

Appendix A

Safety Data Sheets for Priority Products Produced by the Submitter of This Abridged AA Report

JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Trade name : JM CORBOND® (A) ISO

Manufacturer or supplier's details

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

Company : Johns Manville Canada Inc.
Address : 5301 42 Avenue
Innisfail, AB Canada T4G 1A2
Telephone : +1-303-978-2000
Emergency telephone : +1-800-424-9300 (CHEMTREC)
number

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) and the Hazardous Products Regulations (WHMIS 2015)**

Acute toxicity (Inhalation) : Category 4
Skin irritation : Category 2
Eye irritation : Category 2A
Respiratory sensitisation : Category 1
Skin sensitisation : Category 1
Specific target organ toxicity : Category 3 (Respiratory system)
- single exposure
Specific target organ toxicity : Category 1 (Respiratory system)
- repeated exposure
(Inhalation)



GHS label elements

JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

Hazard pictograms	:	 
Signal word	:	Danger
Hazard statements	:	<p>H315 Causes skin irritation. H317 May cause an allergic skin reaction. H319 Causes serious eye irritation. H332 Harmful if inhaled. H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. H335 May cause respiratory irritation. H372 Causes damage to organs (Respiratory system) through prolonged or repeated exposure if inhaled.</p>
Precautionary statements	:	<p>Prevention: P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. P264 Wash skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P271 Use only outdoors or in a well-ventilated area. P272 Contaminated work clothing should not be allowed out of the workplace. P280 Wear protective gloves/ eye protection/ face protection. P285 In case of inadequate ventilation wear respiratory protection.</p> <p>Response: P302 + P352 IF ON SKIN: Wash with plenty of soap and water. P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention. P337 + P313 If eye irritation persists: Get medical advice/ attention. P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor. P362 Take off contaminated clothing and wash before reuse.</p> <p>Storage: P403 + P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up.</p> <p>Disposal: P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.</p>

JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**Hazardous components**

Chemical name	CAS-No.	Concentration (%)
polymethylenepolyphenylene isocyanate	9016-87-9	>= 50 - <= 70
4,4'-methylenediphenyl diisocyanate	101-68-8	>= 30 - <= 50

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 immediately. Get medical attention immediately.
If breathing is irregular or stopped, administer artificial respiration.
- 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.
Get medical attention if irritation develops and persists.
- 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.
If easy to do, remove contact lens, if worn.
Keep eye wide open while rinsing.
Protect unharmed eye.
Seek medical advice.
- If swallowed : Do NOT induce vomiting.
Gently wipe or rinse the inside of the mouth with water.
Never give anything by mouth to an unconscious person.
If swallowed, call a poison control centre or doctor immediately.
- Most important symptoms and effects, both acute and delayed : Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
Harmful if inhaled.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause respiratory irritation.
Causes damage to organs through prolonged or repeated exposure if inhaled.

JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Water mist
Carbon dioxide (CO₂)
Dry chemical
Foam
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : The product reacts with water and generates heat.
- Hazardous combustion products : carbon oxides
nitrogen oxides
isocyanates
hydrogen cyanide
- Specific extinguishing methods : Use a water spray to cool fully closed containers.
- Further information : 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 : Use personal protective equipment.
Ensure adequate ventilation.
Immediately evacuate personnel to safe areas.
- 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).
Recovered material should be stored in a vented container.
The vent must prevent the ingress of water as further reaction with spilled materials can take place which could lead to overpressurization of the container.
Large spills should be collected mechanically (remove by pumping) for disposal.

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms.

JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

Do not breathe vapours/dust.
 Avoid formation of aerosol.
 Avoid exposure - obtain special instructions before use.
 Avoid contact with skin and eyes.
 Smoking, eating and drinking should be prohibited in the application area.
 Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
 For personal protection see section 8.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
 Observe label precautions.
 Electrical installations / working materials must comply with the technological safety standards.

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

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
4,4'-methylenediphenyl diisocyanate	101-68-8	TWA	0.005 ppm	ACGIH
		TWA	0.005 ppm 0.05 mg/m ³	NIOSH REL
		C	0.02 ppm 0.2 mg/m ³	NIOSH REL
		C	0.02 ppm 0.2 mg/m ³	OSHA

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 : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled

JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material : Nitrile rubber

Material : butyl-rubber

Material : Neoprene

Material : PVC

Remarks

: Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

Eye protection

: Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection

: Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Remove and wash contaminated clothing before re-use.

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

Appearance : viscous liquid

Color : dark brown

Odor : musty

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Initial boiling point and boiling range : > 204 °C
Decomposition

Flash point : > 230 °C

JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: 13.9 hPa (40 °C)
Relative vapour density	: No data available
Relative density	: ca. 1.235 (25 °C) (Water = 1.0)
Solubility(ies)	
Water solubility	: insoluble
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Thermal decomposition	: > 300 °C
Viscosity, dynamic	: No data available
Viscosity, kinematic	: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Container can be pressurized by carbon dioxide due to reaction with humid air and/or water.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Mixture reacts slowly with water resulting in evolution of carbon dioxide. Polymerisation is a highly exothermic reaction and may generate sufficient heat to cause thermal decomposition and/or rupture containers.
Conditions to avoid	: Do not expose to temperatures above: 177 °C Exposure to moisture If contained in exposed to high heat (> 350 °F), it can be pressurized and possibly rupture. Methylene diisocyanate reacts slowly with water to form carbon dioxide gas. This gas can cause sealed container to expand and possibly rupture.

JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

Incompatible materials	:	Water Strong bases Acids Alcohols Metals
Hazardous decomposition products	:	carbon oxides nitrogen oxides Isocyanates Hydrogen cyanide (hydrocyanic acid)

SECTION 11. TOXICOLOGICAL INFORMATION**Acute toxicity****Components:****polymethylenepolyphenylene isocyanate:**

Acute oral toxicity	:	LD50 (Rat): > 2,000 mg/kg
Acute inhalation toxicity	:	Assessment: The component/mixture is moderately toxic after short term inhalation.
Acute dermal toxicity	:	LD50 (Rabbit, male and female): > 9,400 mg/kg Method: OECD Test Guideline 402

Acute toxicity**4,4'-methylenediphenyl diisocyanate:**

Acute oral toxicity	:	LD50 (Rat, male and female): > 2,000 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): 2.24 mg/l Exposure time: 1 h Test atmosphere: dust/mist Assessment: The component/mixture is moderately toxic after short term inhalation.
Acute dermal toxicity	:	LD50 (Rabbit, male and female): > 9,400 mg/kg Method: OECD Test Guideline 402

Skin corrosion/irritation**Components:****polymethylenepolyphenylene isocyanate:**

Species: Rabbit
Result: Skin irritation

Skin corrosion/irritation**4,4'-methylenediphenyl diisocyanate:**

Species: Rabbit
Method: Draize Test
Result: Mild skin irritant

Species: Human

JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

Result: irritating

Serious eye damage/eye irritation**Components:****polymethylenepolyphenylene isocyanate:**

Species: Rabbit

Result: Eye irritation

Serious eye damage/eye irritation**4,4'-methylenediphenyl diisocyanate:**

Species: Rabbit

Result: Moderate eye irritation

Method: Draize Test

Species: Human

Result: irritating

Respiratory sensitisation: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Respiratory or skin sensitisation**Components:****polymethylenepolyphenylene isocyanate:**

Exposure routes: Dermal

Species: Mouse

Assessment: May cause sensitisation by skin contact.

Method: OECD Test Guideline 429

Result: positive

Exposure routes: Inhalation

Species: Guinea pig

Assessment: May cause sensitisation by inhalation.

Result: positive

Respiratory or skin sensitisation**4,4'-methylenediphenyl diisocyanate:**

Exposure routes: Dermal

Species: Mouse

Assessment: May cause sensitisation by skin contact.

Method: OECD Test Guideline 429

Result: positive

Exposure routes: Inhalation

Species: Guinea pig

Assessment: May cause sensitisation by inhalation.

Result: positive

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.

ACGIH

No component of this product present at levels greater than or

JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

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.

STOT - single exposure**Components:****polymethylenepolyphenylene isocyanate:**

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

STOT - single exposure**4,4'-methylenediphenyl diisocyanate:**

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

STOT - repeated exposure**Components:****polymethylenepolyphenylene isocyanate:**

Exposure routes: Inhalation

Target Organs: Respiratory system

Assessment: Causes damage to organs through prolonged or repeated exposure.

STOT - repeated exposure**4,4'-methylenediphenyl diisocyanate:**

Exposure routes: Inhalation

Target Organs: Respiratory system

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

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity**

No data available

Persistence and degradability

No data available

JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

Bioaccumulative potential**Components:****4,4'-methylenediphenyl diisocyanate:**

Partition coefficient: n- : log Pow: 4.51 (20 °C)
octanol/water pH: 7

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).

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Disposal of residual product : Dispose of contents/container to an approved facility in
accordance with local, regional, national and international
regulations.
Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with
chemical or used container.

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

TDG: 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

JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

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 12(b) Export Notification (40 CFR 707, Subpart D) : No substances are subject to TSCA 12(b) export notification requirements.

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
4,4'-methylenediphenyl diisocyanate	101-68-8	5000	*

*: 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 : Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Respiratory or skin sensitisation
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 : The following components are subject to reporting levels established by SARA Title III, Section 313:

polymethylenepolyphenylene isocyanate	9016-87-9	50 - 70 %
4,4'-methylenediphenyl diisocyanate	101-68-8	30 - 50 %

Clean Air Act

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

4,4'-methylenediphenyl diisocyanate	101-68-8	50 - 70 %
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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 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

4,4'-methylenediphenyl diisocyanate	101-68-8	50 - 70 %
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JM Spray Polyurethane Foam (SPF) – Component A (USA and Canada)

Version 2.4

Revision Date 07/30/2019

Print Date 07/30/2019

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:

DSL : All components of this product are on the Canadian DSL

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 : 07/30/2019

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.

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

Version 2.5

Revision Date 08/15/2019

Print Date 08/15/2019

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 : +1-800-424-9300 (CHEMTREC)
number

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 : Category 2
- repeated exposure

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.

Additional Labelling

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

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

Version 2.5

Revision Date 08/15/2019

Print Date 08/15/2019

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**Hazardous components**

Chemical name	CAS-No.	Concentration (%)
1,1,1,3,3-pentafluoropropane (HFC-245fa)	460-73-1	≥ 5 - < 10
tris(2-chloro-1-methylethyl) phosphate	13674-84-5	≥ 1 - < 5
triethyl phosphate	78-40-0	≥ 1 - < 5
trans-1,2-dichloroethylene	156-60-5	≥ 1 - < 5
diethylmethylbenzenediamine	68479-98-1	≥ 1 - < 5

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 (CO ₂) Foam
Unsuitable extinguishing	: High volume water jet

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

Version 2.5

Revision Date 08/15/2019

Print Date 08/15/2019

media	
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

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

Version 2.5

Revision Date 08/15/2019

Print Date 08/15/2019

Components with workplace control parameters

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

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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 Full protective suit Choose body protection according to the amount and concentration of the dangerous substance at the work place.
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

Appearance	:	liquid
Color	:	various, lavender, tan
Odor	:	No data available
Odor Threshold	:	No data available
pH	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling	:	No data available

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

Version 2.5

Revision Date 08/15/2019

Print Date 08/15/2019

range	
Flash point	: > 94 °C
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Relative density	: No data available
Water solubility	: No data available
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Thermal decomposition	: No data available
Viscosity	
Viscosity, dynamic	: 650 mPa.s (24 °C)
Viscosity, kinematic	: No data available

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

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

Version 2.5

Revision Date 08/15/2019

Print Date 08/15/2019

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/kgAcute inhalation toxicity : LC50 (Rat): 96 mg/l
Exposure time: 4 h

Acute dermal toxicity : LD0 (Rabbit): > 5,000 mg/kg

Acute toxicity**diethylmethylenbenzenediamine:**

Acute oral toxicity : LD50 (Rat): 472 mg/kg

Acute inhalation toxicity : LC50 (Rat): 2.45 mg/l
Exposure time: 1 hLC50 (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

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

Version 2.5

Revision Date 08/15/2019

Print Date 08/15/2019

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- : Not mutagenic in Ames Test
Assessment**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.

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

Version 2.5

Revision Date 08/15/2019

Print Date 08/15/2019

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 - : Experiments have shown reproductive toxicity effects in male
Assessment 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

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

Version 2.5

Revision Date 08/15/2019

Print Date 08/15/2019

mg/l

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia (water flea)): 32 mg/l

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
Method: Regulation (EC) No. 440/2008, Annex, A.8

trans-1,2-dichloroethylene:

Partition coefficient: n-octanol/water : log Pow: 2.06

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

Version 2.5

Revision Date 08/15/2019

Print Date 08/15/2019

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 : No data available
information

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 : No substances are subject to a
Chemicals Significant New Use Rule.

U.S. Toxic Substances Control Act (TSCA) Section : No substances are subject to TSCA
12(b) Export Notification (40 CFR 707, Subpart D) 12(b) export notification requirements.

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

Version 2.5

Revision Date 08/15/2019

Print Date 08/15/2019

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
trans-1,2-dichloroethylene	156-60-5	1000	*

*: 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 SOCM I 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

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

Version 2.5

Revision Date 08/15/2019

Print Date 08/15/2019

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.

**JM Open-cell (oc) and Open-cell Appendix x (ocx) Spray
Polyurethane Foam (SPF) – Component B (USA)**

Version 1.3

Revision Date 05/14/2018

Print Date 05/14/2018

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Trade name : JM Corbond® oc SPF side B, JM Corbond® ocx SPF side B

Manufacturer or supplier's details

Company : Johns Manville
Address : P.O. Box 5108
Denver, CO USA 80127
Telephone : +1 303-978-2000 8:00 a.m.-5:00 p.m. M-F
Emergency telephone : 1-800-424-9300 (Chemtrec, in English)
number
Prepared by : productsafety@jm.com

SECTION 2. HAZARDS IDENTIFICATION**GHS Classification**

Acute toxicity (Oral) : Category 4
Acute toxicity (Inhalation) : Category 4
Eye irritation : Category 2B

GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : H302 + H332 Harmful if swallowed or if inhaled
H320 Causes eye irritation.

Precautionary statements :

Prevention:

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/

**JM Open-cell (oc) and Open-cell Appendix x (ocx) Spray
Polyurethane Foam (SPF) – Component B (USA)**

Version 1.3

Revision Date 05/14/2018

Print Date 05/14/2018

attention.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**Hazardous components**

Chemical name	CAS-No.	Concentration (%)
polyol blend	Not Assigned	≥ 30 - < 50
tris(2-chloro-1-methylethyl) phosphate	13674-84-5	≥ 20 - < 30
flame retardant	Not Assigned	≥ 10 - < 20
Tertiary amine	Not Assigned	≥ 5 - < 10

SECTION 4. FIRST AID MEASURES

- General advice : Do not leave the victim unattended.
- If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.
- In case of eye contact : Remove contact lenses.
Immediately flush eye(s) with plenty of water.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Do NOT induce vomiting.
Keep respiratory tract clear.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
- Most important symptoms and effects, both acute and delayed : None known.

SECTION 5. FIREFIGHTING MEASURES

- Unsuitable extinguishing media : High volume water jet
- Hazardous combustion products : Hazardous decomposition products due to incomplete combustion
carbon oxides

JM Open-cell (oc) and Open-cell Appendix x (ocx) Spray Polyurethane Foam (SPF) – Component B (USA)

Version 1.3

Revision Date 05/14/2018

Print Date 05/14/2018

No hazardous combustion products are known

- Specific extinguishing methods : Standard procedure for chemical fires.
- Further information : 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 : Use personal protective equipment.
- Environmental precautions : 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 : Wipe up with absorbent material (e.g. cloth, fleece).
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 : 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.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Tertiary amine	Not Assigned	TWA	0.05 ppm	ACGIH
		C	0.15 ppm	ACGIH

**JM Open-cell (oc) and Open-cell Appendix x (ocx) Spray
Polyurethane Foam (SPF) – Component B (USA)**

Version 1.3

Revision Date 05/14/2018

Print Date 05/14/2018

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 workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hand protection

Remarks : Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

Eye protection : Tightly fitting safety goggles

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

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

Appearance : liquid

Colour : amber

Odour : slight

Odour Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Initial boiling point and boiling range : No data available

Flash point : 93.4 °C

Evaporation rate : No data available

Flammability (solid, gas) : No data available

**JM Open-cell (oc) and Open-cell Appendix x (ocx) Spray
Polyurethane Foam (SPF) – Component B (USA)**

Version 1.3

Revision Date 05/14/2018

Print Date 05/14/2018

Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Relative density	: 1.2
Water solubility	: No data available
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Thermal decomposition	: No data available
Viscosity, dynamic	: No data available
Viscosity, kinematic	: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No decomposition if stored and applied as directed.
Chemical stability	: No decomposition if stored and applied as directed.
Possibility of hazardous reactions	: No decomposition if stored and applied as directed.
Conditions to avoid	: No data available

SECTION 11. TOXICOLOGICAL INFORMATION**Acute toxicity****Product:**

Acute oral toxicity	: Acute toxicity estimate : 1,141 mg/kg Method: Calculation method
Acute inhalation toxicity	: Acute toxicity estimate : 12.07 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Calculation method
Acute dermal toxicity	: Acute toxicity estimate : 3,877 mg/kg Method: Calculation method

**JM Open-cell (oc) and Open-cell Appendix x (ocx) Spray
Polyurethane Foam (SPF) – Component B (USA)**

Version 1.3

Revision Date 05/14/2018

Print Date 05/14/2018

Acute toxicity**Components:****polyol blend:**

Acute oral toxicity : LD50 (Rat): 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): 200 mg/l
Exposure time: 1 h

Acute dermal toxicity : LD50 (Rabbit): 2,000 mg/kg

Acute toxicity**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**flame retardant:**

Acute oral toxicity : LD50 (Rat): 10,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): 4.4 mg/l
Exposure time: 4 h

Acute dermal toxicity : LD50 (Rabbit): 20,000 mg/kg

Skin corrosion/irritation**Product:**

Remarks: May cause skin irritation in susceptible persons.

Skin corrosion/irritation**Components:****tris(2-chloro-1-methylethyl) phosphate:**

Species: Rabbit

Result: No skin irritation

Serious eye damage/eye irritation**Product:**

Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin.

Serious eye damage/eye irritation**Components:****tris(2-chloro-1-methylethyl) phosphate:**

Species: Rabbit

**JM Open-cell (oc) and Open-cell Appendix x (ocx) Spray
Polyurethane Foam (SPF) – Component B (USA)**

Version 1.3

Revision Date 05/14/2018

Print Date 05/14/2018

Result: Mild eye irritation

Exposure time: 24 h

Method: Draize Test

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- : Not mutagenic in Ames Test
Assessment**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.

ACGIH

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

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: InhalationReproductive toxicity - : Experiments have shown reproductive toxicity effects in male
Assessment and female laboratory animals.
Did not show teratogenic effects in animal experiments.**Repeated dose toxicity****Components:****tris(2-chloro-1-methylethyl) phosphate:**Species: Rat, male
NOAEL: 36 mg/kg
Application Route: Oral
Exposure time: 90 d

**JM Open-cell (oc) and Open-cell Appendix x (ocx) Spray
Polyurethane Foam (SPF) – Component B (USA)**

Version 1.3

Revision Date 05/14/2018

Print Date 05/14/2018

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 (Chronic toxicity) : NOEC (Daphnia (water flea)): 32 mg/l

Persistence and degradability**Components:****tris(2-chloro-1-methylethyl) phosphate:**

Biodegradability : Result: Not readily biodegradable.

Bioaccumulative potential**Components:****tris(2-chloro-1-methylethyl) phosphate:**

Partition coefficient: n-octanol/water : log Pow: 2.68

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

**JM Open-cell (oc) and Open-cell Appendix x (ocx) Spray
Polyurethane Foam (SPF) – Component B (USA)**

Version 1.3

Revision Date 05/14/2018

Print Date 05/14/2018

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**

These products are not classified as dangerous goods according to international transport regulations.

SECTION 15. REGULATORY INFORMATION**TSCA list**

TSCA - 5(a) Significant New Use Rule List of Chemicals : Not relevant

U.S. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D) : Not relevant

EPCRA - Emergency Planning and Community Right-to-Know Act**CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

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

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

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).

**JM Open-cell (oc) and Open-cell Appendix x (ocx) Spray
Polyurethane Foam (SPF) – Component B (USA)**

Version 1.3

Revision Date 05/14/2018

Print Date 05/14/2018

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

TSCA	: On TSCA Inventory
DSL	: This product contains the following components that are not on the Canadian DSL nor NDSL.
	: polyol blend
	: surfactant
	: flame retardant

SECTION 16. OTHER INFORMATION**Further information**

Revision Date : 05/14/2018

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.