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Bayer MaterialScience

Product Information

BAYSEAL™CC Polar

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

Product Description

Bayseal CC Polar closed cell 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 Polar increases structural integrity of a structure. This product also contributes to a healthier indoor environment by controlling problems associated with moisture vapor drive. The fluid applied, expanding nature of Bayseal CC Polar system during application provides increased performance value by sealing the building envelope.

The Bayseal CC Polar system is comprised of an "A" component or aromatic diisocyanate manufactured by Bayer MaterialScience LLC and a blended "B" component which includes polyols, fire retarding materials, and additives.

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

Bayseal CC Polar 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"
Dimensional Stability: (158°F & 97% R.H.)	ASTM D-2126 % Change in Volume	< 10%
Air Leakage Rate:	ASTM E-283	< 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 highest quality foam and to maximize yield. Ambient air temperature, humidity, substrate temperatures, substrate 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 desired physical properties, Bayseal CC Polar system should be spray-applied to substrates when ambient air and surface temperatures are greater than 30°F but less than 80°F. All substrates to be sprayed must be free of dirt, soil, grease, oil and moisture prior to the application of Bayseal CC Polar system. 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 BaySystems 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, physical properties, and will cause overspray. Precautions must be taken to prevent damage to adjacent areas from overspray.

Processing Parameters

Store materials between 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. Conditioned trailers or tanks may be necessary. Material temperature should be confirmed with a thermometer or an infrared gun.

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 ± 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. 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 the capacity of the proportioner's pre-heater is critical. Contact your BaySystems representative for specific recommendations 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.

When converting from one SPF "B" system to another it is important to drain hoses and transfer pumps to minimize transitional material. SPF created during the transition should not be installed as insulation. This material should be discarded using an appropriate disposal method consistent with local codes and regulations.

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

** Dependent upon hose length.*

Thermal Barrier

The Model Building 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. The Model Building Codes allow for omission of the prescribed thermal barrier in certain instances by way of diversified testing, such as:

- attics and crawlspaces with limited access.
- successful testing in accordance with 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 Polar 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. In the model building code, climate zones 5 and higher in the U.S. require a Class II vapor retarder, as defined in 2004 Supplement To The IRC, Table N 1101.2.

Per Lift Application

Applicators should limit per lift thickness of Bayseal CC Polar to 3 inches for optimal processing and physical properties, with the following exception: If the lift encapsulates CPVC piping the maximum lift thickness is 2 inches. Second lifts, if necessary, should be applied after 10 minutes of cure time. If additional lifts are needed, applicators should wait 30 minutes between lifts for optimal foam processing.

Health and Safety Information

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling Bayseal CC Polar system. 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, safe use and handling brochures, 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 April 2010. Please contact Bayer MaterialScience to determine whether this publication has been revised.

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