



SIGMA-ALDRICH

Material Safety Data Sheet

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Section 1 - Product and Company Information

Product Name Isobutyraldehyde, 99+%
Product Number 240788
Brand Aldrich Chemical

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS, MO 63103 US
Technical Phone: 314 771 5765
Fax: 800 325 5052
Emergency Phone: 414 273 3850 Ext. 5996

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 C4H8O
Synonyms Isobutaldehyde, Isobutanal, Isobutyral, Isobutyraldehyd (Czech), Isobutyric aldehyde, Isobutyryl aldehyde, Isopropyl aldehyde, Isopropyl formaldehyde, Methyl propanal, 2-Methylpropanal, 2-Methyl-1-propanal, alpha-Methylpropionaldehyde, 2-Methylpropionaldehyde, NCI-C60968, Propanal, 2-methyl-, Propionaldehyde, 2-methyl-, 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. Assure 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 explosion-resistant location.
Forms explosive mixtures in air.

Flash Point: -2.2 °F -19 °C

Explosion Limits: Lower: 1.6 % Upper: 11.0 %

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

Extinguishing Media

Suitable

Water spray. Carbon dioxide, dry chemical powder, or appropriate foam. Use water spray to cool fire-exposed containers.

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 non-sparking 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.

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

Government approved respirator.

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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	

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

Method: closed cup
Method: closed cup

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: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: Value:
48.0 h 86 mg/l

Test Type
EC50 Daphnia

Species
Daphnia magna

Time: Value:
48.0 h 277 mg/l

Test Type
EC50 Algae

Time: Value:
72.0 h 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
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
Deminimis: 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 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

