

MATERIAL SAFETY DATA SHEET

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Version 1.12

Section 1 - Product and Company Information

Product Name ISOBUTYRALDEHYDE, DRY, 98%
Product Number 538205
Brand ALDRICH

Company Sigma-Aldrich
Address 3050 Spruce Street
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

Substance Name	CAS #	SARA 313
ISO-BUTYRALDEHYDE	78-84-2	Yes

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
RTECS Number: NQ4025000

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

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 - 19.0 °C Method: closed cup

EXPLOSION LIMITS

Lower: 1.6 % Upper: 11 %

AUTOIGNITION TEMP

190 °C

FLAMMABILITY

N/A

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 ineffective. 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 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: 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 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.
Hand: Compatible chemical-resistant gloves.
Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash thoroughly after handling. Wash contaminated clothing before reuse.

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	100 MG/M3
Poland		NDSch	-
Poland		NDSP	-
Russia	OEL	STEL	5 mg/m3
Remarks: Skin			

Section 9 - Physical/Chemical Properties

Appearance	Physical State: Clear liquid Color: Colorless Odor: Unpleasant odor.	
Property	Value	At Temperature or Pressure
Molecular Weight	72.11 AMU	
pH	N/A	
BP/BP Range	63.0 - 64.0 °C	
MP/MP Range	- 65.0 °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
Surface Tension	N/A
Partition Coefficient	Log Kow: 0.77
Decomposition Temp.	N/A
Flash Point	- 2.2 °F - 19.0 °C Method: closed cup

Explosion Limits Lower: 1.6 %
Upper: 11 %

Flammability N/A
Autoignition Temp 190 °C
Refractive Index 1.374
Optical Rotation N/A
Miscellaneous Data N/A
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: Material may be irritating to mucous membranes and
upper respiratory tract. May be harmful if inhaled.

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.

TOXICITY DATA

Oral

Rat

> 3,000 mg/kg

LD50

Skin

Rabbit

> 5,000 mg/kg

LD50

4 H

Inhalation
Rat
> 23,900 mg/m3
LC50
Oral
Mouse
> 7,000 mg/kg
LD50

Oral
Rat
960 mg/kg
LD50

Remarks: Blood: Hemorrhage. Lungs, Thorax, or Respiration: Other changes. Gastrointestinal: Necrotic changes.

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

Rating: No evidence.
Species: Mouse/rat
Route: Inhalation

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat
Dose: 7500 MG/M3/6H
Route of Application: Inhalation
Exposure Time: (6-15D PREG)
Result: Maternal Effects: Other effects.

Section 12 - Ecological Information

ACUTE ECOTOXICITY TESTS

Test Type: LC50 Fish
Species: Leuciscus idus

Time: 48 h
Value: 86 mg/l

Test Type: EC50 Daphnia
Species: Daphnia magna
Time: 48 h
Value: 277 mg/l

Test Type: EC50 Algae
Time: 72 h
Value: 84 mg/l

ELIMINATION

Elimination: 90.0 - 100.0 %

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.
R: 11
Risk Statements: Highly flammable.
S: 16
Safety Statements: 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 2008 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.