SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Trade name : JM Gen IV B Summer

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 and industrial installation and use only.
Prepared by : productsafety@jm.com

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200 (OSHA HCS 2012)
Skin irritation : Category 2
Serious eye damage : Category 1
Skin sensitisation : Category 1
Reproductive toxicity : Category 1B
Specific target organ toxicity - repeated exposure : Category 2

GHS label elements
Hazard pictograms : 

Signal word : Danger
Hazard statements : H315 Causes skin irritation.
                   H317 May cause an allergic skin reaction.
                   H318 Causes serious eye damage.
                   H360 May damage fertility or the unborn child.
                   H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements : Prevention:
                           P201 Obtain special instructions before use.
                           P202 Do not handle until all safety precautions have been read
and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.

Storage:
P405 Store locked up.

Disposal:
P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous components</th>
<th>CAS-No.</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>tris(2-chloro-1-methylethyl) phosphate</td>
<td>13674-84-5</td>
<td>&gt;= 5 - &lt;= 10</td>
</tr>
<tr>
<td>(2Z)-1,1,1,4,4,4-hexafluorobut-2-ene</td>
<td>692-49-9</td>
<td>&gt;= 5 - &lt;= 10</td>
</tr>
<tr>
<td>diethylene glycol</td>
<td>111-46-6</td>
<td>&gt;= 1 - &lt;= 5</td>
</tr>
<tr>
<td>triethanolamine</td>
<td>102-71-6</td>
<td>&gt;= 1 - &lt;= 5</td>
</tr>
<tr>
<td>2-butoxyethanol</td>
<td>111-76-2</td>
<td>&gt;= 1 - &lt;= 5</td>
</tr>
<tr>
<td>1-[bis[3-(dimethylamino)propyl]amino]propan-2-ol</td>
<td>67151-63-7</td>
<td>&gt;= 1 - &lt;= 5</td>
</tr>
</tbody>
</table>

Actual concentration or concentration range is withheld as a trade secret

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.
Take off all contaminated clothing immediately.
Wash contaminated clothing before re-use.
Call a physician if irritation develops or 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.
Keep eye wide open while rinsing.
Protect unharmed eye.
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:
Causes serious eye damage.
Causes skin irritation.
May cause an allergic skin reaction.
May damage fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media:
Water spray
Dry chemical
Carbon dioxide (CO2)
Foam

Unsuitable extinguishing media:
High volume water jet

Hazardous combustion products:
carbon oxides
nitrogen oxides
phosphorus oxides
Hydrocarbons
hydrogen cyanide
Hydrogen chloride gas
Hydrogen fluoride

Specific extinguishing methods:
Standard procedure for chemical fires.

Further information:
Use a water spray to cool fully closed containers.
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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 further leakage or spillage if safe to do so. The product should not be allowed to enter drains, water courses or the soil.

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: Fire or intense heat may cause violent rupture of packages.

Advice on safe handling: Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. Smoking, eating and drinking should be prohibited in the application area. For personal protection see section 8.

Conditions for safe storage: Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected.

Materials to avoid: polymerisation initiators

Recommended storage temperature: 10 - 24 °C

Storage period: 6 Months

Further information on storage stability: Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected.

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>(2Z)-1,1,4,4,4-hexafluorobut-</td>
<td>692-49-9</td>
<td>TWA</td>
<td>500 ppm</td>
<td>US WEEL</td>
</tr>
</tbody>
</table>
### Biological occupational exposure limits

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Biological specimen</th>
<th>Sampling time</th>
<th>Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-butoxyethanol</td>
<td>111-76-2</td>
<td>Butoxyacetic acid (BAA)</td>
<td>Urine</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>200 mg/g Creatinine</td>
<td>ACGIH BEI</td>
</tr>
</tbody>
</table>

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

**Hand protection**

- **Material**: Protective 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**: Wear safety glasses with side shields or goggles. Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols. Remove respiratory and skin/eye protection only after vapours have been cleared from the area.

**Skin and body protection**: Wear protective clothing, such as long-sleeved shirts and pants. Full protective suit. 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: liquid
Colour: amber
Odour: amine-like
Odour Threshold: No data available
pH: No data available
Melting point/freezing point: No data available
Initial boiling point and boiling range: 92 - 342 °C
Flash point: 128 °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
Density: 1.17 g/cm³
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
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. Exposure to moisture.

Incompatible materials: Strong oxidizing agents isocyanates.


SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity
Not classified based on available information.

Product:

Acute oral toxicity: Acute toxicity estimate: 2,982 mg/kg Method: Calculation method

Acute inhalation toxicity: Acute toxicity estimate: 34 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method

Acute dermal toxicity: Acute toxicity estimate: 2,245 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, male and female): > 7 mg/l
  Exposure time: 4 h
  Test atmosphere: dust/mist
  Method: standard acute method
  Remarks: No mortality was observed.
Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

Acute toxicity (2Z)-1,1,1,4,4,4-hexafluorobut-2-ene:
Acute inhalation toxicity : LC50 (Rat, male and female): 690.413 mg/l
  Exposure time: 4 h
  Test atmosphere: vapour
  Method: OECD Test Guideline 403

Acute toxicity diethylene glycol:
Acute oral toxicity : LD50 (Humans): 1,000 mg/kg

Acute toxicity triethanolamine:
Acute oral toxicity : LD50 (Rat, male and female): 6,400 mg/kg
  Method: OECD Test Guideline 401
Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
  Method: OECD Test Guideline 402

Acute toxicity 2-butoxyethanol:
Acute oral toxicity : LD50: 1,414 mg/kg
  Method: OECD Test Guideline 401

Acute toxicity 1-[bis[3-(dimethylamino)propyl]amino]propan-2-ol:
Acute oral toxicity : LD50 (Rat, male and female): 1,344 mg/kg
  Method: OECD Test Guideline 401
Acute dermal toxicity : LD50 (Rabbit, male and female): 3,570 mg/kg
  Method: OECD Test Guideline 402

Skin corrosion/irritation
Causes skin irritation.

Product:
Result: irritating
Skin corrosion/irritation

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

Skin corrosion/irritation
2-butoxyethanol:
Species: Rabbit
Result: irritating

Skin corrosion/irritation
1-[bis[3-(dimethylamino)propyl]amino]propan-2-ol:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Corrosive after 1 to 4 hours of exposure

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
2-butoxyethanol:
Species: Rabbit
Result: irritating
Method: OECD Test Guideline 405

Serious eye damage/eye irritation
1-[bis[3-(dimethylamino)propyl]amino]propan-2-ol:
Species: Rabbit
Result: Irreversible effects on the eye
Method: OECD Test Guideline 405

Respiratory sensitisation: Not classified based on available information.

**Respiratory or skin sensitisation**
Skin sensitisation: May cause an allergic skin reaction.

**Product:**
Result: May cause sensitisation by skin contact.

**Respiratory or skin sensitisation**

**Components:**
tris(2-chloro-1-methylethyl) phosphate:
JM Gen IV closed-cell spray polyurethane foam (cc SPF) –
Component B (Summer)

Result: Does not cause skin sensitisation.

Respiratory or skin sensitisation
diethylene glycol:
Test Type: Maximisation Test
Species: Guinea pig
Assessment: Did not cause sensitisation on laboratory animals.

<table>
<thead>
<tr>
<th>IARC</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA</td>
<td>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.</td>
</tr>
<tr>
<td>NTP</td>
<td>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.</td>
</tr>
</tbody>
</table>

Reproductive toxicity
May damage fertility or the unborn child.

Product:
Reproductive toxicity - Assessment: Presumed human reproductive toxicant

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.

STOT - repeated exposure
May cause damage to organs through prolonged or repeated exposure.

Product:
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
**diethylene glycol:**
Species: Rat
1600 mg/kg
Application Route: Oral
Target Organs: Kidney

**Aspiration toxicity**
Not classified based on available information.

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**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

**diethylene glycol:**
Toxicity to fish: LC50 (Pimephales promelas (fathead minnow)): 75,200 mg/l
End point: mortality
Exposure time: 96 h
Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): > 10,000 mg/l
Exposure time: 24 h
Test Type: static test
Method: DIN 38412

**Persistence and degradability**

**Components:**

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

**diethylene glycol:**
Biodegradability: aerobic
Result: Readily biodegradable.
Biodegradation: 90 - 100 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

**triethanolamine:**
Biodegradability: Result: Readily biodegradable.
Bioaccumulative potential

Components:

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

(2Z)-1,1,1,4,4,4-hexafluorobut-2-ene:
Partition coefficient: n-octanol/water : log Pow: 2.3 (30 °C)
pH: 6.1
Method: OECD Test Guideline 117

diethylene glycol:
Bioaccumulation : Species: Leuciscus idus (Golden orfe)
Bioconcentration factor (BCF): 100
Exposure time: 3 d
Concentration: 0.05 mg/l
Partition coefficient: n-octanol/water : log Pow: -1.98

triethanolamine:
Partition coefficient: n-octanol/water : log Pow: -2.3 (25 °C)

2-butoxyethanol:
Partition coefficient: n-octanol/water : log Pow: 0.81 (25 °C)
pH: 7

1-[bis[3-(dimethylamino)propyl]amino]propan-2-ol:
Partition coefficient: n-octanol/water : log Pow: 0.587 (22.6 °C)
pH: 12
Method: OECD Test Guideline 107

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).
Global warming potential

Global Warming Potentials - 40CFR Part 98 -Table A-1 to SubPart A.

Components:

(2Z)-1,1,1,4,4,4-hexafluorobut-2-ene:
100-year global warming potential: 1.58
Further information: Unsaturated Hydrofluorocarbons (HFCs) and Hydrochlorofluorocarbons (HCFCs), This compound was added to Table A-1 in the final rule published on December 11, 2014, and effective on January 1, 2015.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues : Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

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

SECTION 15. REGULATORY INFORMATION

TSCA list
TSCA - 5(a) Significant New Use Rule List of Chemicals : The following substance(s) is/are subject to a Significant New Use Rule: (2Z)-1,1,1,4,4,4-hexafluorobut-2-ene

U.S. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpart D) : The following substance(s) is/are subject to TSCA 12(b) export notification requirements: (2Z)-1,1,1,4,4,4-hexafluorobut-2-ene

EPCRA - Emergency Planning and Community Right-to-Know Act
SAFETY DATA SHEET

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Revision Date 03/12/2020
Print Date 03/12/2020

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

SARA 311/312 Hazards
- Serious eye damage or eye irritation
- Skin corrosion or irritation
- Respiratory or skin sensitisation
- Reproductive toxicity
- Specific target organ toxicity (single or repeated exposure)

SARA 302
- This material does not contain any components with a section 302 EHS TPQ.

SARA 313
- The following components are subject to reporting levels established by SARA Title III, Section 313:
  - 2-butoxyethanol 111-76-2 1 - 5 %

Clean Air Act
The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):  
  - diethylene glycol 111-46-6 1 - 5 %
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):
  - diethylene glycol 111-46-6 1 - 5 %
  - 2-butoxyethanol 111-76-2 1 - 5 %

California Prop. 65
⚠️WARNING: This product can expose you to chemicals including 1,4-dioxane, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

The components of this product are reported in the following inventories:
- TSCA : On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

Further information
Revision Date : 03/12/2020

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.