

## Material Safety Data Sheet

Version 3.1

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## 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : 2-Methyl-1-propanol

Product Number : 58448

Brand : Sigma

Supplier : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA

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Preparation Information : Sigma-Aldrich Corporation  
Product Safety - Americas Region  
1-800-521-8956

## 2. HAZARDS IDENTIFICATION

## Emergency Overview

## OSHA Hazards

Flammable liquid, Target Organ Effect, Irritant

## Target Organs

Central nervous system, Liver, Kidney

## GHS Classification

Flammable liquids (Category 3)

Acute toxicity, Oral (Category 5)

Acute toxicity, Inhalation (Category 5)

Acute toxicity, Dermal (Category 5)

Skin irritation (Category 2)

Serious eye damage (Category 1)

Specific target organ toxicity - single exposure (Category 3)

Acute aquatic toxicity (Category 2)

## GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H226

Flammable liquid and vapour.

H303 + H313

May be harmful if swallowed or in contact with skin.

H315

Causes skin irritation.

H318

Causes serious eye damage.

H333

May be harmful if inhaled.

H335 + H336

May cause respiratory irritation, and drowsiness or dizziness.

H401

Toxic to aquatic life.

Precautionary statement(s)

P261

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P280  
P305 + P351 + P338

Wear protective gloves/ eye protection/ face protection.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

#### HMIS Classification

Health hazard: 2  
Chronic Health Hazard: \*  
Flammability: 3  
Physical hazards: 0

#### NFPA Rating

Health hazard: 2  
Fire: 3  
Reactivity Hazard: 0

#### Potential Health Effects

**Inhalation** May be harmful if inhaled. Causes respiratory tract irritation. Vapours may cause drowsiness and dizziness.  
**Skin** May be harmful if absorbed through skin. Causes skin irritation.  
**Eyes** Causes eye irritation.  
**Ingestion** May be harmful if swallowed.

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Isobutanol  
Isobutyl alcohol

Formula : C<sub>4</sub>H<sub>10</sub>O  
Molecular Weight : 74.12 g/mol

Component		Concentration
<b>iso-Butanol</b>		
CAS-No.	78-83-1	-
EC-No.	201-148-0	
Index-No.	603-108-00-1	

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### 4. FIRST AID MEASURES

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

#### 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.

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### 5. FIREFIGHTING MEASURES

#### Conditions of flammability

Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

#### Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

#### Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

**Hazardous combustion products**

Hazardous decomposition products formed under fire conditions. - Carbon oxides

**Further information**

Use water spray to cool unopened containers.

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**6. ACCIDENTAL RELEASE MEASURES****Personal precautions**

Use personal protective equipment. Avoid breathing vapors, 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.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

**Methods and materials 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).

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**7. HANDLING AND STORAGE****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.

**Conditions for safe storage**

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.

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**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Basis
iso-Butanol	78-83-1	TWA	50 ppm	USA. ACGIH Threshold Limit Values (TLV)
Remarks	Skin & eye irritation			
		TWA	50 ppm 150 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	100 ppm 300 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
	The value in mg/m3 is approximate.			
		TWA	50 ppm 150 mg/m3	USA. NIOSH Recommended Exposure Limits

**Personal protective equipment****Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of 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).

**Hand 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.

**Eye 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 and 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.

**Hygiene measures**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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**9. PHYSICAL AND CHEMICAL PROPERTIES****Appearance**

Form	liquid
Colour	no data available

**Safety data**

pH	no data available
Melting point/freezing point	Melting point/range: -108 °C (-162 °F) - lit.
Boiling point	108 °C (226 °F) - lit.
Flash point	28 °C (82 °F) - closed cup
Ignition temperature	no data available
Autoignition temperature	427 °C (801 °F)
Lower explosion limit	1.7 %(V)
Upper explosion limit	10.6 %(V)
Vapour pressure	8 hPa (6 mmHg) at 20 °C (68 °F) 10 hPa (8 mmHg) at 22 °C (72 °F)
Density	0.803 g/mL at 25 °C (77 °F)
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Viscosity, kinematic	4.00 mm <sup>2</sup> /s at 20 °C (68 °F)
Relative vapour density	2.55
Odour	no data available
Odour Threshold	no data available
Evaporation rate	0.6

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**10. STABILITY AND REACTIVITY****Chemical stability**

Stable under recommended storage conditions.

**Possibility of hazardous reactions**

Vapours may form explosive mixture with air.

**Conditions to avoid**

Heat, flames and sparks.

**Materials to avoid**

Strong oxidizing agents, Acid chlorides, Acid anhydrides Strong oxidizing agents, Acid chlorides, Acid anhydrides

**Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Other decomposition products - no data available

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**11. TOXICOLOGICAL INFORMATION****Acute toxicity****Oral LD50**

LD50 Oral - rat - 2,460 mg/kg

LD50 Oral - rat - 2,500 - 6,400 mg/kg

**Inhalation LC50**

LC50 Inhalation - rat - 4 h - 8000 ppm

**Dermal LD50**

LD50 Dermal - rabbit - 3,400 mg/kg

LD50 Dermal - rabbit - 4,240 mg/kg

**Other information on acute toxicity**

LD50 Intraperitoneal - mouse - 544 mg/kg

LD50 Intravenous - mouse - 417 mg/kg

LD50 Intraperitoneal - rabbit - 323 mg/kg

LD50 Intraperitoneal - guinea pig - 1,201 mg/kg

LD50 Intraperitoneal - Hamster - 1,401 mg/kg

**Skin corrosion/irritation**

Skin - guinea pig - Mild skin irritation

**Serious eye damage/eye irritation**

Eyes - rabbit -

Remarks: Moderate eye irritation

Eyes - rabbit - Moderate eye irritation

**Respiratory or skin sensitization**

Dermatitis

**Germ cell mutagenicity**

no data available

**Carcinogenicity**

Carcinogenicity - rat - Oral

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors. Leukaemia

Carcinogenicity - rat - Subcutaneous

Tumorigenic: Carcinogenic by RTECS criteria. Gastrointestinal: Tumors. Liver: Tumors.

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.

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.

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.

**Reproductive toxicity**

no data available

#### **Teratogenicity**

no data available

#### **Specific target organ toxicity - single exposure (Globally Harmonized System)**

May cause respiratory irritation.

May cause drowsiness or dizziness.

#### **Specific target organ toxicity - repeated exposure (Globally Harmonized System)**

no data available

#### **Aspiration hazard**

no data available

#### **Potential health effects**

<b>Inhalation</b>	May be harmful if inhaled. Causes respiratory tract irritation. Vapours may cause drowsiness and dizziness.
<b>Ingestion</b>	May be harmful if swallowed.
<b>Skin</b>	May be harmful if absorbed through skin. Causes skin irritation.
<b>Eyes</b>	Causes eye irritation.

#### **Signs and Symptoms of Exposure**

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.

#### **Synergistic effects**

no data available

#### **Additional Information**

RTECS: NP9625000

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## **12. ECOLOGICAL INFORMATION**

#### **Toxicity**

Toxicity to fish                      LC50 - Pimephales promelas (fathead minnow) - 1.220 mg/l - 96 h

#### **Persistence and degradability**

no data available

#### **Bioaccumulative potential**

no data available

#### **Mobility in soil**

no data available

#### **PBT and vPvB assessment**

no data available

#### **Other adverse effects**

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic life.

no data available

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## **13. DISPOSAL CONSIDERATIONS**

#### **Product**

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

#### **Contaminated packaging**

Dispose of as unused product.

## 14. TRANSPORT INFORMATION

### DOT (US)

UN number: 1212 Class: 3 Packing group: III  
Proper shipping name: Isobutanol  
Reportable Quantity (RQ): 5000 lbs  
Marine pollutant: No  
Poison Inhalation Hazard: No

### IMDG

UN number: 1212 Class: 3 Packing group: III EMS-No: F-E, S-D  
Proper shipping name: ISOBUTANOL  
Marine pollutant: No

### IATA

UN number: 1212 Class: 3 Packing group: III  
Proper shipping name: Isobutanol

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## 15. REGULATORY INFORMATION

### OSHA Hazards

Flammable liquid, Target Organ Effect, Irritant

### SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### SARA 313 Components

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.

### SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

### Massachusetts Right To Know Components

	CAS-No.	Revision Date
iso-Butanol	78-83-1	1993-04-24

### Pennsylvania Right To Know Components

	CAS-No.	Revision Date
iso-Butanol	78-83-1	1993-04-24

### New Jersey Right To Know Components

	CAS-No.	Revision Date
iso-Butanol	78-83-1	1993-04-24

### California Prop. 65 Components

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

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## 16. OTHER INFORMATION

### Further information

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