1. Identification

Product identifier used on the label

ISOBUTANOL

Recommended use of the chemical and restriction on use
Recommended use*: for industrial use only

* The “Recommended use” identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:
BASF Canada Inc.
100 Milverton Drive
Mississauga, ON L5R 4H1, CANADA

Telephone: +1 289 360-1300

Emergency telephone number

CANUTEC (reverse charges): (613) 996-6666
BASF HOTLINE: (800) 454-COPE (2673)

Other means of identification

Molecular formula: C(4) H(10) O
Chemical family: alcohol, aliphatic
Synonyms: 2-Methyl-1-Propanol

2. Hazards Identification

According to Hazardous Products Regulations (HPR) (SOR/2015-17)

Classification of the product

<table>
<thead>
<tr>
<th></th>
<th>Flam. Liq.</th>
<th>Skin Corr./Irrit.</th>
<th>Eye Dam./Irrit.</th>
<th>STOT SE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
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<td>1</td>
<td>3 (Vapours may cause</td>
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<td></td>
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<td>drowsiness and dizziness.)</td>
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<td>3 (irritating to</td>
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<td>Specific target organ</td>
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<td>toxicity — single</td>
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<tr>
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<td>Flammable liquids</td>
<td>Skin corrosion/irritation</td>
<td>Serious eye damage/eye irritation</td>
<td>exposure</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>exposure</td>
</tr>
</tbody>
</table>
Label elements

Pictogram:

Signal Word:
Danger

Hazard Statement:
H226 Flammable liquid and vapour.
H318 Causes serious eye damage.
H315 Causes skin irritation.
H336 May cause drowsiness or dizziness.
H335 May cause respiratory irritation.

Precautionary Statements (Prevention):
P280 Wear protective gloves and eye/face protection.
P271 Use only outdoors or in a well-ventilated area.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P243 Take precautionary measures against static discharge.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
P264 Wash with plenty of water and soap thoroughly after handling.
P240 Ground/bond container and receiving equipment.
P242 Use only non-sparking tools.

Precautionary Statements (Response):
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P370 + P378 In case of fire: Use... to extinguish.

Precautionary Statements (Storage):
P233 Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Precautionary Statements (Disposal):
P501 Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture. See section 12 - Results of PBT and vPvB assessment.
3. Composition / Information on Ingredients

According to Hazardous Products Regulations (HPR) (SOR/2015-17)

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Weight %</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>78-83-1</td>
<td>&gt;= 99.5%</td>
<td>Isobutanol</td>
</tr>
</tbody>
</table>

4. First-Aid Measures

Description of first aid measures

General advice:
Remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air. Assist in breathing if necessary. Consult a physician.

If on skin:
Wash affected areas thoroughly with soap and water. Remove contaminated clothing. If irritation develops, seek medical attention.

If in eyes:
In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. Immediate medical attention required.

If swallowed:
Rinse mouth and then drink plenty of water. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Seek medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Indication of any immediate medical attention and special treatment needed

Note to physician
Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
water spray, dry powder, alcohol-resistant foam, carbon dioxide

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
Advice for fire-fighters
Protective equipment for fire-fighting:
Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:
Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Keep containers cool by spraying with water if exposed to fire. Foam should be applied in large quantities as it is broken down to some extent by the product.

Impact Sensitivity:
Remarks: Based on the chemical structure there is no shock-sensitivity.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Avoid inhalation. Avoid contact with the skin, eyes and clothing.

Environmental precautions
Discharge into the environment must be avoided.

Methods and material for containment and cleaning up
For small amounts: Pick up with absorbent material (e.g. sand, sawdust, general-purpose binder).
Dispose of absorbed material in accordance with regulations.
For large amounts: Pump off product.
Spills should be contained, solidified, and placed in suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling
Ensure thorough ventilation of stores and work areas.

Protection against fire and explosion:
Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

Conditions for safe storage, including any incompatibilities
No applicable information available.

Further information on storage conditions: Keep container tightly closed and dry; store in a cool place.

8. Exposure Controls/Personal Protection

Components with occupational exposure limits
Isobutanol OSHA PEL PEL 100 ppm 300 mg/m3 ; TWA value 50 ppm 150 mg/m3 ;
ACGIH TLV TWA value 50 ppm ;
Personal protective equipment

Respiratory protection:
Wear the following respiratory protection if exposure limits may be exceeded: Wear a NIOSH-certified (or equivalent) respirator as necessary.

Hand protection:
Chemical resistant protective gloves. Suitable materials, nitrile rubber (Buna N), chloroprene rubber (Neoprene)

Eye protection:
Tightly fitting safety goggles (chemical goggles) and face shield.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures:
Avoid contact with the skin, eyes and clothing. Avoid inhalation of vapour. Wearing of closed work clothing is required additionally to the stated personal protection equipment. Wash soiled clothing immediately.

9. Physical and Chemical Properties

Form: liquid
Odour: mild
Odour threshold: not determined
Colour: clear
pH value: neutral
(20 °C)
Melting point: < -90 °C (ASTM D97)
Boiling point: 108 °C (1,013 hPa) (OECD Guideline 103)
Sublimation point: No applicable information available.
Flash point: 31 °C (DIN EN 22719; ISO 2719, closed cup)

Flammability: Flammable.
Lower explosion limit: 1.1 % (V) (19.9 °C)
The lower explosion point of the substance/mixture has been determined. The explosion point describes the temperature of a flammable liquid at which the concentration of the saturated vapour mixed with air equals the lower explosion limit.

Upper explosion limit: 11.7 % (V) (59.4 °C)
The upper explosion point of the substance/mixture has been determined. This explosion point describes the temperature of a flammable liquid at which the concentration of the saturated vapour mixed with air equals the upper explosion limit.
10. Stability and Reactivity

Reactivity
No applicable information available.

Corrosion to metals:
No corrosive effect on metal.

Oxidizing properties:
Based on its structural properties the product is not classified as oxidizing.

Formation of flammable gases:
Remarks: Forms no flammable gases in the presence of water.

Chemical stability
The product is stable if stored and handled as prescribed/indicated.

Possibility of hazardous reactions
The product is chemically stable.
Reacts with strong oxidizing agents.

Conditions to avoid
Avoid extreme heat. Avoid sources of ignition. Avoid electro-static discharge.
**Incompatible materials**
strong oxidizing agents

**Hazardous decomposition products**

Decomposition products:
Hazardous decomposition products: No hazardous decomposition products if stored and handled as prescribed/indicated.

Thermal decomposition:
No decomposition if stored and handled as prescribed/indicated.

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### 11. Toxicological information

**Primary routes of exposure**

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

**Acute Toxicity/Effects**

**Acute toxicity**
Assessment of acute toxicity: Of low toxicity after single ingestion. Of low toxicity after short-term skin contact. Virtually nontoxic by inhalation.
If used as intended, this product is not expected to present a physical or health hazard.

- **Oral**
  - Type of value: LD50
  - Species: rat (male/female)
  - Value: > 2,830 - 3,350 mg/kg (OECD Guideline 401)

- **Inhalation**
  - Type of value: LC50
  - Species: rat (male/female)
  - Value: > 18.18 mg/l (similar to OECD guideline 403)
  - Exposure time: 6 h
  - The vapour was tested.

- **Dermal**
  - Type of value: LD50
  - Species: rabbit (male/female)
  - Value: > 2,000 - 2,460 mg/kg (OECD Guideline 402)

**Assessment other acute effects**
Assessment of STOT single:
Possible narcotic effects (drowsiness or dizziness). Causes temporary irritation of the respiratory tract.

**Irritation / corrosion**
Assessment of irritating effects: May cause severe damage to the eyes. Skin contact causes irritation.

**Skin**
- Species: rabbit
- Result: Irritant.
Method: OECD Guideline 404
The European Union (EU) has classified this substance with 'Irritating to skin' (R38).

Eye
Species: rabbit
Result: Risk of serious damage to eyes.
Method: OECD Guideline 405

Sensitization
Assessment of sensitization: Skin sensitizing effects were not observed in animal studies. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Guinea pig maximization test
Species: guinea pig
Result: Non-sensitizing.
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Aspiration Hazard
Some authorities consider isobutly alcohol, n-primary alcohols and ketones with C3-C13 as "May be harmful if swallowed and enters airways"

Chronic Toxicity/Effects

Repeated dose toxicity
Assessment of repeated dose toxicity: No substance-specific organtoxicity was observed after repeated administration to animals.
No known chronic effects.

Genetic toxicity
Assessment of mutagenicity: The substance was not mutagenic in bacteria. The substance was not mutagenic in mammalian cell culture. The substance was not mutagenic in studies with mammals.

Carcinogenicity
Assessment of carcinogenicity: The chemical structure does not suggest a specific alert for such an effect.

Reproductive toxicity
Assessment of reproduction toxicity: The results of animal studies gave no indication of a fertility impairing effect.

Teratogenicity
Assessment of teratogenicity: No indications of a developmental toxic / teratogenic effect were seen in animal studies.

Experiences in humans
High concentrations have a narcotizing effect.

Symptoms of Exposure
The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

12. Ecological Information
Toxicity

Aquatic toxicity
Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish
LC50 (96 h) 1,430 mg/l, Pimephales promelas (Fish test acute, Flow through.)
The statement of the toxic effect relates to the analytically determined concentration.

Aquatic invertebrates
EC50 (48 h) 1,100 mg/l, Daphnia pulex (ASTM E1193-97, static)
Nominal concentration.

Aquatic plants
EC50 (72 h) 1,799 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201, static)
The statement of the toxic effect relates to the analytically determined concentration.

Chronic toxicity to fish
No data available regarding toxicity to fish.

Chronic toxicity to aquatic invertebrates
No observed effect concentration (21 d) 20 mg/l, Daphnia magna (Daphnia test chronic, semistatic)
Nominal concentration.

Assessment of terrestrial toxicity
No data available concerning terrestrial toxicity.

Microorganisms/Effect on activated sludge

Toxicity to microorganisms
DIN 38412 Part 8 aquatic bacterium/Toxic limit concentration (16 h): 280 mg/l

Persistence and degradability

Assessment biodegradation and elimination (H2O)
Readily biodegradable (according to OECD criteria).

Elimination information
70 - 80 % BOD of the ThOD (28 d) (OECD 301D; EEC 92/69, C.4-E) (aerobic, other)

Assessment of stability in water
According to structural properties, hydrolysis is not expected/probable.

Bioaccumulative potential

Assessment bioaccumulation potential
Significant accumulation in organisms is not to be expected.

Mobility in soil

Assessment transport between environmental compartments
The substance will slowly evaporate into the atmosphere from the water surface.
Adsorption to solid soil phase is not expected.
Additional information

Adsorbable organically-bound halogen (AOX):
This product contains no organically-bound halogen.

13. Disposal considerations

Waste disposal of substance:
Must be disposed of or incinerated in accordance with local regulations.
Dispose of in accordance with national, state and local regulations.

Container disposal:
Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.
WARNING: Empty containers may still contain hazardous residue. Flammable vapors may exist in containers in which residues of this product remain.

14. Transport Information

Land transport
TDG
Hazard class: 3
Packing group: III
ID number: UN 1212
Hazard label: 3
Proper shipping name: ISOBUTANOL (ISOBUTYL ALCOHOL)

Sea transport
IMDG
Hazard class: 3
Packing group: III
ID number: UN 1212
Hazard label: 3
Marine pollutant: NO
Proper shipping name: ISOBUTANOL (ISOBUTYL ALCOHOL)

Air transport
IATA/ICAO
Hazard class: 3
Packing group: III
ID number: UN 1212
Hazard label: 3
Proper shipping name: ISOBUTANOL

15. Regulatory Information

Federal Regulations

Registration status:
According to Controlled Products Regulations (CPR) (SOR/88-66)

WHMIS classification: D2B: Materials Causing Other Toxic Effects - Toxic material
B2: Flammable Liquid

Assessment of the hazard classes according to UN GHS criteria (most recent version):

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Number</th>
<th>Description</th>
</tr>
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<tbody>
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<td>Flam. Liq.</td>
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<td>Specific target organ toxicity — single exposure</td>
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<td>STOT SE</td>
<td>3</td>
<td>Specific target organ toxicity — single exposure</td>
</tr>
<tr>
<td>Acute Tox.</td>
<td>5 (oral)</td>
<td>Acute toxicity</td>
</tr>
<tr>
<td>Acute Tox.</td>
<td>5 (dermal)</td>
<td>Acute toxicity</td>
</tr>
<tr>
<td>Asp. Tox.</td>
<td>2</td>
<td>Aspiration hazard</td>
</tr>
</tbody>
</table>

16. Other Information

SDS Prepared by:
BASF NA Product Regulations
SDS Prepared on: 2017/04/10

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

END OF DATA SHEET