



SIGMA-ALDRICH

## Material Safety Data Sheet

Date Printed: 03/18/2009  
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Version 1.120

### Section 1 - Product and Company Information

**Product Name** Isobutyraldehyde, 98%  
**Product Number** 320358  
**Brand** Aldrich Chemical

**Company** Sigma-Aldrich  
**Address** 3050 Spruce Street  
**City, State, Zip, Country** SAINT LOUIS, MO 63103 US  
**Technical Phone:** 800-325-5832  
**Fax:** 800-325-5052

**Emergency Phone:** 314-776-6555

### Section 2 - Composition/Information on Ingredient

<u>Substance Name</u>	<u>CAS #</u>	<u>SARA 313</u>	<u>EC no</u>	<u>Annex I Index Number</u>
ISO-BUTYRALDEHYDE	78-84-2	Yes	201-149-6	

**Formula** C<sub>4</sub>H<sub>8</sub>O  
**Synonyms** Isobutylaldehyde, Isobutanol, Isobutyral, Isobutyraldehyd (Czech), Isobutyric aldehyde, Isobutyryl aldehyde, Isopropyl aldehyde, Isopropyl formaldehyde, Methyl propanal, 2Methylpropanal, 2Methyl-1-propanal, alpha-Methylpropionaldehyde, 2Methylpropionaldehyde, NCI-C60968, Propanal, 2-methyl-, Propionaldehyde, 2methyl-, Valine aldehyde

### Section 3 - Hazards Identification

#### Emergency Overview

Flammable (USA) Highly Flammable (EU).  
Stench.

**HMS Rating**  
Health: 1 Flammability: 3 Reactivity: 0

**NFPA Rating**  
Health: 1 Flammability: 3 Reactivity: 0

For additional information on toxicity, please refer to Section 11.

### Section 4 - First Aid Measures

#### Oral Exposure

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

#### Inhalation Exposure

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

#### Dermal Exposure

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

#### Eye Exposure

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. ~~As an~~ adequate flushing by separating the eyelids with fingers. Call a physician.

### Section 5 - Fire Fighting Measures

**Flammable Hazards:** Yes

#### Explosion Hazards

Vapor may travel considerable distance to source of ignition and flash back.  
Container explosion can occur under fire conditions. In advanced or massive fires the area should be evacuated and the fire should be fought from a remote explosionresistant location.  
Forms explosive mixtures in air.

**Flash Point:** -22 °F -19 °C

**Explosion Limits:** Lower: 1.6 % Upper: 11.0 %

**Autoignition Temp:** 190 °C **Flammability:** Yes

#### Extinguishing Media Suitable

For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be effective. Cool all affected containers with flooding quantities of water.

#### Firefighting

##### Protective Equipment

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

##### Specific Hazard(s)

Flammable liquid. Emits toxic fumes under fire conditions.

### Section 6 - Accidental Release Measures

#### Procedure to be Followed in Case of Leak or Spill

Evacuate area. Shut off all sources of ignition.

#### Procedure(s) of Personal Precaution(s)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

#### Methods for Cleaning Up

Cover with dry-lime, sand, or soda ash. Place in covered containers using nonsparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

### Section 7 - Handling and Storage

#### Handling

##### User Exposure

Do not breathe vapor. Avoid contact with eyes, skin, and clothing. ~~Avoid prolonged or repeated exposure.~~

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**Storage**  
**Suitable**

Keep container closed. Keep away from heat, sparks, and open flame. Store at 2-8°C

## Section 8 - Exposure Controls / PPE

### Engineering Controls

Safely shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

### Personal Protective Equipment

#### Respiratory

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate, use a fullface 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 fullface supplied air respirator.

#### Hand

Compatible chemical-resistant gloves.

#### Eye

Chemical safety goggles.

### General Hygiene Measures

Wash thoroughly after handling. Wash contaminated clothing before reuse.

### Exposure Limits

Country	Type	Value
Poland	NDS	100 MG/M3
Poland	NDSch	-
Poland	NDSP	-
Russia	STEL	5 mg/m3

**Remarks:** Skin

## Section 9 - Physical/Chemical Properties

Appearance	Physical State	Color	Odor
	Clear liquid	Colorless	Unpleasant odor.

**Molecular Weight** 72.11 AMU

pH	N/A
BP/BP Range	63 - 64 °C
MP/MP Range	-65 °C
Freezing Point	N/A
Vapor Pressure	66 mmHg
Vapor Density	2.5 g/l
Saturated Vapor Conc.	N/A
SG/Density	0.79 g/cm3
Bulk Density	N/A
Odor Threshold	N/A
Volatile%	N/A
VOC Content	N/A
Water Content	N/A
Solvent Content	N/A
Evaporation Rate	N/A
Viscosity	N/A
Partition Coefficient	Log Kow: 0.77
Decomposition Temp.	N/A
Flash Point °F	-2.2 °F
Flash Point °C	-19 °C

Method: closed cup  
Method: closed cup

<b>Explosion Limits</b>	Lower: 1.6 % Upper: 11.0 %
<b>Flammability</b>	N/A
<b>Autoignition Temp</b>	190 °C
<b>Refractive Index</b>	1.374
<b>Solubility</b>	N/A

N/A = not available

## Section 10 - Stability and Reactivity

### Stability

Stable

Stable

### Materials to Avoid

Oxidizing agents, Strong acids, Strong bases, Strong reducing agents

### Hazardous Decomposition Products

Carbon monoxide, Carbon dioxide

### Hazardous Polymerization

Will not occur.

## Section 11 - Toxicological Information

### Route of Exposure

#### Skin Contact

May cause skin irritation.

#### Skin Absorption

May be harmful if absorbed through the skin.

#### Eye Contact

May cause eye irritation.

#### Inhalation

May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

#### Ingestion

May be harmful if swallowed.

### Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**RTECS Number:** NQ4025000

### Toxicity Data

Oral - Rat: > 3,000 mg/kg (LD50)

Skin - Rabbit: > 5,000 mg/kg (LD50)

Inhalation - Rat: > 23,900 mg/m3 (LC50)

Oral - Mouse: > 7,000 mg/kg (LD50)

Oral - Rat: 960 mg/kg (LD50)

Remarks: Lungs, Thorax, or Respiration: Other changes.

Gastrointestinal: Necrotic changes.

Blood: Hemorrhage.

Inhalation - Mouse: 39,500 mg/m3 (LC50)

Remarks: Behavioral: Excitement.

Sense Organs and Special Senses (Nose, Eye, Ear, and Taste): Eye: Other.

Lungs, Thorax, or Respiration: Pleural thickening.

Skin - Rabbit: 7130 UL/KG (LD50)

#### Irritation Data

Skin - Rabbit:  
Remarks: No irritation effect

Eyes - Rabbit:  
Remarks: No irritation effect

Skin - Rabbit: 397 mg  
Remarks: Open irritation test

#### NTP Carcinogen List

<u>Rating</u>	<u>Species</u>	<u>Route</u>
No evidence.	Mouse/rat	Inhalation

#### Chronic Exposure- Reproductive Hazard

<u>Species</u>	<u>Dose</u>	<u>Route of Application</u>	<u>Exposure Time</u>
Rat	7500 MG/M3/6H	Inhalation	(6-15D PREG)

Result: Maternal Effects: Other effects.

### Section 12 - Ecological Information

#### Acute Ecotoxicity Tests

##### Test Type

LC50 Fish

##### Species

Leuciscus idus

**Time:** 48.0 h  
**Value:** 86 mg/l

##### Test Type

EC50 Daphnia

##### Species

Daphnia magna

**Time:** 48.0 h  
**Value:** 277 mg/l

##### Test Type

EC50 Algae

**Time:** 72.0 h  
**Value:** 84 mg/l

#### Elimination

### Section 13 - Disposal Considerations

#### Appropriate Method of Disposal of Substance or Preparation

Contact a licensed professional waste disposal service to dispose of this material.  
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.  
Observe all federal, state, and local environmental regulations.

### Section 14 - Transport Information

#### DOT

**Proper Shipping Name:** Isobutylaldehyde [or] Isobutyl aldehyde  
**UN#:** 2045  
**Class:** 3  
**Packing Group:** Packing Group II  
**Hazard Label:** Flammable liquid  
**PIH:** Not PIH

#### IATA

**Proper Shipping Name:** Isobutylaldehyde  
**IATA UN Number:** 2045  
**Hazard Class:** 3

Packing Group: II

### Section 15 - Regulatory Information

#### EU Additional Classification

**Symbol of Danger:** F

**Indication of Danger**

Highly Flammable.

**Risk Statements** R: 11

Highly flammable.

**Safety Statements** S: 16

Keep away from sources of ignition- no smoking.

#### US Classification and Label Text

**Indication of Danger**

Flammable (USA) Highly Flammable (EU).

**Safety Statements**

Keep away from sources of ignition- no smoking. Wear suitable protective clothing and gloves.

**US Statements**

Stench.

#### United States Regulatory Information

**SARA Listed:** Yes

**De minimis:** 1 %

**Notes:** This product is subject to SARA section 313 reporting requirements.

**TSCA Inventory Item:** Yes

#### Canada Regulatory Information

**WHMIS Classification**

This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

**DSL:** Yes

**NDSL:** No

### Section 16 - Other Information

#### Disclaimer

For R&D use only. Not for drug, household or other uses.

#### Warranty

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. SigmaAldrich Inc., shall not be held liable for any damage resulting from handling or form contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2009 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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