SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Trade name: JM Closed Cell B ND, JM Corbond® III 2.8 Closed-cell SPF, JM Corbond® III Closed-cell SPF, JM Corbond® IIIe Closed-cell SPF, JM MCS+ Closed-cell SPF

Manufacturer or supplier's details
Company: Johns Manville
Address: P.O. Box 5108
Denver, CO USA 80127
Telephone: +1-303-978-2000
Emergency telephone number: +1-800-424-9300 (CHEMTREC)

Recommended use of the chemical and restrictions on use
Restrictions on use: For professional users only.
Prepared by: productsafety@jm.com

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200 (OSHA HCS 2012)
Specific target organ toxicity - repeated exposure: Category 2

GHS label elements
Hazard pictograms:

Signal word: Warning
Hazard statements: H373 May cause damage to organs through prolonged or repeated exposure.
Precautionary statements:
Prevention:
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Response:
P314 Get medical advice/ attention if you feel unwell.
Disposal:
P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.
SAFETY DATA SHEET
200000000618

JM Closed-cell Spray Polyurethane Foam (cc SPF) – Component B (USA)

Version 2.5 Revision Date 08/15/2019 Print Date 08/15/2019

Additional Labelling
The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 4.02%

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1,3,3-pentafluoropropane (HFC-245fa)</td>
<td>460-73-1</td>
<td>&gt;= 5 - &lt; 10</td>
</tr>
<tr>
<td>tris(2-chloro-1-methylethyl) phosphate</td>
<td>13674-84-5</td>
<td>&gt;= 1 - &lt; 5</td>
</tr>
<tr>
<td>triethyl phosphate</td>
<td>78-40-0</td>
<td>&gt;= 1 - &lt; 5</td>
</tr>
<tr>
<td>trans-1,2-dichloroethylene</td>
<td>156-60-5</td>
<td>&gt;= 1 - &lt; 5</td>
</tr>
<tr>
<td>diethylmethylbenzenediamine</td>
<td>68479-98-1</td>
<td>&gt;= 1 - &lt; 5</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled : Remove to fresh air.
If breathing has stopped, apply artificial respiration.
If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact : In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash contaminated clothing before re-use.
Call a physician if irritation develops or persists.
Take off all contaminated clothing immediately.

In case of eye contact : In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Do NOT induce vomiting.
 Rinse mouth with water.
 Never give anything by mouth to an unconscious person.
 Keep respiratory tract clear.
 Obtain medical attention.

Most important symptoms and effects, both acute and delayed : None known.
SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media:
- Water mist
- Dry powder
- Carbon dioxide (CO2)
- Foam

Unsuitable extinguishing media:
- High volume water jet

Hazardous combustion products:
- carbon oxides
- nitrogen oxides
- phosphorus oxides
- halogenated compounds

Specific extinguishing methods:
- Standard procedure for chemical fires.

Special protective equipment for firefighters:
- Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:
- Immediately evacuate personnel to safe areas.
- Keep people away from and upwind of spill/leak.
- Ensure adequate ventilation.
- Use personal protective equipment.

Environmental precautions:
- Prevent product from entering drains.
- Prevent further leakage or spillage if safe to do so.
- If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up:
- Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
- Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion:
- Normal measures for preventive fire protection.

Advice on safe handling:
- Do not breathe vapours/dust.
- Avoid exposure - obtain special instructions before use.
- Avoid contact with skin and eyes.
- For personal protection see section 8.
- Smoking, eating and drinking should be prohibited in the application area.
- Dispose of rinse water in accordance with local and national regulations.
Conditions for safe storage: Keep container tightly closed in a dry and well-ventilated place. Electrical installations / working materials must comply with the technological safety standards.

Recommended storage temperature: 10 - 24 °C

Storage period: 6 Months

Further information on storage stability: Stable at normal ambient temperature and pressure.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1,3,3-pentafluoropropane (HFC-245fa)</td>
<td>460-73-1</td>
<td>TWA</td>
<td>300 ppm</td>
<td>US WEEL</td>
</tr>
<tr>
<td>triethyl phosphate</td>
<td>78-40-0</td>
<td>TWA</td>
<td>7.45 mg/m³</td>
<td>US WEEL</td>
</tr>
<tr>
<td>trans-1,2-dichloroethylene</td>
<td>156-60-5</td>
<td>TWA</td>
<td>200 ppm</td>
<td>ACGIH</td>
</tr>
</tbody>
</table>

Johns Manville is a member of the Center for the Polyurethanes Industry (CPI) of the American Chemistry Council. For more information about safe work practices, see CPI’s Health and Safety Product Stewardship Workbook for High-Pressure Application of Spray Polyurethane Foam (SPF) and other resources (some available in Spanish and French) at the following website hyperlinks: https://www.spraypolyurethane.org/resources/ and https://www.spraypolyurethane.org/additional-resources/.

Personal protective equipment

Respiratory protection: When spray applying: use a NIOSH-approved respirator with an Assigned Protection Factor (APF) of at least 1000, such as a supplied air respirator. Non-spray applications: select a NIOSH-approved respirator based on actual or potential airborne concentrations and in accordance with regulatory standards and/or industrial regulations.

Hand protection
Material: Impervious gloves

Remarks: Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Eye protection: Tightly fitting safety goggles

Skin and body protection: Chemical resistant apron
Hygiene measures:
- Handle in accordance with good industrial hygiene and safety practice.
- When using do not eat or drink.
- When using do not smoke.
- Wash hands before breaks and at the end of workday.
- Written instructions for handling must be available at the work place.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>liquid</td>
</tr>
<tr>
<td>Color</td>
<td>various, lavender, tan</td>
</tr>
<tr>
<td>Odor</td>
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</tr>
<tr>
<td>Odor Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 94 °C</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Water solubility</td>
<td>No data available</td>
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<tr>
<td>Solubility in other solvents</td>
<td>No data available</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
</tbody>
</table>
**SECTION 10. STABILITY AND REACTIVITY**

Reactivity : No dangerous reaction known under conditions of normal use.  

Chemical stability : Stable under normal conditions.  

Possibility of hazardous reactions : Contact with isocyanates will cause polymerization. Stable under recommended storage conditions.  

Conditions to avoid : Protect from frost, heat and sunlight.  

Incompatible materials : Strong oxidizing agents  

Hazardous decomposition products : carbon oxides  
                              : nitrogen oxides  
                              : phosphorus oxides  
                              : halogenated compounds

**SECTION 11. TOXICOLOGICAL INFORMATION**

**Acute toxicity**

**Product:**

Acute oral toxicity : Acute toxicity estimate : > 5,000 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate : > 40 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour  
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate : > 5,000 mg/kg  
Method: Calculation method

**Acute toxicity**

**Components:**

**tris(2-chloro-1-methylethyl) phosphate:**

Acute oral toxicity : LD50 (Rat): 632 mg/kg

Acute inhalation toxicity : LC50 (Rat): 4.6 mg/l  
Exposure time: 4 h
Acute dermal toxicity: LD50 (Rabbit): > 5,000 mg/kg

Acute toxicity
triethyl phosphate:
Acute oral toxicity: LD50: 500 mg/kg
Method: Converted acute toxicity point estimate

Acute toxicity
trans-1,2-dichloroethylene:
Acute oral toxicity: LD50 (Rat): 7,902 mg/kg
LD50 (Mouse): 2,122 mg/kg
Acute inhalation toxicity: LC50 (Rat): 96 mg/l
Exposure time: 4 h
Acute dermal toxicity: LD0 (Rabbit): > 5,000 mg/kg

Acute toxicity
diethylmethylbenzenediamine:
Acute oral toxicity: LD50 (Rat): 472 mg/kg
Acute inhalation toxicity: LC50 (Rat): 2.45 mg/l
Exposure time: 1 h
LC50 (Rat): > 2.45 mg/l
Exposure time: 1 h
Acute dermal toxicity: LD50 (Rabbit): > 1,000 mg/kg

Skin corrosion/irritation

Components:
tris(2-chloro-1-methylethyl) phosphate:
Species: Rabbit
Result: No skin irritation

Skin corrosion/irritation
triethyl phosphate:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

Skin corrosion/irritation
diethylmethylbenzenediamine:
Species: Rabbit
Exposure time: 4 h
Result: No skin irritation
Serious eye damage/eye irritation

Components:
tris(2-chloro-1-methylethyl) phosphate:
Species: Rabbit
Result: Mild eye irritation
Exposure time: 24 h
Method: Draize Test

Serious eye damage/eye irritation
triethyl phosphate:
Species: Rabbit
Result: Eye irritation
Method: OECD Test Guideline 405

Serious eye damage/eye irritation
trans-1,2-dichloroethylene:
Species: Rabbit
Result: Eye irritation

Serious eye damage/eye irritation
diethylmethylbenzenediamine:
Species: Rabbit
Result: irritating

Respiratory or skin sensitisation

Components:
tris(2-chloro-1-methylethyl) phosphate:
Result: Does not cause skin sensitisation.

Germ cell mutagenicity

Components:
tris(2-chloro-1-methylethyl) phosphate:
Germ cell mutagenicity- Assessment: Not mutagenic in Ames Test

IARC
No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA
No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP
No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
Reproductive toxicity

**Components:**

**tris(2-chloro-1-methylethyl) phosphate:**
- Effects on fertility: Species: Rat, male
- Application Route: Inhalation

Reproductive toxicity - Assessment: Experiments have shown reproductive toxicity effects in male and female laboratory animals. Did not show teratogenic effects in animal experiments.

**STOT - repeated exposure**

**Components:**

**diethylmethylbenzenediamine:**
- Assessment: May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

**Components:**

**tris(2-chloro-1-methylethyl) phosphate:**
- Species: Rat, male
- NOAEL: 36 mg/kg
- Application Route: Oral
- Exposure time: 90 d

**diethylmethylbenzenediamine:**
- Species: Rabbit, female
- NOAEL: 1 mg/kg
- Application Route: Skin contact

- Species: Rat
- NOAEL: 10 mg/l
- Application Route: inhalation (gas)

Further information

**Product:**
- Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

**Components:**

**tris(2-chloro-1-methylethyl) phosphate:**
- Toxicity to algae: EC50 (Scenedesmus capricornutum (fresh water algae)): 47 mg/l
- Toxicity to daphnia and other aquatic invertebrates: NOEC (Daphnia (water flea)): 32 mg/l
(Chronic toxicity)

**triethyl phosphate:**
- **Toxicity to algae**: EC50 (Desmodesmus subspicatus (green algae)): 901 mg/l
- **Toxicity to daphnia and other aquatic invertebrates**
  - (Chronic toxicity): NOEC (Daphnia magna (Water flea)): 31.6 mg/l
    - Exposure time: 21 d
    - Method: OECD Test Guideline 211

**trans-1,2-dichloroethylene:**
- **Toxicity to fish**: LC50 (Lepomis macrochirus (Bluegill sunfish)): 140 mg/l
  - Exposure time: 96 h
- **Toxicity to daphnia and other aquatic invertebrates**: EC50 (Daphnia magna (Water flea)): 220 mg/l
  - Exposure time: 48 h
- **Toxicity to algae**: EC50 (Selenastrum capricornutum (green algae)): 798 mg/l
  - Exposure time: 96 h
  - EC50 (Skeletonema costatum (marine diatom)): 712 mg/l
  - Exposure time: 96 h

**Persistence and degradability**

**Components:**

**tris(2-chloro-1-methylethyl) phosphate:**
- **Biodegradability**: Result: Not readily biodegradable.

**trans-1,2-dichloroethylene:**
- **Biodegradability**: Result: Not readily biodegradable.
  - Biodegradation: 8 %
  - Exposure time: 28 d

**Bioaccumulative potential**

**Components:**

**tris(2-chloro-1-methylethyl) phosphate:**
- **Partition coefficient**: n-octanol/water: log Pow: 2.68

**triethyl phosphate:**
- **Partition coefficient**: n-octanol/water: log Pow: 1.11

**trans-1,2-dichloroethylene:**
- **Partition coefficient**: n-octanol/water: log Pow: 2.06
Mobility in soil
No data available

Other adverse effects

Product:
Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Disposal of residual product : Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International transport regulations
Land transport
USDOT: Not classified as a dangerous good under transport regulations

Sea transport
IMDG: Not classified as a dangerous good under transport regulations

Air transport
IATA/ICAO: Not classified as a dangerous good under transport regulations

SECTION 15. REGULATORY INFORMATION

TSCA list
TSCA - 5(a) Significant New Use Rule List of Chemicals : No substances are subject to a Significant New Use Rule.

U.S. Toxic Substances Control Act (TSCA) Section : No substances are subject to TSCA
EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Component RQ (lbs)</th>
<th>Calculated product RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>trans-1,2-dichloroethylene</td>
<td>156-60-5</td>
<td>1000</td>
<td>*</td>
</tr>
</tbody>
</table>

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Specific target organ toxicity (single or repeated exposure)
SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act
The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):
- ethane-1,2-diol 107-21-1
- diethylene glycol 111-46-6
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC’s (40 CFR 60.489):
- ethane-1,2-diol 107-21-1
- diethylene glycol 111-46-6

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)
This product does not require a warning under the California Safe Drinking Water and Toxic Enforcement Act (Proposition 65).
The components of this product are reported in the following inventories:
TSCA : All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

SECTION 16. OTHER INFORMATION

Further information
Revision Date : 08/15/2019
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.