Isobutanol – (Isobutyl Alcohol)

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name:	Isobutanol
CAS Number:	78-83-1
EC Number:	201-148-0

1.2 Relevant identified uses of the substance or mixture and uses advised against

Product use: Laboratory chemicals, Industrial & for professional use only

1.3 Details of the supplier of the safety data sheet

Company name:	East Harbour Group Ltd 20 Clough Road, Severalls Industrial Park Colchester, Essex, CO4 9QS United Kingdom
Telephone:	+44 (0) 333 242 0100
Email:	info@eastharbourgroup.com

1.4 Emergency telephone number

Emergency telephone:	0800 246 1274

Section 2: Hazardous identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3), H226
Skin irritation (Category 2), H315
Serious eye damage (Category 1), H318
Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
For the full text of the H-Statements mentioned in this Section, see Section 16.

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2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008



Signal word	Danger

Hazard statement(s)

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

Precautionary statement(s)

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280	Wear eye protection/ face protection.
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.
P403 + P235	Store in a well-ventilated place. Keep cool.

2.3 Other hazards none

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Section 3: Composition/information on ingredients

3.1 Substances

Synonyms:	Isobutanol Isobutyl alcohol
Formula:	C4H10O
Molecular weight:	74.12 g/mol
CAS-No.:	78-83-1
EC-No.:	201-148-0
Index-No.:	603-108-00-1

Hazardous ingredients according to Regulation (EC) No 1272/2008

Component	Classification	Concentration
iso-Butanol		
CAS-No. 78-83-1	Flam. Liq. 3; Skin Irrit. 2; Eye	<= 100 %

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Dam. 1; STOT SE 3; H226,
H315, H318, H336, H335

For the full text of the H-Statements mentioned in this Section, see Section 16.

Section 4: First aid measures

4.1 Description of first aid measures
General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact
Wash off with soap and plenty of water. Consult a physician.
In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

Section 5: Fire-fighting measures

5.1 Fire Fighting Media and Instructions:
Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxide

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary

5.4 Further information
Use water spray to cool unopened containers.

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Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and material for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

Section 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build-up of electrostatic charge. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Storage class (TRGS 510): Flammable liquids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

Section 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)											
Coun-try	Name of agent	CAS no.	Identi-fier	TWA (ppm)	TWA (mg/m^3)	STEL (ppm)	STEL (mg/m^3)	Ceiling-C (ppm)	Ceiling-C (mg/m^3)	Nota-tion	Source
GB	2 - methylpropan -1-ol	78-83-1	WEL	50	154	75	231				EH40/2005

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Notation
Ceiling-C ceiling value is a limit value above which exposure should not occur
STEL short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)
TWA time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

8.2 Exposure controls /
Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.3 Personal protective equipment
Eye/face protection - Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection - Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection - Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Respiratory protection - Where risk assessment shows air-purifying respirators are appropriate use (US) or type ABEK (EN 14387) respirator cartridges as a backup to engine protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure - Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	Form: liquid Colour: colourless, clear
Odor	Alcohol-like
Odor Threshold	No data available
pH	No data available
Melting Point/Freezing Point	Melting point/range: -108 °C - lit.
Initial boiling point and boiling range	108 °C - lit.
Flash Point	28 °C - closed cup
Evaporation Rate	0.6
Flammability (solid, gas)	No data available
Upper/Lower Flammability or Explosive Limits	Upper explosion limit: 10.6 %(V)

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	Lower explosion limit: 1.7 %(V)
Vapor Pressure	8 hPa at 20 °C
Vapor Density	2.55
Relative Density	0.803 g/mL at 25 °C
Water Solubility	70 g/l at 20 °C - OECD Test Guideline 105 - completely miscible
Partition Coefficient: n-octanol/water	log Pow: 1 at 25 °C
Auto-ignition temperature	427 °C
Decomposition temperature	No data available
Viscosity	4.00 mm2/s at 20 °C –
Explosive properties	No data available
Oxidizing properties	No data available

9.2 Other safety information

Surface tension	69.7 mN/m at 20 °C
Relative vapour density	2.55

Section 10: Stability and Reactivity

10.1 Reactivity	No data available
10.2 Chemical Stability	Stable under recommended storage conditions.
10.3 Possibility of hazardous reactions	No data available
10.4 Conditions to avoid	Heat, flames and sparks.
10.5 Incompatible materials	Strong oxidizing agents, Acid chlorides, Acid anhydrides Strong oxidizing agents, Acid chlorides, Acid anhydrides
10.6 Hazardous decomposition products	Hazardous decomposition products formed under fire conditions. - Carbon oxides Other decomposition products - No data available In the event of fire: see section 5

Section 11: Toxicological Information

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - female - 3,350 mg/kg(iso-Butanol) (OECD Test Guideline 401)
LC50 Inhalation - Rat - male and female - 4 h - 24.6 mg/l(iso-Butanol)
LD50 Dermal - Rabbit - female - 2,460 mg/kg(iso-Butanol) (OECD Test Guideline 402)
LD50 Intraperitoneal - Rat - 720 mg/kg(iso-Butanol)

Skin corrosion/irritation

Skin - Rabbit(iso-Butanol)
Result: Irritating to skin. - 24 h
Serious eye damage/eye irritation

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Eyes – Rabbit (iso-Butanol)
Result: Risk of serious damage to eyes. - 24 h (OECD Test Guideline 405)

Respiratory or skin sensitisation
No data available(iso-Butanol)

Germ cell mutagenicity
Hamster(iso-Butanol)
fibroblast
Result: negative OECD Test Guideline 474(iso-Butanol)
Mouse - male and female
Result: negative

Carcinogenicity
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.

Reproductive toxicity
Specific target organ toxicity - single exposure
May cause respiratory irritation. - Respiratory Tract(iso-Butanol)
May cause drowsiness or dizziness. - Central nervous system(iso-Butanol)

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available (iso-Butanol)

Additional Information
Repeated dose toxicity - Rat - male and female - inhalation (vapour)(iso-Butanol)
RTECS: NP9625000
Cough, Shortness of breath, Headache, Nausea, Vomiting, Central nervous system depression, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (iso-Butanol)

Section 12: Ecological Information

12.1 Toxicity

Toxicity to fish	flow-through test LC50 - Pimephales promelas (fathead minnow) - 1,430 mg/l - 96 h(iso-Butanol)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia pulex (Water flea) - 1,100 mg/l - 48 h(iso-Butanol)
Toxicity to algae	static test EC50 - Pseudokirchneriella subcapitata - 1,799 mg/l - 72 h(iso-Butanol) (OECD Test Guideline 201)
Toxicity to bacteria	Growth inhibition IC50 - Sludge Treatment - > 1,000 mg/l - 16 h(iso-Butanol)

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12.2 Persistence and degradability
Biodegradability — aerobic - Exposure time 28 d(iso-Butanol) Result: 70 - 80 % - Readily biodegradable (OECD Test Guideline 301D)

12.3 Bioaccumulative potential — No data available

12.4 Mobility in soil — No data available(iso-Butanol)

12.5 Results of PBT and vPvB assessment — This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects — No data available

Section 13: Disposal considerations

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber b highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused

Section 14: Transport Information

14.1 UN number
ADR/RID: 1212 IMDG: 1212 IATA: 1212

14.2 UN proper shipping name
ADR/RID: ISOBUTANOL IMDG: ISOBUTANOL IATA: ISOBUTANOL

14.3 Transport hazard class(es)
ADR/RID: 3 IMDG: 3 IATA: 3

14.4 Packaging group
ADR/RID: III IMDG: III IATA: III

14.5 Environmental hazards
ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user
No data available

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This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

Section 15: Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical safety assessment
For this product a chemical safety assessment was not carried out

Section 16: Other Information

Full text of H-Statements referred to under sections 2 and 3.

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

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product