Bayseal™ 2.4

Bayer MaterialScience

Div. 7-Thermal and Moisture Protection
Closed-Cell Roofing Foam
Technical Datasheet: 05/23/08

Product Description

Bayseal 2.4 is a two-component, closed-cell, polyurethane foam system, designed for spray applications. This foam system offers high compressive strengths, smooth aesthetics and a broad application temperature window for extended project opportunities.

After installation SPF provides seamless protection by sealing cracks, crevices and holes while insulating decks from temperature extremes. Polyurethane foam also eliminates condensation preventing mold growth, enhances energy efficiency and lowers lifecycle costs by providing a low maintenance deck solution.

Unique Properties

Bayer MaterialScience's "A" component is a polymeric disocyanate. The "B" component is a combination of polyols, catalytic agents and non-ozone-depleting HFC-245fa blowing agent.

Recommended Uses

- Roofing Systems
- Agricultural Applications
- Tank Insulation

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 and selection of the appropriate reactivity formulation. Variations in ambient air and substrate temperature 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 optimum results, Bayseal 2.4 should be spray-applied to substrates when ambient air and surface temperatures fall within a range of 50ºF to 120ºF. All substrates to be sprayed must be dry at the 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 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 Equipment

Store at 65º to 85ºF in a dry and well-ventilated area. Material in containers should be maintained at 65ºF to 75ºF while in use. Heated trailers, hotboxes, or heated tank storage may be necessary. Material temperature should be confirmed with a thermometer or IR gun. Do not configure equipment to recirculate Bayseal 2.4 from proportioner back into drum. Do not recirculate or mix other suppliers' "A" or "B" component into Bayseal 2.4 containers. (continued)

Typical Physical Properties

Properties	Test Method	Value
"R" Value (initial):	ASTM C-518	6.3 per inch
Compressive Strength:	ASTM D-1621	40-45 psi
Core Density:	ASTM D-1622	2.4 lbs./ft^3
Closed Cell Content:	ASTM D-2856	>92%
Tensile Strength:	ASTM D-1623	Equal to Tensile
Water Absorption:	ASTM D-2842	.04 lbs./ft^3
Dimentional Stability:	ASTM D-2126	% of Volume Change
	28 days at 158°F, 95%RH	< 5% Actual 2.50%

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 RatioParts:	1 to 1 by volume "A" to "B"
Viscosity at 77°F:	500-700cps "B" Component
	200-300cps "A" Component

Note: Adhesion should not be tested within one hour of application

Product Reactivity

Processing Designation:	Winter	Regular	Summer
Surface Temperature:	45-70°F	70-90°F	above 90°F
Cream Time (Seconds):	1.5-2.5	2-3	3-4
Tack Free Time (Seconds):	5-6	7-8	9-10

*Dependent upon hose length

Test values may vary depending on type of equipment, equipment settings and environmental conditions.

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Credentials/Certifications

Bayseal 2.4 is available in a Class II formulation, as set forth under Underwriters Laboratories (UL 723, ASTM E84), and possess the flammability characteristics shown:

Underwriters Laboratories UL 723, Surface Burning Characteristics

ASTM Method E84

	Class I	Class II	Class III
Flame Spread	≤25	≤75	Non-rated
Smoke Development	≤450	≤450	Non-rated

Processing Equipment (continued)

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 ± 2% of the desired 1:1 mixing ratio by volume. Hose heaters should be set to deliver 125ºF to 135 ºF 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 may vary as a function of the type of equipment, ambient and substrate conditions, and the specific application. 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. Mechanical purge spray guns (specifically direct impingement or DI type) are recommended over air purge guns for highest foam quality. Contact your local BaySystems 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 a thermal barrier, which is applied over SPF to slow thermal rise during a fire, and delay its involvement in a fire. A building code definition of an approved thermal barrier is one that is equal in fire resistance to 1/2 inch gypsum board. Thermal barriers limit the temperature rise of the underlying SPF to not more than 121°C (250°F) after 15 minutes of fire exposure in compliance with ASTM-E119 (Test Methods for Fire Tests of Building Construction Materials). Thermal barriers meeting this criterion are termed a "15 minute thermal barrier" or classified as having an "index of 15". BaySystems recommends that an approved thermal barrier separate Bayseal 2.4 from the building interior unless waived by a local building code official. 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 ASTM E-119. Just because a material is advertised as a "thermal barrier" or "ignition barrier" does not mean that it has been tested in conjunction with SPF and approved by a code agency or a local code official. 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.

Exotherm Caution

Spray foam liquid to cellular plastic transition depends upon an exothermic (heat-producing) reaction between the "A" and "B" components. Applicators should limit Bayseal 2.4 thickness to 2" per pass to avoid fire hazards resulting from excessive heat generation. If subsequent passes are needed, applicators should wait 10 minutes between passes to allow reaction heat to dissipate. The exothermic reaction can cause temporary substrate thermal rises in excess of 150ºF, which may result in substrate thermal expansion. If the substrate then contracts when the reaction heat dissipates, substrate deformation can occur.

Material Safety Data Sheets are available on this polyurethane foam material. Any individual who may come in contact with these products should read and understand the MSDS.

Handling and Safety
Respiratory protection is MANDATORY! Contact Bayer MaterialScience for a copy of the Model Respiratory Protection Program developed by API or visit their website at www.polyurethane.org. Persons with known respiratory allergies should avoid exposure to the "A" component. The "A" component contains reactive isocyanate groups while the "B" component contains amine and/or organometallic catalysts with blowing agents. Both materials must be handled and used with adequate ventilation. The vapors must not exceed the TLV (0.02 parts per million) for isocyanates. Avoid breathing vapors. Wear a NIOSH approved respirator. If inhalation of vapors occur, remove victim from contaminated area and administer oxygen if breathing is difficult. Call a physician immediately. 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 immediatly. 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.

Disclaimer

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