

**SIGMA-ALDRICH****Material Safety Data Sheet**

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**Section 1 - Product and Company Information**

Product Name	Isobutyraldehyde, 98% <sup>+</sup>
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
	<b>Emergency Phone:</b> 314-776-6555

**Section 2 - Composition/Information on Ingredient**

Substance Name	CAS #	SARA 313	EC no	Annex I Index Number
ISO-BUTYRALDEHYDE	78-84-2	Yes	201-149-6	
<b>Formula</b>				
<b>Synonyms</b>				
C4H8O Isobutraldehyde, Isobutanal, Isobutryl, Isobutyraldehyd (Czech), Isobutyric aldehyde, Isobutyryl aldehyde, Isopropyl aldehyde, Isopropyl formaldehyde, Methyl propanal, $\alpha$ Methylpropanal, 2-Methyl-1-propanal, alpha-Methylpropionaldehyde, 2-Methylpropionaldehyde, NCI-C60968, Propanal, 2-methyl-, Propionaldehyde, 2methyl-, Valine aldehyde				

**Section 3 - Hazards Identification**

**Emergency Overview**  
 Flammable (USA) Highly Flammable (EU).  
 Stench.

**HMIS 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. Assess 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**

Safety 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**  
Clear liquid

**Color**  
Colorless

**Odor**  
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 4.4 °C

**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

**Explosion Limits** Lower: 1.6 %  
Upper: 11.0 %  
**Flammability** N/A  
**Autoignition Temp** 190 °C  
**Refractive Index** 1.374  
**Solubility** 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****Hazardous Decomposition Products**

Carbon monoxide, Carbon dioxide

**Hazardous Polymerization****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:Nerotic 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:** Isobutyraldehyde [or] Isobutyl aldehyde  
**UN#:** 2045  
**Class:** 3  
**Packing Group:** Packing Group II  
**Hazard Label:** Flammable liquid  
**PIH:** Not PIH

**IATA**

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

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**Sigma-Aldrich Corporation**  
[www.sigma-aldrich.com](http://www.sigma-aldrich.com)

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  
**Dominimis:** 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. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from 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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