cannot be applied to any substrate that has surface moisture such as rain, condensation, dew, frost, etc. Any polyurethane foam applied during these conditions must be completely removed and the substrate allowed to thoroughly dry prior to a new application.

Cold weather temperature application may require changing of spray technique, material temperatures, application temperatures, substrate preparation, and environmental conditioning. Consult with a Quadrant Performance Material Technical Representative for details.

Skin Exposure:

Immediately remove any clothing soiled by the product. Immediately wash skin with water and soap and rinse thoroughly. Remove breathing apparatus only after contaminated clothing have been completely removed.

In case of irregular breathing or respiratory arrest, provide artificial respiration. First Aid responders should pay attention to self protection and use the recommended protective clothing.

Inhalation:

Supply fresh air or oxygen; call a medical professional.

Eye Contact:

Immediately rinse affected eye(s) for several minutes under running water. Consult a doctor and the EnviroSeal HFO SDS for proper treatment.

Accidental Ingestion:

Immediately call a doctor. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

Environmental Precautions:

Inform the relevant authorities if the product has caused environmental pollution. Do not allow material to enter sewers/ surface or ground water systems.

Material Spill Containment And Clean Up:

Isolate and keep unnecessary and unprotected personnel from entering the spill area. Spilled material may cause a slipping hazard. Ensure adequate ventilation. Contain spilled material if possible. Absorb with materials such as: dirt, sand, sawdust, or kitty litter. Collect in suitable and properly labeled containers. Contact local and state government for proper cleanup and disposal procedures.

Waste Disposal:

Dispose of raw chemical only in a licensed disposal facility. Do not discharge into waterways or sewer systems. Contact Chemtrec (800) 424-9300 or Clean Harbors (800) 444-4244.

Container Disposal:

Steel drums must be emptied (as defined by RCRA, Section 261.7 or state regulations that may be more stringent) and can be sent to a licensed drum re-conditioner for reuse, a scrap metal dealer, or an approved landfill. Drums destined for a scrap dealer or landfill must be punctured or crushed to prevent reuse. Do not repurpose used drums for any activity.

Technical Assistance:

For additional assistance please contact the Quadrant Performance Materials Technical Services or Product Engineering Depts. at 972-542-0072.

Disclaimer

Technical information as shown in this document is intended to be used as general guidelines only. Please refer to the Safety Data Sheet and product label prior to using this product.

Finished Foam Protection:

The finished surface of the sprayed polyurethane foam should be protected from the adverse effects of direct exposure of ultraviolet light from the sun. Exposure will cause dusting and discoloration.



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