

STYROFOAM™ BRAND SPF CA INSULATION

PRODUCT NAME

STYROFOAM™ Brand SPF CA Insulation

MANUFACTURER

Dow Chemical Canada ULC
Dow Building Solutions
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www.dowbuildingsolutions.com

PRODUCT DESCRIPTION

STYROFOAM™ Brand SPF CA Insulation is a two-component, spray-applied polyurethane foam that creates a seamless, monolithic barrier against water vapour and air, and allows for use on substrates as low as -1°C (30°F). This SPF successfully incorporates a zero ozone-depleting blowing agent in the manufacturing process.

STYROFOAM™ Brand SPF CA Insulation is available in two seasonal grades. Recommended processing temperatures:

Winter

-1°C to 21°C (30°F to 70°F) Ambient
-1°C to 16°C (30°F to 60°F) Substrate

Spring/Summer

7°C to 35°C (45°F to 95°F) Ambient
7°C to 38°C (45°F to 100°F) Substrate

PROPERTIES

STYROFOAM™ Brand SPF CA Insulation is created from a unique polyol technology, which offers improved foam yield and wide processing latitude. STYROFOAM™ Brand SPF CA Insulation expands during application to fill cavities, cracks and crevices, helping prevent uncontrolled air leakage and helping maintain consistent, comfortable indoor temperatures. The foam serves as both an insulation and air sealant for a wide range of new and retrofit applications throughout the building envelope. In addition, STYROFOAM™ Brand SPF CA Insulation resists moisture and provides structural reinforcement for improved racking strength. STYROFOAM™ Brand SPF CA

Insulation provides structural enhancement only. Use in conjunction with approved structural components and framing members consistent with local building code requirements.

STYROFOAM™ Brand SPF CA Insulation exhibits typical physical properties indicated in Table 1 when tested as represented.

PACKAGING

STYROFOAM™ Brand SPF CA Insulation is sold in 208 liter (55 gallon) steel drum sets. The A-side drum is labeled Dow 3019 Isocyanate with a net weight of 227 kg (500 lbs). The B-side is labeled STYROFOAM™ Brand SPF CA Polyol with a net weight of 222 kg (490 lbs).

APPLICABLE STANDARDS

Applicable test methods include:

- CAN/ULC-S705.1-01 (including Amendments 1 and 2) – Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Material – Specification
- CAN/ULC-S705.2-05 – Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Application

CODE COMPLIANCES

STYROFOAM™ Brand SPF CA Insulation has been evaluated by the Canadian Construction Materials Centre (CCMC) for compliance with CAN/ULC-S705.1-01 (including Amendments 1 and 2)

- CCMC Listing # 13501-L

FIRE PROTECTION

When cured, STYROFOAM™ Brand SPF CA Insulation is combustible and will burn if exposed to open flame or sparks from high-energy sources. Do not expose foam to temperatures above 107°C (225°F).

SAFETY AND CONDITIONS OF USE

- Read the instructions and Material Safety Data Sheets carefully before use. The MSDSs are available at www.dowbuildingsolutions.com/na. Visit www.spraypolyurethane.com for information covering a wide range of topics, including an overview of SPF health and safety guidelines, suggested personal protective equipment (PPE) and typical first-aid treatment.
- STYROFOAM™ Brand SPF CA contains isocyanate, hydrofluorocarbon blowing agent and polyol. Do not breathe vapour or spray. Use only with a NIOSH-approved supplied air respirator (SAR) in accordance with your company's respiratory protection program. Supplied air respirator or an approved air-purifying respirator equipped with an organic vapour sorbent and a P100 particulate filter is required to maintain exposure levels below ACGIH, OSHA, WEEL or other applicable limits. For situations where the atmospheric levels may exceed the level for which an air-purifying respirator is effective, use a positive-pressure, air-supplying respirator (air line or self-contained breathing apparatus).
- Isocyanate is irritating to the eyes, skin and respiratory system, and may cause sensitization by inhalation or skin contact. Sensitization, or the development of asthma, can lead to permanent respiratory problems. Do not consume or store food or tobacco in the work area. Wash hands and face prior to eating or smoking.

- STYROFOAM™ Brand SPF CA will adhere to most surfaces and skin. Do not get foam on skin. When spraying polyurethane foam, wear MDI-resistant (e.g., nitrile) or fabric gloves coated in nitrile, neoprene, butyl or PVC. Spray applicators should wear chemically resistant coveralls or full body suits with hoods and MDI-resistant fitted boots or booties. Professional judgment is necessary to determine the appropriate PPE necessary for secondary activities such as cleaning and trimming of the cured foam. Cured foam must be mechanically removed or allowed to wear off in time.
- The contents are under pressure.
- STYROFOAM™ Brand SPF CA should be installed by a trained SPF applicator.
- Cured STYROFOAM™ Brand SPF CA Insulation is combustible and may constitute a fire hazard. Do not expose foam to flame or temperatures above 107°C (225°F). Special precautions must be taken when welding in the vicinity of the insulation. If hot work must be done near exposed SPF, the insulation must be shielded from heat and sparks by a thermal barrier.

INSTALLATION PREPARATION

When required by code, STYROFOAM™ Brand SPF CA Insulation should be installed in accordance with CAN/ULC-S705.2.

Spray equipment must be capable of delivering proper ratio (1:1 by volume) of polymeric isocyanate and polyol blend at adequate temperatures and spray pressures (Table 2). Ensure that the “A” and “B” equipment is well marked and clean with no contamination. Ensure that the gun head is clean, the nozzle is properly sized, and all environmental controls are in good working order. Ensure that ambient and substrate temperatures are within the recommended guidelines specified in Table 2.

Substrate must be at least 3 degrees Celsius above dew point, with best processing results when ambient humidity is below 80 percent. Substrate must also be free of moisture (dew or frost), grease, oil, solvents and other materials that would adversely affect adhesion of the polyurethane foam. Moisture content of wood or concrete should be less than 18 percent for proper adhesion. Poor adhesion could result in stud-line cracking.

Cover unrelated equipment, tools, or other objects in the immediate area to protect from overspray. Be

aware of air movements in room from wind or fans and use screening as needed to protect areas from unintentional spraying.

Due to the exothermic reaction of the isocyanate and polyol blend, mixed components should be applied in layers (maximum 50 mm [2.0"] thickness per layer). Allow foam to cool completely before applying successive layers.

Contact a local Dow representative or visit www.dowbuildingsolutions.com for more specific instructions.

TABLE 1: TYPICAL PHYSICAL PROPERTIES OF STYROFOAM™ BRAND SPF CA INSULATION

Property	Test Method	Value
Ambient (Substrate) Temperature Range, °C Winter Processing Parameters Spring/Summer Processing Parameters	–	-1 to 21 (-1 to 16) 7 to 35 (7 to 38)
Air Permeance, L/s @ 75 Pa	CCMC 07272	0.0002
Apparent Core Density, kg/m ³ (lb/ft ³)	ASTM D1622	42 (2.6)
Compressive Strength, kPa	ASTM D1621	174
Dimensional Stability, % change, 28 days at -20°C at 80°C at 70°C, 97 +/- 3% RH	ASTM D2126 Modified	-1.0 +1.8 +4.9
Surface Burning Characteristics Flame Spread Classification Smoke Developed	CAN/ULC S102 and S127	235 485
Open Cell Content, volume %	ASTM 6226	6
Initial Thermal Resistance, m ² •K/W, 50 mm thick specimen	ASTM C518	2.27
Conditioned Thermal Resistance, m ² •K/W, 90 days at 60°C, 50 mm specimen	ASTM C518	2.18
Long-term Thermal Resistance, m ² •K/W 100 mm 75 mm 50 mm 25 mm	CAN/ULC S770	4.0 2.9 1.9 0.9
Tensile Strength, kPa	ASTM D1623	437
Water Absorption, % by volume	ASTM D2842	4
Water Vapour Permeance, ng/(Pa•s•m ²)	ASTM E96	51
Volatile Organic Compound Emissions, time to residential occupancy	CAN/ULC 774	24 hr
Method of Identification	Color Additive	Blue

APPLICATION

Ensure pumps, lines and gun are flushed of any previous material. Install the pumps in the drums, making sure that there is no cross-contamination of “A” and “B” side equipment. It is recommended to install a desiccated air dryer on the vent side of the drums to prevent moisture from entering the drums as the liquid is pumped out.

Set primary and hose heater temperatures and pump pressures as shown in Table 2. Do not exceed a pressure difference of 200 psi between the iso and polyol side. Ensure that hoses do not cool off during cold-weather application.

Point the gun perpendicular to the surface during application and as close as possible to the substrate without causing splash back. It is recommended to apply the foam after all sheathing and veneer fasteners have been installed and any wall penetrations are complete in order to seal the wall against air infiltration. Apply spray foam in consecutive layers no less than 13 mm (0.5") and no more than 50 mm (2.0"). Make sure to allow the foam to cool completely between applications of layers.

For troubleshooting tips, see Table 3.

STORAGE AND HANDLING

STYROFOAM™ Brand SPF CA Polyol (B side) and Dow 3019 Isocyanate (A side) raw materials have a shelf life of 6 months when stored dry between 15°C and 32°C (60°F and 90°F). Avoid direct sunlight during shipping and storage on the job site. Artificial warming of drums is not recommended.

Caution should be exercised when opening containers as pressure may be present when the material has been exposed to elevated temperatures.

Ensure drums are capped after use. Empty drums are nonreturnable and should be disposed of by using current industrial practices in accordance with federal, provincial or local regulations.

Avoid cross-contamination of equipment by maintaining dedicated equipment to A-side and B-side material. Do not mix contents of drums.

AVAILABILITY

STYROFOAM™ Brand SPF CA Insulation is distributed through an extensive network. For more information, call:

1-800-232-2436 (English)
1-800-565-1255 (French)

TECHNICAL SERVICES

Dow can provide technical information to help address questions when using STYROFOAM™ Brand SPF CA Insulation.

For technical assistance, call:
1-866-583-BLUE (2583) (English)
1-800-363-6210 (French)

TABLE 2: RECOMMENDED PROCESSING PARAMETERS FOR STYROFOAM™ BRAND SPF CA INSULATION

Type of Machine: H2O/35, H-25/H-40/E-30; GX7, Probler gun, #0.028 mix chamber or equivalent air purge or mechanical purge	Relative Humidity %: <80	Ambient Temp (°C) Winter: -1 to 21 Spring/Summer: 7 to 35	Substrate Temp (°C) Winter: -1 to 16 Spring/Summer: 7 to 38
Difference Between Ambient and Dew Point Temperatures (°C): >3	Primary Heater Temp (°C): 46-54	Ambient Temp (°C): As above	Hose Temp (°C): 46-54
Dynamic Pressure “A” (psi): 600-1200 (800 ⁽¹⁾)	Dynamic Pressure “B” (psi): 600-1200 (800 ⁽¹⁾)	Mixing Ratio A/B: 1:1	SPF Max.: 50 mm thick per pass

(1) Recommended initial pressure

TABLE 3: STYROFOAM™ BRAND SPF CA INSULATION TROUBLESHOOTING TIPS

Observation	Cause	Potential Issues	Potential Solutions
Color changes	A/B off-ratio	<ul style="list-style-type: none"> Poor foam properties Excessive shrinkage Stud-line cracking 	<ol style="list-style-type: none"> Ensure drum transfer pumps are working properly (steady static pressures). Ensure that chemical filters are not plugged and the check valves in the displacement pumps are operating correctly (steady dynamic pressures). A low polyol level will produce foam that is brittle and amber colored. A low isocyanate level will produce foam that is spongy and dark blue in color.
Color swirls	Poor mixing	<ul style="list-style-type: none"> Poor foam properties Excessive shrinkage Stud-line cracking 	<ol style="list-style-type: none"> Check the drum chemical temperatures and determine if between 15°C and 32°C (60°F and 90°F). Determine if the dynamic pressures are approximately 800 psi or higher. Determine if the hose chemical temperatures are between 46°C and 54°C (115°F and 130°F).
Faster/slower than normal cream	High/low chemical temperatures; high/low chemical pressures	<ul style="list-style-type: none"> Poor yield Poor foam properties Excessive shrinkage Stud-line cracking 	<ol style="list-style-type: none"> Verify that drum temperatures are at the appropriate temperature. Determine whether the heater block has the capacity to heat the chemicals to the temperature for spraying at the desired rate. Ensure the line temperatures are operating properly. Ensure that the dynamic pressures are in the recommended ranges. Minimize exposure of the line to direct sunlight or severe cold.
Non-circular or smaller/larger than usual spray pattern	Plugging; high/low chemical temperatures; high/low chemical pressures	<ul style="list-style-type: none"> Poor yield Poor foam properties Excessive shrinkage Stud-line cracking 	<ol style="list-style-type: none"> Check the drum chemical temperatures and determine if between 15°C and 32°C (60°F and 90°F). Determine if the dynamic pressures are approximately 800 psi or higher. Determine if the hose chemical temperatures are between 46°C and 54°C (115°F and 130°F).
Foam revision	High chemical temperatures	<ul style="list-style-type: none"> Poor yield Poor foam properties Excessive shrinkage Stud-line cracking 	Foam revision occurs when the mixing chemicals exit the gun as a froth or foam and then collapse. This is often due to excessively high temperature leading to boiling of the blowing agent in the mixing chamber.
Poor wetting of the substrate	Dirty substrate	Poor adhesion	Clean the substrate.
	Substrate incompatible with SPF	Poor adhesion	Prime the substrate.
Narrow spray pattern/sputtering	Hose or chemical temperatures have dropped	<ul style="list-style-type: none"> Poor foam quality Poor yield High overspray Rough, lumpy surface 	Increase hose and/or hose temperature.

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CAUTION: When cured, this product is combustible and will burn if exposed to open flame or sparks from high-energy sources. Do not expose to temperatures above 107°C (225°F). Do not use at a continuous service temperature above 80°C (176°F). For more information, consult MSDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector. In an emergency, call 1-519-339-3711.

STYROFOAM™ Brand SPF CA contains isocyanate, hydrofluorocarbon blowing agent and polyol. Read the instructions and Material Safety Data Sheets carefully before use. Wear protective clothing (including long sleeves), gloves, goggles and proper respiratory protection. Supplied air or an approved air-purifying respirator equipped with an organic vapour sorbent and a P100 particulate filter is required to maintain exposure levels below ACGIH, OSHA, WEEL or other applicable limits. Contents under pressure. STYROFOAM™ Brand SPF should be installed by a trained SPF applicator.

Building and/or construction practices unrelated to building materials could greatly affect moisture and the potential for mould formation. No material supplier including Dow can give assurance that mould will not develop in any specific system.

www.dowbuildingsolutions.com

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For Sales Information: 1-800-232-2436 (English) . 1-800-565-1255 (French)

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