

## PRODUCT DATA SHEET

### DESCRIPTION

JM Corbond III SPF insulation is a premium, high-yield, 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 -7°C (19°F). 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.

### USE

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 grey in color.

- Walls – may be applied to the exterior or interior of walls in both commercial and residential buildings. May be applied between studs or in open spaces to a variety of substrates including but not limited to plywood, OSB (oriented strand board), foam sheathing with or without foil facers, rock, brick, CMU (concrete masonry units), concrete and steel. The use of primers may be evaluated to improve adhesion when needed.
- 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™ Fibre Glass building insulation to create a custom insulation solution.

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 per pass. Additional passes may be necessary to achieve the desired thickness. When exceeding a finished foam thickness of 75 mm, a cooling period of 10 minutes per 25 mm applied is required between passes.

### 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. The shelf life is six months when stored indoors at a temperature between 10°C and 25°C (50°F and 77°F). Storage below 10°C may result in compound stratification of the B and/or crystalline formation in the A component. Temperatures above 25°C may decrease 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
- NO1BN 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.



### PERFORMANCE ADVANTAGES

**Unique Climate Isolation System:** creates a thermal, air and moisture barricade.

**Applications:** JM Corbond III SPF is an excellent solution for new construction, remodels, basements, commercial buildings and many other applications.

**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 at 25 mm in accordance with CCMC 07272, JM Corbond III SPF has an air permeance <0.02 L/S @ 75 Pa.

**Energy Efficient:** JM Corbond III SPF delivers excellent thermal performance. With a LTTR of 2.03 when tested at 50 mm (R-value of 5.8/in) and 4.37 when tested at 100 mm (R-value of 6.3/in). JM Corbond III is a type 2 SPF insulation.

**Superior Moisture Performance:** helps prevent water and water vapour migration that can lead to mold growth.

Exhibits no fungal growth when tested in accordance with ASTM C1338.

**Covers Completely:** expands and adheres to whatever it touches, 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 -7°C (19°F).

**High-Quality Raw Materials:** consistent, product without offensive odor, no ozone-depleting chemicals and exceptional seasonal versatility.



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**JM CORBOND III®**

**SPECIFICATION COMPLIANCE**

See below for a complete list of test results.

**TYPICAL PHYSICAL PROPERTIES**

| PROPERTY   | TEST METHOD   | JM CORBOND III SPF   |
|--|---|--|
| Nominal Density  | ASTM D1622  | Medium density 33kg/m3 (2.1 lb/ft3)  |
| Dimensional Stability, % Vol. Change<br>-20°C<br>80°C<br>70°C, 97 ±3%RH  | ASTM D2126 Modified   | 0.3<br>1.1<br>12   |
| Tensile Strength   | ASTM 1623   | 313 kPa (45 psi)   |
| Surface Burning Characteristics  | CAN/ULC-S102<br>CAN/ULC-S127  | Pass<br>Pass   |
| Compressive Strength   | ASTM D1621  | 245 kPa (36 psi)   |
| Open-cell Content  | ASTM D6226  | 2.1%   |
| Thermal Resistance (50 mm thick specimen)  | Initial – ASTM C518<br>Conditioned 90 days @ 60°C – ASTM C518<br>Long Term – CAN/ULC S770 LTR | RSI R-value<br>2.40 m² k/w 14.40 ft²•hr•°F /BTU<br>2.31 m² k/w 13.88 ft²•hr•°F /BTU<br>2.03 m² k/w 11.60 ft²•hr•°F /BTU Type 2 SPF |
| Water Absorption   | ASTM D2842  | 0.88%  |
| Water Vapour Permeance   | ASTM E96  | 46ng (Pa.s.m²)   |
| Air Permeance  | CCMC 07272  | < 0.0002 L/S@75 Pa   |
| Time to Occupancy  | CAN/ULC-S774  | 24 Hours – Pass  |
| Sound Transmission Coefficient (STC)<br>2 x 4 wood stud, 16" on centers,<br>2.76 of JM Corbond III SPF, 15/32" exterior<br>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 obtained from sprayed laboratory samples. The test methods were performed per the test method standards.
2. Thermal performance (K-factor and R-value) may vary 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. Products are manufactured to meet 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.

**LONG TERM THERMAL RESISTANCE\***

Test Method: CAN/ULC-S770

| THICKNESS (inches) | R-VALUE U.S. <sup>1</sup> (°F-ft²•h/BTU) | THICKNESS (mm) | RSI-VALUE <sup>1</sup> (°K•m²/W) |
|--------------------|--|----------------|----------------------------------|
| 2.00               | 11.70                                    | 50.8           | 2.06                             |
| 2.50               | 14.63                                    | 63.5           | 2.58                             |
| 2.95               | 17.89                                    | 75.0           | 3.15                             |
| 3.00               | 18.18                                    | 76.2           | 3.20                             |
| 3.50               | 21.21                                    | 88.9           | 3.73                             |
| 3.94               | 24.84                                    | 100.0          | 4.37                             |
| 4.00               | 25.24                                    | 102.0          | 4.44                             |
| 5.00               | 31.55                                    | 127.0          | 5.55                             |
| 6.00               | 37.86                                    | 152.4          | 6.66                             |

\*The Long Term Thermal Resistance values are the design values used for JM Corbond III® per CAN/ULC-S705.1, section 5.5.8.2





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**PROPERTIES AND PROCESSING CHARACTERISTICS**

**LIQUID COMPONENT PROPERTIES VISCOSITY**

|                                |                               |
|--------------------------------|-------------------------------|
| Component A                    | 250 cps @ 22°C                |
| Component B                    | 700 cps @ 22°C                |
| Specific Gravity @ 21°C        | <b>A:</b> 1.25 <b>B:</b> 1.21 |
| 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 12.7 mm gypsum wallboard. Consultation with building code officials before application is recommended.

**Caution:** Polyurethane foam can present 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 polyurethane foams 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 is typically manufactured by Graco/Gusmer or Glasscraft and shall be capable of metering each component within ±2% of the metering ratio previously noted. Equipment not manufactured by the aforementioned must be evaluated by a Johns Manville technical representative for suitability. 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 70°C at the gun by use of both primary heaters and heated hoses. The use of 2:1 transfer pumps is recommended for supplying the liquid components to the proportioner.

**PROCESSING CHARACTERISTICS AND RECOMMENDATIONS**

|                               | <b>PREHEATER</b>          | <b>HOSE</b>         |
|-------------------------------|---------------------------|---------------------|
| Component A                   | 35–49°C (95–120°F)        | 38–52°C (100–125°F) |
| Component B                   | 40–52°C (105–125°F)       |                     |
| Gun Pressure at Tip (dynamic) | 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 57°C be exceeded without first contacting a Johns Manville technical representative. It is the responsibility of the applicator to determine the specific temperature settings to match the environmental conditions, his own equipment and these materials.

**RECOMMENDED SUBSTRATE TEMPERATURES AT TIME OF APPLICATION**

|         | <b>WINTER</b> | <b>SUMMER</b> |
|---------|---------------|---------------|
| Minimum | -7°C (19°F)   | 7°C (45°F)    |
| Maximum | 21°C (70°F)   | 50°C (122°F)  |

Applications using winter grade material above 15°C may result in reduced yield and a foam profile that is less desirable than usual. For applications below 2°C (35°F), JM Corbond III technical personnel may 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 per pass. Additional passes may be necessary to achieve the desired thickness. When exceeding a finished foam thickness of 75 mm, a cooling period of 10 minutes per inch applied is required between passes. (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 or thermal degradation. (Under certain conditions, applications exceeding this thickness may cause spontaneous combustion of the foam to occur, even hours after product was applied.)

**Caution:** CCMC governed installations may not exceed 50 mm per pass thickness.

**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:

- a. Full-face mask or hood with fresh air source
- b. Fabric coveralls
- c. Fabric or rubber gloves

Please visit [www.spraypolyurethane.org](http://www.spraypolyurethane.org) for additional information on appropriate PPE selection and use.



## 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 to the exterior or interior of walls in both commercial and residential buildings. May be applied between studs or in open spaces to a variety of substrates including but not limited to plywood, OSB (oriented strand board), foam sheathing, rock, brick, CMU (concrete masonry units), concrete and steel. The use of primers may be evaluated to improve adhesion when needed.

### 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).

### VAPOUR RETARDERS

Typically, no additional vapour retarder needs be installed over a cavity where JM Corbond III SPF has been installed greater than 38 mm. Because of JM Corbond III SPF's low water-vapour permeance and excellent sealing characteristics, it functions as its own vapour retarder. (See Typical Physical Properties.) The elimination of a second vapour barrier will avoid the creation of what is commonly known as a water vapour "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 vapour 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 can present 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 polyurethane foam should carefully examine the end-use and construction sequencing to determine any potential fire hazard associated with such product. 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, CMU and cured concrete. Ferrometallic substrates (especially mild steel) may be sand-blasted for increased adhesion in accordance with SSPC-SP6. Sand-blasted surfaces should be immediately primed with an epoxyimide primer as recommended by the primer manufacturer. Galvanized and stainless steel, and aluminum substrates may 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 but are not limited to:

- 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.



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**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:

- a. Full-face mask or hood with fresh air source
- b. Fabric coveralls
- c. Fabric gloves
- d. 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 employment. Periodic checkups are recommended if the personnel continue to spray these materials. Personnel with the following conditions should avoid the spraying of these components:

- a. Asthma or chronic bronchitis
- b. Chronic respiratory disorders
- c. Sensitivity to chemical substances including polymeric isocyanates

**DERMAL EXPOSURE**

If a major splash or spill of the raw material (A) on (B) 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 material. The affected area should then be wiped with a 70% solution of rubbing alcohol (isopropyl) 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 vapour 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.