

## COMPANY

Johns Manville, a Berkshire Hathaway company, was founded in 1858. Our ownership by Berkshire Hathaway, one of the most admired companies in the world and one of the most financially secure, allows JM to invest for the future. This enables JM to continue delivering the broadest range of insulation products in the industry and offering innovative solutions that meet your needs.

## DESCRIPTION

JM Corbond® Open-cell (oc) Spray Polyurethane Foam insulation is a two-component, low-density, nonstructural insulation system designed for interior commercial, residential and industrial applications. JM Corbond oc is 100% water blown. The low-density nature allows for tremendous yield while providing excellent heat, air, and sound control. This multi-functionality results in high-performing buildings that are energy efficient, comfortable, and have better air quality. JM Corbond oc is compatible with most common construction materials.

## RECOMMENDED USES

- Walls
- Unvented attics
- Ceilings
- Floors
- Vented attics
- Crawl spaces

## ENVIRONMENTAL CONSIDERATIONS AND SUBSTRATE TEMPERATURES

Applicators must recognize and anticipate weather conditions prior to application to ensure highest-quality foam and to maximize yield. Ambient air, substrate temperatures and moisture are all critical factors. Extremes in 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 optimum results, JM Corbond oc should be spray-applied to substrates when ambient air and substrate temperatures are between 0 and 54°C (32 and 130°F). All substrates to be sprayed must be free of dirt, soil, grease, oil and moisture prior to the application of JM Corbond oc. Moisture in any form — excessive humidity (>80% R.H.) rain, fog or ice — will chemically react with components and adversely affect system performance and corresponding physical properties. Precautions must be taken to prevent damage to adjacent areas from overspray.

## PROCESSING PARAMETERS

Store at 18–29°C (65–85°F) in a dry well-ventilated area. Heated trailers or conditioned tank storage may be necessary. Do not store in direct sunlight. Keep drums tightly closed when not in use and under dry air or nitrogen pressure of 14–21 kPa (2–3 psi) after they have been opened. Shelf life is six months for side B, and twelve months for side A, from date of manufacture when stored in original unopened containers.

JM Corbond oc should be thoroughly mixed and/or recirculated prior to application. Continue mild agitation throughout application process.

**Do not recirculate or mix JM or other suppliers' "A" or "B" components into JM Corbond oc containers. 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. Heaters should be set to deliver 43–60°C (110–140°F) materials to the spray gun. Initial proportioner dynamic pressure should be 8274 kPa (1200 psi). These settings will ensure thorough mixing in the spray gun mix chamber in typical applications. Optimum hose pressure and temperature may vary as a function of the type of equipment, 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.

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



## PERFORMANCE ADVANTAGES

- Improves energy efficiency
- Provides an effective air barrier
- Minimizes sound transmission
- Controls moisture infiltration
- Provides R-3.6 at 1 inch

## REOCCUPANCY

- All occupants must vacate the building or the spray area must be cordoned off and remain separated from the occupied space for 24 hours after application
- The application area must be properly ventilated during application and for 24 hours post application
- Re-entry time: 24 hours

**TYPICAL PHYSICAL PROPERTIES\***

Properties	Test Method	Values	
R-value (aged)	ASTM C518	0.63 km <sup>2</sup> /W at 25 mm	3.6 ft <sup>2</sup> h°F/BTU at 1 inch
Core Density	ASTM D1622	7.2 kg/m <sup>3</sup> (Nominal)	0.5 lb/ft <sup>3</sup>
Dimensional Stability, 28 days	ASTM D2126		
-29°C/Ambient RH		0.8% Volume Change	
80°C/Ambient RH		-12.1% Volume Change	
70°C/95% ± 3% RH		-7.6% Volume Change	
Water Vapour Permeance	ASTM E96	2140 ng/Pa•s•m <sup>2</sup> at 50 mm	37 Perm
VOC Emission	CAN/ULC S774	Pass	
Sound Transmission Coefficient	ASTM E90	39** (STC)	
Surface Burning Characteristics	CAN/ULC S102		
	Flame Spread Rating	25	
	Smoke Developed Classification	315	
Fungi Resistance Tests	ASTM C1338	No Fungal Growth	
Spontaneous Ignition Temperature	ASTM D1929	560°C	1040°F

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

\*\*Residential exterior wall with 16" o.c. 2x6 wood studs, fiberboard siding, and ½" gypsum board.

**PROCESSING PARAMETERS AND PHYSICAL CHARACTERISTICS**

Proportioner Temperature	"A" and "B" 43-60°C (110-140°F)
Hose Temperature	"A" and "B" 43-60°C (110-140°F)
Pressures	8274 kPa (1200 psi) dynamic*
Mix Ratio Parts	1 to 1 by volume "A" to "B"
Viscosity at 25°C	500 cps "B"
Shelf Life	Side B: 6 months at 18-29°C (65-85°F) Side A: 12 months at 18-29°C, (65-85°F)

\*Dependent upon hose length.

**FLAMMABILITY CHARACTERISTICS**

**Surface Burning Characteristics:** CAN/ULC S102

**Flame Spread Rating:** 25

**Smoke Developed Classification:** 315

**Note:** This numerical flame spread and all other data presented are not intended to reflect the hazards presented by this or any other material in actual fire situations.

The use of polyurethane foam in interior applications on walls or ceilings presents a fire risk unless protected by an approved 15-minute thermal barrier. One example of an approved "thermal barrier" is 1.27 cm (0.5 inch) gypsum wallboard. Consultation with building code officials before application is recommended.

**Caution:** Polyurethane foam may 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.

## **SPRAYING**

This spray system may be applied in passes of uniform thickness from a minimum of 2.54 cm (1 inch) to a maximum of 30 cm (12 inches). For maximum yield and productivity, the product may be applied in a single pass to the specified thickness or up to a 30 cm (12 inches) maximum pass.

## **CLEANUP LIQUIDS**

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

Applicators must use personal protective equipment recommended by the Center for Polyurethanes Industry for use in high pressure spray foam application.

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

## **SAFETY AND HANDLING**

Applicators should ensure the safety of the job site 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.

Appropriate literature has been assembled that provides information concerning the health and safety precautions that must be observed when handling JM Corbond oc. Before working with this product, you must read and become familiar with the available information on its risks, proper use and handling, as well as required personal protective equipment. This cannot be overemphasized. Information is available in several forms, e.g., material safety data sheets and product labels. More resources are available at [polyurethane.org](http://polyurethane.org), [sprayfoam.org](http://sprayfoam.org), [www.JM.com](http://www.JM.com) or by contacting your Johns Manville representative.

**Note:** The information contained in this bulletin is current as of June 2016. Please contact Johns Manville to determine whether this publication has been revised.

## **DESCRIPTION**

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

## **WALLS**

JM Corbond oc may be applied to the interior of walls in commercial, residential, and industrial buildings. It may be applied between studs or in open spaces to a variety of substrates including but not limited to: metal, concrete, wood, gypsum board, fibreboard, glass, Rigid Polyurethane Foam, SPF, Polypropylene, Polyethylene, asphalt and tar.

## **CATHEDRAL ROOFS**

JM Corbond oc may be applied directly to the underside of roof sheathing between the rafters to the desired thickness. Please consult local building codes with regard to any required venting.

## **VAPOUR RETARDER**

JM Corbond oc insulation is intended for indoor applications. It is vapour permeable and will allow some diffusion of moisture through the insulation. For some applications of JM Corbond oc insulation, installation of a vapour retarder may be recommended. Refer to local codes and manufacturer’s written specifications to ensure compliance.

## **CLEARANCES TO HEAT SOURCES**

A minimum of 7.62 cm (3 inches) of clearance is required between JM Corbond oc and combustion appliance flues, fireplace flues, recessed can lights, including IC-rated fixtures, heat lamps 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 may present a fire risk unless protected by an approved 15-minute thermal barrier. One example of an approved “thermal barrier” is 1.27 cm (0.5 inch) gypsum wallboard. See section 316.4 of the IRC or section 2603.4 of the IBC for further information on thermal barriers. Alternative solutions to prescribed thermal barriers are available as tested in accordance with NFPA 286. Please consult a Johns Manville representative for further information. Consulting with building code officials before application is recommended.

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 oc should be clean and dry, free of dirt, oil, solvents, grease, loose particulate, peeling coating or other foreign matter. Untreated wood, plywood and oriented strand board (OSB) typically do not need primer. JM Corbond oc also adheres well without primer to expanded polystyrene, extruded polystyrene, foil-faced insulation boards, concrete masonry units (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 epoxymide 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 oc. Consult your primer manufacturer and JM for a specific recommendation. Acid wash or other pre-wash may also be needed.

**SUBSTRATE TEMPERATURE AND MOISTURE**

Substrates over 32°C (90°F), such as decks of cathedral roofs with sunshine above, require longer than minimum cooling time between passes. JM Corbond oc 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. During application, 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. Applicators must use personal protective equipment recommended by the Center for Polyurethanes Industry for use in high pressure spray foam application. Additional precautions include, but are not limited to:

- a. Post warning signs at all work area entrances. (Available from JM at no charge.)
- b. No welding, smoking or open flame.
- c. Seal off the work area from adjacent rooms and ventilation ducts.
- d. Mask areas required to prevent overspray such as windows, doors, tubs and showers, etc.
- e. Restrict access of nonapplication personnel.
- f. Provide ventilation as needed.
- g. Provide breathing and eye protection to both workers and spectators.

**OUTDOOR APPLICATION PRECAUTIONS**

All personnel in the spray area must be equipped with a fresh-air-supplied face mask or hood. Applicators must use personal protective equipment recommended by the Center for Polyurethanes Industry for use in high pressure spray foam application. The area surrounding the spray operation should be protected from overspray and exposure of individuals not involved in the spray operations. Additional precautions include, but are not limited to:

- a. Post warning signs a minimum of 30.5m (100 ft.) from all work areas.
- b. No welding, smoking or open flame.
- c. Close all air-intake vents on air-handling equipment on the building.
- d. Provide breathing and eye protection for spectators.
- e. Move vehicles out of area.
- f. Do not apply when the wind velocity is greater than 16 kph (10 mph) 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 oc 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**

Safety Data Sheets on product components and the finished product are available from JM. Installers of this product should read and understand the SDS 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. Applicators must use personal protective equipment recommended by the Center for Polyurethanes Industry for use in high pressure spray foam application. Precautions include, but are not limited to:

- a. Full-face mask or hood with fresh air source
- b. Fabric coveralls
- c. Non-permeable gloves
- d. Solvent-resistant 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. Sensitization to chemical substances including polymeric isocyanates

### **DERMAL EXPOSURE**

If a major splash or spill of the raw material (A) or (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 (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 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 SDS 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.