

Div. 7-Thermal and Moisture Protection
 Closed-Cell Insulation
 Technical Datasheet: January 1, 2012

Product Description

PROSEAL closed-cell spray applied polyurethane foam is a two component, medium-density, structural insulation system designed for commercial, residential, and industrial applications. Closed-cell polyurethane foam yields a high R-value and minimizes air and moisture infiltration. The spray applied nature of PROSEAL systems allows for tremendous sealing properties which contributes to healthier homes and workplaces. The rigid nature of PROSEAL increases overall structural integrity resulting in more durable structures. PROSEAL expands during application to provide increased performance values by sealing the building envelope.

The PROSEAL system is comprised of an "A" component or aromatic diisocyanate and a blended "B" component which includes polyols, fire retarding materials, catalysts and non-ozone depleting blowing agents.

Recommended Uses

- Walls
- Floors
- Unvented Crawl Spaces
- Foundations
- Cold Storage
- Unvented Attics
- Vented Attics
- Concrete Slabs
- Freezers
- Ceilings
- Piping
- Vented Crawl Spaces
- Ducts •Tanks
- Coolers

Product Reactivity

- Surface Temperature: 50-120°F
- Cream Time at 75°F: 2-3 seconds
- Tack Free Time at 75°F: 7-8 seconds
- Cure Time at 75°F: 4 hours
- *Dependent upon hose length

Environmental Consideration and Substrate Temperatures

Applicators must recognize and anticipate climatic conditions prior to application to ensure highest quality foam and to maximize yield. Ambient air and substrate temperatures, moisture, and wind velocity are all critical determinants of foam quality. Extreme ambient air and substrate temperature will influence the chemical reaction of the two components, directly affecting the yield, adhesion and the resultant physical properties of the foam insulation. To obtain optimum results, PROSEAL should be spray-applied to substrates when ambient air and surface temperatures are between 50°F and 120°F. All substrates to be sprayed must be free of dirt, soil, grease, oil and moisture prior to the application of PROSEAL. Moisture in any form: excessive humidity (>85%R.H.) rain, fog, or ice will react chemically will adversely affect system performance and corresponding physical properties. Application should not take place when the ambient temperature is within 5°F of the dew point. Wind velocities in excess of 12 miles per hour may result in excessive loss of exotherm and interfere with the mixing efficiency of the spray gun affecting foam surface texture, cure, physical properties and will cause overspray.

Precautions must be taken to prevent damage to adjacent areas from fugitive overspray.

Processing Parameters

Store at 65° to 85°F in a dry and well-ventilated area. Material in containers should be maintained at 65°F to 75°F while in use. Heated trailers, hotboxes, or heated tank storage may be necessary. Material temperature should be confirmed with a thermometer or IR gun. (continued)

Test values were generated from laboratory samples and actual properties may vary with equipment and application conditions..

Processing Parameters & Physical Characteristics

- Pre-heater Temperature: "A" and "B" 125-135°F
- Hose Temperature: "A" and "B" 125-135°F
- Pressures: 1000-1400 psi (dynamic)*
- Mix Ratio: 1 to 1 by volume "A" to "B"
- Viscosity at 75°F: 400-500 cps "B" Component

PROSEAL

Credentials/Certifications
 PROSEAL is a Class I formulation, as set forth under Underwriters Laboratories ASTM E-84 (UL 723, NFPA 255, UBC Standard 8-1).

Surface Burning Characteristics ASTM Method E84 (UL 723)

Class I

Flame Spread		≤25
Smoke Development		≤450
Nominal Thickness (Inches)		4.0

NOTE:
 The flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

Properties	Test Method	Value
Fungi Resistance:	ASTM G-21	Zero Rating
R-Value (aged):	ASTM C-518	6.9 per inch 24 @ 3.5" 37.8 @ 5.5" 54.3 @ 7.9"
Sound Transmission Coefficient	ASTM E-90-85/E413	43 (STC)
Noise Reduction Coefficient:	ASTM C-423	0.2 (NRC)
Compressive Strength:	ASTM D-1621	15-20 psi
Core Density:	ASTM D-1622	1.9 - 2.2 lbs./ft ³
Closed Cell Content:	ASTM D-2856	>92%
Tensile Strength:	ASTM D-1623	55 - 65 psi
Moisture Vapor Transmission (permeance):	ASTM E-96	.80 Perm @ 1" .23 Perm @ 3.5" .14 Perm @ 5.5" .10 Perm @ 7.9"
Dimensional Stability:	ASTM D-2126	(7 days at 158°F, 95%RH)
Air Leakage Rate:	ASTM E-283	6% 0.0001 (L/s)/m ²

Processing Equipment

2:1 transfer pumps are recommended for material transfer from container to the proportioner. The plural component proportioner must be capable of supplying each component within $\pm 2\%$ of the desired 1:1 mixing ratio by volume. Hose heaters should be set to deliver 125°F to 135 °F materials to the spray gun. These settings will ensure thorough mixing in the spray gun mix chamber in typical applications. Optimum hose pressure and temperature will vary with equipment type and condition, ambient and substrate conditions, and the specific application. Some equipment may require you to heat drums to achieve optimum material temperature. It is the responsibility of the applicator to properly interpret equipment technical literature, particularly information that relates acceptable combinations of gun chamber size, proportioner output, and material pressures. The relationship between proper chamber size and the capacity of the proportioner's pre-heater is critical. Contact your local representative for specific recommendations, pricing, and availability of spray and auxiliary equipment.

CAUTION: Extreme care must be taken when removing and reinstalling drum transfer pumps so as NOT to reverse the "A" and "B" components.

Thermal Barrier

IRC and IBC codes require that SPF be separated from the interior of a building by an approved fifteen (15) minute thermal barrier, such as 1/2" gypsum wall board or equivalent, installed per manufacturer's instructions and corresponding code requirements. There are exceptions to the thermal barrier requirement:

- (1) Code authorities may approve coverings based on fire tests specific to the SPF application. For example, covering systems that successfully pass large scale tests may be approved by code authorities in lieu of a thermal barrier;
- (2) SPF protected by 1" thick masonry does not need a thermal barrier. Certain materials that offer protection from ignition, called "ignition barriers," may not be considered as thermal barrier alternatives unless they comply with NFPA 286. Applicators should request test data and code body approvals or other written indications of acceptability under the code to be sure that the product selected offers code-compliant protection.

Applicators should ensure the safety of the jobsite and construction personnel by posting appropriate signs warning that all "hot work" such as welding, soldering, and cutting with torches should take place no less than 35 feet from any exposed foam. If "hot work" must be performed all spray polyurethane foam should be covered with an appropriate fire or welder's blanket, and a fire watch should be provided.

Vapor Retarder

PROSEAL qualifies as a vapor retarder as defined by the International Code Council and ASHRAE (class II) at a minimum thickness of 1 inch. Building construction types with a persistent, high moisture drive require additional moisture remediation, as local building codes dictate. This is including climate zones 5 and higher in the U.S., as defined in 2004 Supplement to the IRC, Table N1101.2.

Per Pass Application

Applicators should limit PROSEAL thickness to 3" per pass for optimal processing and physical properties. Second passes if necessary should be applied after 10

minutes of cure time. If additional passes are needed, applicators should wait 30 minutes between passes for optimal foam processing. Handling and Safety Respiratory protection is MANDATORY! Contact PROFOAM for a copy of the Model Respiratory Protection Program developed by API or visit their website at www.polyurethane.org. Avoid contact with skin, eyes, and clothing. Open containers carefully, allowing any pressure to be relieved slowly and safely. Wear chemical safety goggles and rubber gloves when handling or working with these materials. In case of eye contact, immediately flush with large amounts of water for at least fifteen minutes, consult a physician immediately. In case of skin contact, wash area with soap and water. Wash clothes before reuse.

Fire Hazard

Fires involving either of these components may be extinguished with carbon dioxide, dry chemical, or inert gas. Application of large quantities of water spray is recommended for spill fires. Personnel fighting the fire must be equipped with NIOSH approved self-contained breathing apparatus.

Cleaning of Spills or Leakage

Cover the area with an inert absorbent material such as clay or vermiculite and transfer to metal waste containers. Saturate with water but do not seal the container with the isocyanates and water mixture. The area should then be flushed with large amounts of water, in the case of the "B" component, or a 5% aqueous ammonia, in the case of the "A" component. Dispose of these materials in compliance with federal, state and local regulations.

Caution: Isocyanates will react with water and generate carbon dioxide. This could result in rupture of closed containers.

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