ENVELO-SEAL™ 2.7 CLI
Spray Foam

Closed-Cell Roofing Foam Insulation – Thermal and Moisture Protection

Revised 06.26.13 NP

DESCRIPTION

ENVELO-SEAL™ 2.7 CLI is a two-component closed-cell polyurethane foam insulation system, designed for spray applications. ENVELO-SEAL™ 2.7 CLI was developed using an EPA approved Zero ODP blowing agent. This product provides superior energy efficiency and air infiltration control. This product is an approved roofing material.

RECOMMENDED USES

- Roofing Systems
- Commercial Construction
- Industrial Construction

PRODUCT REACTIVITY	
Processing Designation	Surface Temperature
Winter	45 – 70°F
Regular	65 – 110°F
Summer	95 - 140°F
Note: Adhesion should not be tested within one hour of application.	

SURFACE BURNING CHARACTERISTICS

ASTM Method E84	Class I	**Note:** The flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions
Flame Spread	<25	
Smoke Development	<450	

ENVELO-SEAL™ 2.7 CLI foam-forming system is available in a Class I formulation, as set forth under Underwriters Laboratories UL 723 (ASTM E84), and possesses the flammability characteristics shown below.

ENVELO-SEAL™ 2.7 CLI is an approved roofing material and has completed the Underwriters Laboratories testing for UL-790 approval and is listed as a Class A Roofing System under U.L. File #7622

ENVELO-SEAL™ 2.7 CLI includes three 2.7 pcf density systems designed for processing on substrates 45 – to 140°F. For single pass applications the recommended temperature range applies to the substrate temperature; for multiple-pass applications the temperature recommendations apply to the ambient temperature. Substrate composition will influence product selection. Consult your SPI representative to determine which product best satisfies you application requirements.

TYPICAL PHYSICAL PROPERTIES *	
R-Value (aged): ASTM C-518	6.64 at 1 inch
Compressive Strength: ASTM D1621	44 psi
Core Density: (nominal) ASTM D1622	2.7 lbs/ft^3
Closed Cell Content: ASTM D2856	>90%
Tensile Strength: ASTM D1623	60 psi
Water Vapor Transmission: ASTM E96 B	1.56 Perms at 1 inch
Dimensional Stability: ASTM D2126	% volume change
7 days @158°F, ambient RH	>4%
7 days @ 158°F, 97% RH	>4%
7 days @ -22°F, ambient RH	>4%
Water Absorption ASTM D-2842 96 hour immersion	0.08
Shear Strength ASTM C 273	40 (lbs/in^2)

PROCESSING PARAMETERS AND PHYSICAL CHARACTERISTICS	
Pre-heater Temperature:	"A" and "B" 120 – 130°F
Hose Temperature:	"A" and "B" 120 – 130°F
Pressures:	1000 – 1200 psi (dynamic)*
Mix Ratio Parts:	1 to 1 by volume "A" to "B"
Viscosity at 70°F:	500 – 650 cps "B" Component
	150 – 250 cps "A" Component
*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, substrate temperatures, moisture, and wind velocity are all critical determinants of foam quality and selection of the appropriate reactivity formulation. Variations in ambient air and substrate temperatures will influence the chemical reaction of the two components, directly affecting the expansion rate, amount of rise, yield, adhesion, and the resultant physical properties of the foam insulation.

To obtain optimal results the ENVELO-SEAL™ 2.7 CLI should be spray-applied to substrates when ambient air and surface temperatures fall within the range of 50° - 120°F. All substrates to be sprayed must be dry at time of application. Moisture in the form of rain, fog, frost, dew, or high humidity (>85%R.H.), will react chemically with the mixed components, adversely affecting the polyurethane foam formation, dimensional stability and physical properties of the finished product. Wind velocities in excess of 12 miles per hour may result in loss of exotherm and interfere with the mixing efficiency, affecting foam surface, cure, and physical properties, and will cause overspray. Precautions must be taken to prevent damage to adjacent areas from overspray.

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PROCESSING EQUIPMENT

Store materials between 60° to 80°F in a dry and well-ventilated area. Keep material from freezing. 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 an infrared gun.

2:1 transfer pumps are recommended for material transfer from container to proportioner. The plural-component proportioner must be capable of supplying each component within ± 2% of the desired 1:1 mixing ration by volume. Hose heaters should be set to deliver 120°F to 130°F material 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 warm containers to achieve optimum material temperature. It is the responsibility of the applicator to properly interpret equipment technical literature, particularly information that relates to acceptable combinations of gun chamber size, proportioner output, and material pressures. The relationship between proper chamber size and capacity of the proportioner's pre-heater is critical.

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

PER PASS LIMITATIONS

For optimal physical properties, foam made with ENVELO-SEAL™ 2.7 CLII system pass thickness should be limited to 2" per pass. If subsequent passes are needed, applicators should wait 10 minutes between passes to allow reaction heat to dissipate. The exotherm reaction can cause temporary substrate themal rise in excess of 150°F, which may result in substrate thermal expansion. If the substrate then contracts when the reaction heat dissipates, substrate deformation can occur.

Handling and Safety

Respiratory protection is MANDATORY! 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.

WARRANTY & DISCLAIMER

Specialty Products, Inc. has no role in the manufacture of the finished polymer other than to supply its two components. It is vital that the person applying this product understands the product, and is fully trained and certified in the use of plural-component equipment.

Specialty Products, Inc., an Alaska corporation, warrants only that the two components of this product shall conform to the technical specifications published in the product literature.

The quality and fitness of the product are dependent upon the proper mixture and application of the components by the applicator. There are no warranties that extend beyond the description on the face of this instrument.

Failure to apply the product within the parameters stated on this document shall void the warranty.

SPECIALTY PRODUCTS, INC. MAKES NO WARRANTY OF MERCHANTABILITY OF THE PRODUCT OR OF FITNESS OF THE PRODUCT FOR ANY PARTICULAR PURPOSE.

Specialty Products, Inc. makes no warranty as to the quality of any product modified, supplemented, tinted, or altered in any way after it leaves the manufacturing plant.

Specialty Products, Inc. does not warrant that this product is suitable for use as a liner for potable water containers. Use of this product in a potable water container could be hazardous to health if it is improperly processed or applied.

The liability of Specialty Products, Inc. for any nonconformity of the product to its technical specifications shall be limited to replacement of the product.

The sole exclusive remedy of buyer, which is to have Specialty Products, Inc. replace any nonconforming product at no cost to buyer, is conditioned upon buyer notifying Specialty Products, Inc. or its distributor in writing of such defect within thirty days of the discovery of such defect.

Specialty Products, Inc. shall not be liable for any direct, incidental, or consequential damages resulting from any breach of warranty.

The data presented herein is intended for professional applicators or those persons who purchase or utilize this product in the normal course of their business.

The potential user must perform any pertinent tests in order to determine the product's performance and suitability in the intended application, since final determination of fitness of the product for any particular use is the responsibility of the buyer.

The aforementioned data on this product is to be used as a guide and is subject to change without notice.

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