



BAYSEAL™ CC

*Spray-Applied Polyurethane Foam Insulation
Division 7-Thermal and Moisture Protection
ICC-ESR 2072*

Product Description

Bayseal closed-cell (CC) spray-applied polyurethane foam insulation is a two component, HFC-245fa blown, medium density, structural system designed for commercial, industrial and residential insulation applications.

Closed-cell polyurethane foam yields a high R-value and minimizes air and moisture infiltration. Bayseal CC can increase structural integrity. This product may also contribute to a healthier indoor environment by helping to control problems associated with moisture vapor drive. The fluid applied, expanding nature of Bayseal CC foam-forming system during application provides increased performance value by sealing the building envelope.

The Bayseal CC foam-forming system is comprised of an “A” component or aromatic diisocyanate manufactured by Bayer MaterialScience LLC and a blended “B” component which included polyols, fire retarding materials, and additives.

Bayseal CC foam is available in two grades for warm and cold weather applications; suggested ambient substrate temperatures are specified below:

Grade	Substrate/Ambient Temperature
Standard	50°F to 120°F
Polar	30°F to 80°F

Recommended Uses

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

As with any product, use of Bayseal CC foam-forming system must be tested (including, but not limited to, field testing) in advance by the user to determine suitability.

Typical Physical Properties*

Properties	Test Method	Value
Fungi Resistance:	ASTM G-21	Zero Rating
R Value (aged):	ASTM C-518	6.9 at 1 inch 24 at 3.5 inches 38 at 5.5 inches ^a 54 at 7.9 inches ^a
Compressive Strength:	ASTM D-1621	25 psi (nominal)
Core Density:	ASTM D-1622	2.0 lbs./ft ³ (nominal)
Closed Cell Content:	ASTM D-2856	> 90%
Tensile Strength:	ASTM D-1623	60 psi (nominal)
Moisture Vapor Transmission (Permeance):	ASTM E-96	0.80 Perms at 1" 0.23 Perms at 3.5" 0.14 Perms at 5.5" 0.10 Perms at 7.9"
Water Absorption	ASTM D-2842	< 2%
Dimensional Stability: (158°F & 97% R.H.)	ASTM D-2126 % Change in Volume	< 10%
Air Leakage Rate:	ASTM E-2178	< 0.02 L s ⁻¹ m ⁻¹
Surface Burning Characteristics**	ASTM E-84 4-inches	Flame Spread Index < 25 Smoke Developed Index < 450

* These items are provided as general information only. They are approximate values and are not part of the product specifications.

** These numerical flame spread values are not a true reflection on how this or any material will perform in actual fire conditions.

^a Values extrapolated from 3.5-inch thick sample testing.

Environmental Consideration and Substrate Temperatures

Applicators must recognize and anticipate environmental conditions prior to application to ensure the highest quality foam and to maximize yield. Ambient air and substrate temperature, 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, the Bayseal CC system should only be spray-applied to substrates when ambient air and surface temperatures fall within the range of 30°F and 120°F. All substrates to be sprayed must be free of dirt, soil, grease, oil and moisture prior to application. Moisture in any form: excessive humidity (>85%R.H.), rain, fog, or ice will react chemically and 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. Primers may be necessary dependent upon conditions; consult a Bayer MaterialScience LLC technical service representative.

Wind velocities in excess of 12 miles per hour may result in excessive 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.

Storage Conditions

Store at 70°F to 80°F in a dry and well ventilated area, a minimum of 48 hours prior to application of material. Materials in containers should be maintained at 65°F to 85°F while in use. Conditioned trailers or tanks may be necessary. Material temperature should be confirmed with a thermometer or an infrared gun. Do not configure equipment to recirculate Bayseal CC components from proportioner back into drum. Do not recirculate or mix other suppliers' "A" or "B" component into Bayseal CC X system containers.

CAUTION: If components are below suggested temperatures, the increased viscosity of the components may cause pump cavitation resulting in unacceptable SPF application. If components are above suggested temperatures, there may be loss of blowing agent resulting in diminished yield.

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 120°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. It is the responsibility of the applicator to properly interpret equipment technical literature, particularly information that relates to the 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 for highest foam quality.

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

Processing Parameters and Physical Characteristics	
Pre-heater Temperature:	"A" and "B" 120-135°F
Hose Temperature:	"A" and "B" 120-135°F
Pressures:	1000-1500 psi (dynamic)*
Mix Ratio Parts:	1 to 1 by volume "A" to "B"
Viscosity at 75°F	400-500 cps "B" Component
Shelf Life	6 months @ 65°F to 80°F

* Dependent upon hose length.

Thermal Barrier

The International Building Code and International Residential Code requires 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. The International Building Code allows for omission of the prescribed thermal barrier in certain instance, such as:

- attics and crawlspaces with limited access
- approval by way of diversified testing, such as room corner protocols

Local building codes may vary and must be consulted for applicability of thermal barrier exceptions.

Handling Information

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 not take place until a thermal barrier or approved equivalent is installed over any exposed polyurethane foam.

Vapor Retarder

Bayseal CC qualifies as a vapor retarder as defined by the International Code Council and ASHRAE (Class II) at a minimum thickness of one inch. Building construction types with a persistent, high moisture drive require additional moisture remediation. The contractor should consult local building codes to establish the vapor retarder requirement.

Per Lift Application

Applicators should apply a maximum pass thickness of 2 inches, with a minimum of 30 minutes between passes.

Health and Safety Information

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling materials used to produce Bayseal CC foam. Before working with this product, you must read and become familiar with the available information on its risks, proper use and handling. This cannot be overemphasized. Information is available in several forms, e.g., material safety data sheets and product labels. More resources are available at spraypolyurethane.com, polyurethane.org, sprayfoam.org, baycareonline.com, or by contacting the Bayer MaterialScience Product Safety and Regulatory Affairs Department in Pittsburgh, PA.

Note: The information contained in this bulletin is current as of October 2011, please contact Bayer MaterialScience to determine whether this publication has been revised.

Bayer MaterialScience LLC

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