



JM Corbond III®

**Closed-cell Spray Polyurethane Foam
Canadian Formula
CCMC 13478-L**

INSULATE WITH THE CLIMATE ISOLATION SYSTEM®

Johns Manville Corbond III closed-cell spray polyurethane foam (SPF) is the ultimate insulation solution. It barricades the indoors from the outside climate, creating thermal, air and moisture isolation. Because it will not shrink or settle, its incredible thermal and acoustical performance lasts the life of a structure.

PRODUCT DESCRIPTION

JM Corbond III SPF insulation is a premium, high-yield, gray spray polyurethane foam building insulation. The product is generated on site by combining an isocyanate and a polymeric resin through a dual-component proportioner. Fast, easy and adaptable, it can be applied at temperatures as low as -4°C. JM Corbond III SPF insulation is well suited for residential, commercial and industrial applications. As one of the most advanced insulation solutions, it offers climate isolation between indoor and outside environments.

APPLICATIONS

This system is a sprayable, rigid, closed-cell polyurethane cellular plastic foam insulation designed to insulate buildings. The sprayed product, properly installed, results in a seamless, monolithic and durable insulation fully adhered to the substrate; it is gray in color.

- Walls – may be applied to the exterior or interior of walls in both commercial and residential buildings. May be applied without primer between studs to a variety of sheathing substrates to the desired thickness. Suitable sheathings include but are not limited to plywood, oriented strand board (OSB), any foam sheathing with or without foil facers, rock, brick, concrete masonry units (CMU), concrete, and painted or primed steel. JM Corbond III SPF may be applied to these substrates without studs as well.
- Cathedral roofs – may be applied directly to the underside of roof sheathing between the rafters to the desired thickness. Traditional venting is not necessary and should be avoided.
- Hybrid solutions – combine JM Corbond III SPF with JM Formaldehyde-free™ building insulation to create a custom insulation solution.

The JM Corbond III SPF spray systems are technologically advanced, sophisticated materials and should be applied only by trained, qualified, experienced polyurethane spray applicators.

INSTALLATION

This spray system may be applied in passes of uniform thickness from a minimum of 13 mm to a maximum of 51 mm.

RECOMMENDED STORAGE AND TRANSPORT

Shelf Life and Storage of Raw Materials

All materials should be stored in their original containers and away from heat and moisture, especially after the seals have been broken and the containers have been opened. Shelf life is six months when stored indoors at a temperature between 15°C and 21°C (60°F and 70°F). Storage below 15°C may result in compound stratification of the B and/or crystalline formation in the A component. Temperatures above 24°C may decrease the shelf life. Containers should be opened carefully to allow any pressure buildup to be vented safely. Extensive venting of the B component may result in loss of blowing agent, higher-density foam and reduced yield. Temperatures below 18°C will increase the viscosity of the components making them difficult to pump. Both components are adversely affected by water and humidity.

- Freight class 55 (A or B)
- Resin compounds item 46030
- N01BN non-hazardous

Empty Drum Storage

Store empty drums on their sides with bungs in to avoid moisture entering. "Empty" is at minimum defined as product residue at the bottom of the drum no deeper than 13 mm and 200 mm or less across. Recyclers require drums to be "drip dried" before accepting them. Consult federal or provincial regulations to see if any more stringent requirements apply.

SPECIFICATION COMPLIANCE

See following page for a complete list of test results.



CORBOND III®
Performance Insulation System®

PERFORMANCE ADVANTAGES

- Unique Climate Isolation System – creates a thermal, air and moisture barricade.
- Retrofit applications – can be used to insulate basements, new additions and commercial buildings.
- Flexible hybrid system – JM Spider® Custom Insulation System can be applied over JM Corbond III SPF for improved acoustics and R-value.
- Air impermeable – when tested in accordance with CCMC 07272, JM Corbond III SPF has an air permeance <0.02 L/S @ 75 Pa.
- Energy efficient – medium-density JM Corbond III delivers excellent thermal performance.
- Superior moisture performance – helps prevent water and water vapor migration that can lead to mold growth.
- Exhibits no fungal growth when tested in accordance with ASTM C1338.
- Covers completely – integrally attaches to cavity spaces, will not shrink or settle.
- Suitable for applications with a maximum service temperature of 82°C (180°F).
- Widest application temperature range – can be applied at temperatures as low as -4°C (25°F).
- High-quality raw materials – consistent, product without offensive odor, no ozone-depleting chemicals and exceptional seasonal versatility.

TYPICAL PHYSICAL PROPERTIES

	Test Method	JM Corbond III SPF
Nominal Density	ASTM D1622	Medium density $\geq 28\text{kg/m}^3$
Dimensional Stability, % Vol. Change -20°C 80°C 70°C, 97 \pm 3%RH	ASTM D2126 Modified	0.3 0.3 -1.1
Tensile Strength	ASTM 1623	300 kPa
Surface Burning Characteristics	CAN/ULC-S102 CAN/ULC-S127	Pass Pass
Compressive Strength	ASTM D1621	185 kPa
Open-cell Content	ASTM D1940	7%
Thermal Resistance (50 mm thick specimen)	Initial – ASTM C518 Conditioned 90 days @ 60°C – ASTM C518 Long Term – CAN/ULC S770	RSI 2.24 m ² K/W 2.06 m ² K/W 1.80 m ² K/W R-value 12.7 ft ² •hr•°F /BTU 11.7 ft ² •hr•°F /BTU 10.2 ft ² •hr•°F /BTU
Water Absorption	ASTM D2842	2.60%
Water Vapor Transmission	ASTM E96	49ng (Pa.s.m ²)
Air Permeance	CCMC 07272	0.002 L/S@75 Pa
Time to Occupancy	CAN/ULC-S774	12 Hours - Pass
Sound Transmission Coefficient (STC) 2 x 4 wood stud, 16" on centers, 2.76 of JM Corbond III SPF, 15/32" exterior OSB sheeting, ½" gypsum wallboard	ASTM E90-90 & ASTM E413-87	36 (STC)
Recycled Content of Side B		16.5% (pre- and post-consumer)

NOTES:

1. This information is intended only as a guide for design purposes. The values shown are the average values obtained from sprayed laboratory samples. The test methods were performed per the test method standards.

2. Thermal performance (K-factor and R-value) varies depending on age and use conditions.

The information herein is to assist customers in determining whether our products are suitable for their applications. We request that customers inspect and test our products before use and satisfy themselves as to content and suitability. Our products are intended for sale to industrial and commercial customers for processing. We warrant that our products will meet our written specifications. Nothing herein shall constitute any other warranty express or implied, including any warranty of merchantability or fitness, nor is protection from any law or patent to be inferred. The exclusive remedy for all proven claims is replacement of raw materials and in no event shall we be liable for special, incidental or consequential damages.

Properties and Processing Characteristics

Liquid Component Properties Viscosity

Component A	190 cps @ 22°C
Component B	900 cps @ 22°C
Specific Gravity @ 21°C	1.2
Mixing Ratio Component A and B	1:1

The use of polyurethane foam in interior applications on walls or ceilings presents a fire risk unless protected by an approved thermal barrier. One example of an approved thermal barrier is a material equal to 12.7 mm gypsum wallboard. Consultation with building code officials before application is recommended.

Caution: Polyurethane foam produced from these materials is a fire hazard if exposed to fire or excessive heat (e.g., cutting torches, soldering torches, etc.). Each firm, person or corporation engaged in the use, manufacture, production or application of the polyurethane foams produced from these resins should carefully examine construction sequencing and end-use to determine any potential fire hazard associated with such product and to utilize appropriate precautionary and safety measures during construction.

Equipment

Proportioning equipment shall be manufactured by Graco/Gusmer or Glasscraft and shall be capable of metering each component within $\pm 2\%$ of the metering ratio previously noted. The gun should be of the internal mix type, which provides thorough blending of the two components. The equipment shall be of the heated airless type capable of maintaining 52°C at the gun by use of both primary heaters and heated hoses. Hose thermal sensor in B side. The use of 2:1 feeder pumps is recommended for supplying the liquid components to proportioner, especially during winter operations.

Processing Characteristics and Recommendations

	Preheater	Hose
Component A	32–49°C (90–120°F)	43–52°C (110–125°F)
Component B	43–52°C (110–125°F)	
Gun Pressure at Tip (static)	7,584 kPa (min 1,100 psi)	

These temperatures are typical of those required to produce mixed product using conventional Graco/Gusmer equipment under various conditions. Environmental conditions may dictate the use of other temperature ranges. However, under no circumstances should a temperature of 54°C be exceeded. It is the responsibility of the applicator to determine the specific temperature settings to match the environmental conditions, his own equipment and these materials.

Machine Mix at Recommended Temperatures

	Winter	Fall/Spring
Rise/Tack-Free Time	3–4.5 sec.	4–5.5 sec.
Cure Time	4 hours	4 hours

Characteristics

Reaction times are affected by ambient temperature and the temperature of the substrate. Sprayed through Gusmer Model H-II proportioner, Gap Pro Gun with 01 chamber at recommended processing temperatures and pressures.

Recommended Substrate Temperatures at Time of Application

	Winter	Summer
Minimum	-4°C (25°F)	7°C (45°F)
Maximum	15°C (60°F)	32°C (90°F)

For applications below 2°C (35°F), JM Corbond III technical personnel should be consulted. "Flash" passes should be avoided during cold-weather applications.

Spraying

This spray system may be applied in passes of uniform thickness from a minimum of 13 mm to a maximum of 51 mm. "Flash" passes or a thin pass of less than 25 mm on cold surfaces is to be avoided and may result in loss of adhesion of subsequent passes and yield. Thicknesses over 51 mm require multiple passes. Allow product curing and cooling between each pass; over pass cure time minimum 10 minutes per 25 mm, 51 mm pass requires minimum 20 minutes. (Hot substrates may require more time, see Application Guide.)

JM Corbond III SPF must not be applied in a thickness exceeding 76 mm in a single pass. If this thickness is exceeded, it will seriously affect the quality and physical properties of the finished product and the internal temperature building up within the foam may cause charring inside the foam bun and bread loafing. (Under certain conditions, applications exceeding this thickness may cause spontaneous combustion of the foam to occur, even hours after product was applied.)

Cleanup Liquids

Nonflammable solvents should be used for cleanup. Consult your solvent manufacturer Material Safety Data Sheet for handling precautions.

Protective Equipment

Spraying of polyurethane foam results in the atomizing of the components to a fine mist. Inhalation and exposure to the atomized particles must be avoided.

The following protective equipment is recommended:

- Full-face mask or hood with fresh air source
- Fabric coveralls
- Fabric or rubber gloves

APPLICATION GUIDE

Description

This system is sprayable, rigid, closed-cell polyurethane cellular plastic foam insulation designed to insulate buildings. The sprayed product, properly installed, results in a seamless, monolithic and durable insulation fully adhered to the substrate. JM Corbond III SPF spray systems are technologically advanced, sophisticated materials and should be applied only by trained, qualified, experienced polyurethane spray applicators.

Walls

JM Corbond III SPF may be applied without primer between studs to a variety of sheathing substrates to the desired thickness. Suitable sheathings include but are not limited to plywood, OSB, any foam sheathing with or without foil facers, rock, brick, CMU, concrete, and painted or primed steel. JM Corbond III SPF may be applied to these same substrates without studs as well.

Cathedral Roofs

JM Corbond III SPF may be applied directly to the underside of roof sheathing between the rafters to the desired thickness. Traditional venting is not necessary and should be avoided (section 806.4 of the IRC).

Vapor Retarders

Typically, no additional vapor retarder need be installed over a cavity wherein JM Corbond III SPF has been installed greater than 38 mm. Because of JM Corbond III SPF's low water-vapor permeance and excellent sealing characteristics, it functions as its own vapor retarder. (See Typical Physical Properties.) The elimination of a second vapor sheet will avoid the creation of what is commonly known as a water vapor "trap." The use of JM Corbond III SPF in conjunction with other insulation products or in special environments such as freezers, swimming pools or other special environments may require specific technical attention to vapor retarders. Please consult JM Corbond III SPF technical personnel.

Clearances to Heat Sources

A minimum of 76 mm of clearance is required between JM Corbond III SPF and combustion appliance flues, fireplace flues, recessed can lights, including IC-rated fixtures, heat lamps, uninsulated electrical connections and other heat-producing sources.

Combustion Air to Combustion Appliances

Modern construction techniques of house tightening require that outside air inlets be provided to deliver combustion air to natural gas, propane or oil-fired appliances such as furnaces, boilers, water heaters, space heaters, etc., including gas or wood-burning fireplaces. Backdraft dampers or positive pressure venting may be needed on combustion appliance vents to prevent negative air pressures developed by bath or kitchen vent fans from backdrafting combustion effluent into the building interior.

Warning: Polyurethane Foams Will Burn When Exposed to Fire

The use of polyurethane foam in interior applications on walls or ceilings presents a fire risk unless protected by a Canadian National Building Code approved fire-resistant thermal barrier. Polyurethane foam produced from these materials is a fire hazard if exposed to fire or excessive heat (e.g., cutting torch or soldering torch, construction heater). Each firm, person or corporation engaged in the use, manufacture, production, processing or application of the polyurethane foam produced from these resins should carefully examine the end-use and construction sequencing to determine any potential fire hazard associated with such product and utilize appropriate design and safety measures.

Substrate Preparation

For optimum results, surfaces receiving JM Corbond III SPF should be clean and dry, free of dirt, oil, solvent, grease, loose particulate, peeling coating or other foreign matter.

Untreated wood, plywood and OSB typically do not need primer. JM Corbond III SPF also adheres well without primer to expanded polystyrene, extruded polystyrene, foil-faced insulation boards, CMU and cured concrete. Ferrometallic substrates (especially mild steel) should be sand-blasted in accordance with SSPC-SP6. Sand-blasted surfaces should be immediately primed with an epoxymide primer as recommended by the primer manufacturer. Galvanized and stainless steel, and aluminum substrates should be treated with an appropriate wash primer or adhesive prior to application of JM Corbond III SPF. Consult your primer manufacturer and JM for a specific recommendation. Acid wash or other pre-wash may also be needed.

Drywall Substrates

Drywall substrates to which JM Corbond III SPF is to be applied in thicknesses greater than 38 mm require a first pass thickness at and not to exceed 38 mm with an appropriate cure time before full thickness pass is applied. Lift thicknesses exceeding 38 mm to drywall may deform the drywall. Similar precautions may apply to pre-engineered metal buildings. Drywall requires no priming.

Substrate Temperature and Moisture

This spray system is provided in different reactivity profiles to meet varying substrate temperatures as noted in Processing Characteristics. Substrates over 32°C, such as decks of cathedral roofs with sunshine above, require longer than minimum cooling time between passes. Flash passes at cold substrate are to be avoided. JM Corbond III SPF technical personnel should be consulted in all cases where application conditions are marginal. Moisture in the form of rain, dew, frost or other sources can seriously affect the adhesion of urethane foam to the substrate or to itself. Water reacts with the mixed foam components, seriously affecting the foam's physical properties.

Indoor Application Precautions

All personnel in the spray area must be equipped with a fresh-air-supplied face mask or hood. Additional precautions include:

- Post warning signs at all work area entrances. (Available from JM at no charge.)
- No welding, smoking or open flame.
- Seal off the work area from adjacent rooms and ventilation ducts.
- Mask areas required to prevent overspray such as windows, doors, tubs and showers, etc.
- Mask areas to maintain sufficient clearance to potential heat sources (See Clearances to Heat Sources).
- Restrict access of nonapplication personnel.
- Provide ventilation as needed.
- Provide breathing and eye protection to both workers and spectators.

Outdoor Application Precautions

The area surrounding the spray operation should be protected from overspray and exposure of individuals not involved in the spray operations as follows:

- Post warning signs a minimum of 30 meters from all work areas.
- No welding, smoking or open flame.
- Close all air-intake vents on air-handling equipment on the building.
- Provide breathing and eye protection for spectators.
- Move vehicles out of area.
- Do not apply when the wind velocity is greater than 16 kph to avoid overspraying of perimeter areas.

Climatic Conditions

Cold temperatures and high wind speeds retard the exothermic reaction of foam and can lead to poor adhesion, increased density and loss of yield, as well as thermal shock. Avoid moisture in the form of rain, dew, frost or other sources, which can seriously affect the adhesion of JM Corbond III SPF to the substrate or to itself. Water reacts with the mixed foam components, seriously affecting the foam's physical properties.

PROCESS SAFETY, HEALTH AND TOXICITY INFORMATION

Material Safety Data Sheets (MSDS) on product components and the finished product are available from JM. Installers of this product should read and understand the MSDS before use.

Protective Equipment

Spraying of polyurethane foam results in the atomizing of the components to a fine mist. Inhalation and exposure to the atomized droplets must be avoided.

The following protective equipment is recommended:

- Full-face mask or hood with fresh air source
- Fabric coveralls
- Fabric gloves
- Rubber gloves when handling new materials and cleaning solvents.

WARNING: Exposure may occur even when no noticeable odor is encountered.

Physical Examinations of Personnel

All personnel to be employed in the spraying of these materials should have a complete physical examination prior to starting spray operations. Periodic checkups are recommended if the personnel continue to spray these materials. Personnel with the following conditions should avoid the spraying of these components:

- Asthma or chronic bronchitis
- Chronic respiratory disorders
- Sensitivity to chemical substances including polymeric isocyanates

Dermal Exposure

If a major splash or spill of the raw material isocyanate (A) component comes in contact with the skin, the affected area should immediately be washed with generous amounts of water from a safety shower or other water source. Contaminated clothing should be removed and the skin wiped with a clean dry cloth to remove residual isocyanate. The affected area should then be wiped with a 70% solution of rubbing alcohol (isopropol) followed by repeated washing with soap and water. If a rash develops, a physician should be consulted immediately.

Eye Exposure

Splashes of either component into the eyes should be flushed immediately with generous amounts of water for at least 15 minutes. **CONSULT TRAINED MEDICAL PERSONNEL IMMEDIATELY.**

Inhalation

Symptoms of vapor inhalation are characterized by coughing, tightness in the chest and shortness of breath. Excessive exposure can produce serious, possibly irreversible lung damage. Smoking in the area of application increases the risk of pulmonary injury and must be prohibited. High concentrations of isocyanate may cause symptoms and problems to appear immediately. However, chronic exposure may also lead to the same symptoms and problems. **IF BREATHING HAS STOPPED, ARTIFICIAL RESPIRATION MUST BE PROMPTLY APPLIED.**

If breathing is short, oxygen (if available) should be administered by trained medical personnel. **OBTAIN MEDICAL ATTENTION IMMEDIATELY.**

Applicators

See the A&B component MSDS for more complete raw material handling information.

Cleanup

Nonflammable solvents should be used for cleanup. Consult your solvent manufacturer for handling precautions.

Incompatible Materials

The isocyanate component (A) is incompatible with strong bases, tertiary amines or water. These materials may cause rapid, spontaneous polymerization with subsequent generation of heat and gas.

Decontamination of Spills

In the event of a major isocyanate (A) spill, the area should be immediately evacuated. Only personnel equipped with appropriate respiratory and eye protection equipment should remain. If the spill occurs indoors, the area should be ventilated and leaking containers should be taken outdoors and the remaining isocyanate transferred to other containers.

The spill should be covered with sawdust, ekoperl, vermiculite, fuller's earth or other oil-absorbing material and should then be treated with a dilute solution of ammonium hydroxide/detergent. The neutralized material should be swept up and placed in a suitable container. The material should then be disposed of by a standard method consistent with good industrial practice and in accordance with environmental protection regulations in your area. Where permissible, sanitary landfill disposal is recommended.

Technical specifications as shown in this literature are intended to be used as general guidelines only. The physical and chemical properties of JM Corbond III® closed-cell SPF listed herein represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Any references to numerical flame spread or smoke developed ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions. Check with the sales office nearest you for current information. All Johns Manville products are sold subject to Johns Manville's Limited Warranty and Limitation of Remedy. For a copy of the Johns Manville Limited Warranty and Limitation of Remedy or for information on other Johns Manville thermal and acoustical insulation and systems, call the 800 number or write to the address listed below.

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