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Material Safety Data Sheet
Isobutanol

Section 1 - Product Identification

Synonyms : Isobutyl alcohol; 2-Methylpropan-1-ol; isobutanol; IBA; Isopropyl Carbinol; 2-Methylpropyl Alcohol; i-Butyl alcohol; Butanol-iso; fermentation butyl alcohol; 1-hydroxymethylpropane; Isopropyl carbitol; Isobutyl alcohol

Molecular Weight : 74.122 g/mol

Chemical Formula : $(CH_3)_2CHCH_2OH$

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Recommended use of the chemical and restrictions on use:

- Architectural coatings
- Auto oem
- Auto plastics
- Auto refinish
- Furniture
- General industrial coatings
- Graphic arts
- Hard surface care

Section 2 – Composition/Information on Ingredients

Chemical Name	CAS No	Purity, %
Isobutanol	78-83-1	100

Section 3 – Hazards Identification

3.1 Classification of the substance according to GHS

Flammable liquid 3

H226: Flammable liquid and vapor.

Eye irritant 1

H318: Causes serious eye irritation.

Skin Irritation 2

H315 Causes skin irritation.

3.2. GHS Label elements, including precautionary statements

 H226: Flammable liquid and vapor.	 Warning H318: Causes serious eye irritation.	 H335: May cause respiratory irritation. H336: May cause drowsiness or dizziness.

Prevention:
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equip-ment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.
Response:
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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 + 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.
P332 + P313 If skin irritation occurs: Get medical advice/ atten- tion.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alco- hol-resistant foam to extinguish.
Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

3.3. Other hazards which do not result in classification
May form explosive peroxides.

Section 4 – First-Aid Measures
4.1. Description of first aid mesaures
Skin contact
Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.Get medical advice/ attention.Wash contaminated clothing before reuse.Destroy or thoroughly clean contaminated shoes
Eye contact
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.Call a physician or poison control center immediately. Remove person to fresh air. If signs/symptoms continue, get medical attention.
Inhalation
Remove to fresh air.Treat symptomatically.If symptoms persist, call a physician.
Ingestion
Seek medical advice.
Note to physicians
Treat symptomatically.
4.2. Most important symptoms and effects, both acute and delayed

N.A.

4.3. Indication of any immediate medical attention and special treatment needed

N.A.

Section 5 – Fire Fighting Measures

5.1. Suitable Extinguishing media

Water spray, dry chemical, CO2, Foam

5.2. Specific hazards arising from the chemical

N.A.

5.3. Special protective actions for fire-fighters

Prevent buildup of vapors or gases to explosive concentra- tions.Cool closed containers exposed to fire with water spray. Forms peroxides of unknown stability.Vapors may form explosive mixtures with air. In the event of fire, wear self-contained breathing apparatus.

Section 6 – Accidental Release Measure

6.1. Personal precautions, protective equipment and emergency procedures

Wear appropriate personal protective equipment. Prevent runoff from entering drains, sewers, or streams.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Land spill)

Prevent runoff from entering drains, sewers, or streams. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

Section 7 – Handling and Storage

7.1. Precautions for safe Handling

Keep away from fire, sparks and heated surfaces.Avoid inhalation, ingestion and contact with skin and eyes. Use only with adequate ventilation.Wash thoroughly after handling.Minimize exposure to air.If peroxide formation is suspected, do not open or move container.

7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed and in a well-ventilated place. Keep away from heat.Protect from sunlight.

Section 8 – Exposure Controls/Personal Protection

8.1. Control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parame- ters / Permissible concentration	Basis
isobutanol	78-83-1	TWA	50 ppm	ACGIH
		TWA	50 ppm/ 150 mg/m3	NIOSH REL
		TWA	100 ppm/ 300 mg/m3	OSHA Z-1

..		TWA	50 ppm/150 mg/m3	OSHA P0

8.2. Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

8.3. Individual protection measures, such as personal protective equipment (PPE)

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Eyes and hands protection

Goggles and gloves are required for normal exposures. Ensure that eye flushing systems and safety showers are located close to the working place.

Section 9 – Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance : Liquid
Odour : Sweet
Odour threshold : 1.6ppm
pH @ 20°C : N.A.
Melting point : -108°C
Boiling point : 108 °C
Flash point: 29°C
Evaporation rate : N.A.
Flammability : N.A.
Upper/lower flammability or explosive limits : Non explosive
Vapour pressure : 13mbar
Vapour density : 2.6.
Relative density : 0.80
Solubility in water : Moderate
Partition coefficient: n-octanol/water : N.A
Auto-ignition temperature : 416°C
Decomposition temperature : Thermal stability not tested. Low stability hazard expected at normal operatin temperatures.
Viscosity : Dynamic – 4mPa.s, Kinematic: 5mm2/s

9.2. Other information

Molecular weight : 74.122

Section 10 – Stability and Reactivity

10.1. Reactivity

None reasonably foreseeable.

10.2. Chemical stability

Stable under normal conditions

10.3. Possibility of hazardous reactions

On long term storage, materials containing similar functional groups form peroxides of unknown stability.Stable

10.4. Conditions to avoid:

Heat, flames and sparks

10.5. Incompatible materials
Strong oxidising agents
10.6. Hazardous decomposition products
CO2, CO

Section 11 – Toxicological Information

11.1. Information on toxicological effect
11.1.1. Substances
Acute toxicity[(2)]
Low acute oral toxicity; LD50 in rats 3350mg/kg of body weight.
Skin corrosion / irritation
Cause skin irritation.
Serious eye damage/ irritation
No data available
Respiratory or skin sensitization
No data available
Germcell mutagenicity
No data available
Carcinogenicity
No data available
Reproductive toxicity
No data available
STOT-single exposure
May cause respiratory irritation. May cause drowsiness or dizziness.
STOT-repeated exposure
No data available
Aspiration Hazard
No data available

Section 12 – Ecological Information

12.1.
Algal toxicity[(9)]
EC50 (Pseudokirchneriella subcapitata (algae)): 1,799 mg/l Exposure time: 72 h
Invertebrate toxicity[(10)]
EC50 (Daphnia magna (Water flea)): 1,220 mg/l Exposure time: 96 h
Fish toxicity[(11)]
LC50 (Pimephales promelas (fathead minnow)): 1,430 mg/l Exposure time: 96 h
12.2. Persistence and degradability
Biochemical Oxygen Demand (BOD): BOD-5, 1700mg/g, Chemical Oxygen Demand (COD): 2600 mg/g
12.3. Bioaccumulative potential
No data available
12.4. Mobility in soil
No data available
12.5. Other adverse effects
No Data Available

Section 13 – Disposal Considerations

13.1. Disposal methods
Dispose of in accordance with local regulations.

Section 14 – Transport Information

Borax pentahydrate has no UN Number, and is not regulated under international rail, road, water or air transport regulations.

14.1. UN number : N.A.
14.2. UN proper shipping name : N.A
14.3. Transport of hazard classes : N.A
14.4. Packing group : N.A
14.5. Environmental hazards : N.A.
14.6. Special precautions for user : N.A
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: N.A.

Section 15 – Regulatory Information

15.1. Safety, health and environmental regulations

SARA 311/312 Hazards: Fire hazards
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.

The ingredients of this product are reported in the following inventories:
TSCA : On TSCA Inventory
DSL : All components of this product are on the Canadian DSL
AICS : On the inventory, or in compliance with the inventory
ENCS : On the inventory, or in compliance with the inventory
ISHL : On the inventory, or in compliance with the inventory
KECI : On the inventory, or in compliance with the inventory
PICCS : On the inventory, or in compliance with the inventory
IECSC : On the inventory, or in compliance with the inventory

TSCA list
No substances are subject to a Significant New Use Rule.
No substances are subject to TSCA 12(b) export notification requirements.

Section 16 : Additional Information

16.1. Mainly changes made to the previous version of this Material Safety Data Sheet (MSDS):
• This MSDS complies with ISO 11014; the requirements of UN-GHS

Revision No	Revision content
05	• This SDS is updated in accordance with the GHS (Rev.6) (2015)-Guidance on the Compilation of Safety data Sheets. • This SDS is updated in line with Eti Maden Corporate identity.

16.2. List of abbreviation and acronyms used in this MSDS
SDS : Safety Data Sheets
Index N° : atomic number of the element most characteristic of the properties of the substance
CAS No : Chemical Abstracts Service number
EC No : EINECS Number : European Inventory of Existing Commercial Substances
Repr. Cat. 2 : Substance presumed human reproductive toxicant
Acute Oral Cat. 5 : Substance which is of relatively low acute oral toxicity.
GHS : Globally Harmonised System of Classification and Labelling
LD_{50} : Median Lethal Dose
LC_{50} : Lethal Concentration, 50%
N.A. : Not Applicable
OSHA : Occupational Safety & Health Administration

Cal OSHA : The State of California Division of Occupational Safety and Health (DOSH)
PEL : Permissible Exposure Limits
ACGIH : American Conference of Governmental Industrial Hygienists
TLV : Threshold Limit Value
Japanese MITI : Japanese Ministry of International Trade and Industry
EC_{50} : Half maximal effective concentration
UN : United Nations
U.S. EPA TSCA Inventory: Inventory of the chemical substances manufactured or processed in the United States according to Toxic Substances Control Act compiled and published under the autority of the Environmental Protection Agency
Canadian DSL: Canadian Domestic Substances List

16.3. List of relevant hazard statements and precautionary statements used in this MSDS

Hazard Statement

Prevention:

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P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
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P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.

Response:

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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Storage:

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P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal:

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

16.4. References

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For general information on the toxicology of borates see ECETOC Technical Report No. 63 (1995); Patty's Industrial Hygiene and Toxicology, 4th Edition Vol. II, (1994) Chap. 42, 'Boron'.

16.5. Disclaimer of Liability

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