

Safety Data Sheet

ISO-BUTYRALDEHYDE

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Version: 3.0

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(30090856/SDS_GEN_US/EN)

1. Identification

Product identifier used on the label

ISO-BUTYRALDEHYDE

Recommended use of the chemical and restriction on use

Recommended use*: for industrial use only

* The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:

BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

Emergency telephone number

CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification

Chemical family: aldehydes

2. Hazards Identification

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

Flam. Liq.	2	Flammable liquids
Eye Dam./Irrit.	2B	Serious eye damage/eye irritation
Aquatic Acute	3	Hazardous to the aquatic environment - acute

Label elements

Pictogram:

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Signal Word:
Danger

Hazard Statement:

H225 Highly flammable liquid and vapour.
H320 Causes eye irritation.
H402 Harmful to aquatic life.

Precautionary Statements (Prevention):

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves and eye/face protection.
P243 Take action to prevent static discharges.
P273 Avoid release to the environment.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
P233 Keep container tightly closed.
P240 Ground and bond container and receiving equipment.
P242 Use only non-sparking tools.
P264 Wash with plenty of water and soap thoroughly after handling.

Precautionary Statements (Response):

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P337 + P311 If eye irritation persists: Call a POISON CENTER or doctor/physician.
P370 + P378 In case of fire: Use... to extinguish.

Precautionary Statements (Storage):

P403 + P235 Store in a well-ventilated place. Keep cool.

Precautionary Statements (Disposal):

P501 Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

3. Composition / Information on Ingredients

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

<u>CAS Number</u>	<u>Weight %</u>	<u>Chemical name</u>
78-84-2	> 99.5%	isobutyraldehyde

4. First-Aid Measures

Description of first aid measures

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General advice:

Immediately remove contaminated clothing. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). If not breathing, give artificial respiration. First aid personnel should pay attention to their own safety.

If inhaled:

Keep patient calm, remove to fresh air, seek medical attention.

If on skin:

If irritation develops, seek medical attention.

If in eyes:

In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. Seek medical attention.

If swallowed:

Rinse mouth and then drink 200-300 ml of water.

Do not induce vomiting. Seek medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: Overexposure may cause: , dyspnea, coughing

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Hazards: No hazard is expected under intended use and appropriate handling.

Indication of any immediate medical attention and special treatment needed

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
alcohol-resistant foam, carbon dioxide, dry powder

Unsuitable extinguishing media for safety reasons:
water spray

Additional information:
Water jet can rapidly spread fire.

Special hazards arising from the substance or mixture

Hazards during fire-fighting:

Vapours may form explosive mixture with air. Cool endangered containers with water-spray. Risk of bursting. Burning produces harmful and toxic fumes.

Advice for fire-fighters

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

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Further information:

Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Vapours are heavier than air and may accumulate in low areas and travel a considerable distance up to the source of ignition.

Impact Sensitivity:

Remarks: Based on the chemical structure there is no shock-sensitivity.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid contact with the skin, eyes and clothing. Avoid all sources of ignition: heat, sparks, open flame. Keep people away and stay on the upwind side. Breathing protection required.

Environmental precautions

Do not discharge into drains/surface waters/groundwater. Do not discharge into the subsoil/soil.

Methods and material for containment and cleaning up

Spills should be contained, solidified, and placed in suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling

Protect from air. Ensure thorough ventilation of stores and work areas.

Handle in accordance with good industrial hygiene and safety practice. Ground and/or bond all equipment to prevent electrostatic charges. Avoid all sources of ignition: heat, sparks, open flame.

Protection against fire and explosion:

Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

When containers are opened, flammable vapours may be released. Empty containers may contain flammable residue. Keep away from sources of ignition - No smoking.

Conditions for safe storage, including any incompatibilities

No applicable information available.

Suitable materials for containers: Carbon steel (Iron), tinned carbon steel (Tinplate), glass, Stainless steel 1.4301 (V2), Stainless steel 1.4401, High density polyethylene (HDPE)

Further information on storage conditions: Keep container tightly closed in a cool, well-ventilated place. Protect from air.

8. Exposure Controls/Personal Protection

No occupational exposure limits known.

Advice on system design:

Provide local exhaust ventilation to control vapours/mists.

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Personal protective equipment

Respiratory protection:

Wear a NIOSH-certified (or equivalent) organic vapour respirator.

Hand protection:

Chemical resistant protective gloves, Suitable materials, butyl rubber

Eye protection:

Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures:

Avoid inhalation of vapour. Handle in accordance with good industrial hygiene and safety practice. Eye wash fountains and safety showers must be easily accessible.

9. Physical and Chemical Properties

Form:	liquid	
Odour:	pungent odour	
Odour threshold:	No applicable information available.	
Colour:	colourless to yellowish	
pH value:	not applicable	
Melting point:	-65.9 °C	
	Literature data.	
Boiling point:	64 °C	(measured)
	(1,013.25 hPa)	
Sublimation point:	No applicable information available.	
Flash point:	-24 °C	(DIN 51755, closed cup)
Flammability:	Highly flammable.	
Lower explosion limit:	1.6 %(V)	
Upper explosion limit:	11.0 %(V)	
Autoignition:	180 °C	
Vapour pressure:	230.65 hPa	(measured)
	(25 °C)	
	Literature data.	
Density:	0.78 g/cm ³	
	(25.8 °C)	
Relative density:	0.78	
	(25.8 °C)	
Vapour density:	No applicable information available.	
Partitioning coefficient n-octanol/water (log Pow):	0.77	(OECD Guideline 107)
	(25 °C)	
Self-ignition temperature:	Based on its structural properties the product is not classified as self-igniting.	
Thermal decomposition:	No decomposition if stored and handled as prescribed/indicated.	
Viscosity, dynamic:	0.43 mPa.s	
	(20 °C)	
	Literature data.	
Viscosity, kinematic:	No applicable information available.	

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Solubility in water:	60 g/l (25 °C, 1,013.25 hPa) Literature data.
Solubility (quantitative):	No applicable information available.
Solubility (qualitative):	No applicable information available.
Molar mass:	72.11 g/mol
Evaporation rate:	No applicable information available.

10. Stability and Reactivity

Reactivity

No applicable information available.

Corrosion to metals:

No corrosive effect on metal.

Oxidizing properties:

Based on its structural properties the product is not classified as oxidizing.

Formation of flammable gases:	Remarks:	Forms no flammable gases in the presence of water.
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Chemical stability

No applicable information available.

Possibility of hazardous reactions

When finely distributed, self-ignition is possible.

Conditions to avoid

Avoid all sources of ignition: heat, sparks, open flame.

Incompatible materials

acids, bases, amines, oxidizing agents

Hazardous decomposition products

Decomposition products:

Hazardous decomposition products: No hazardous decomposition products if stored and handled as prescribed/indicated.

Thermal decomposition:

No decomposition if stored and handled as prescribed/indicated.

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity

Assessment of acute toxicity: Of low toxicity after single ingestion. Virtually nontoxic by inhalation. Virtually nontoxic after a single skin contact.

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Oral

Type of value: LD50
Species: rat
Value: 3,730 mg/kg
An aqueous solution was tested.

Inhalation

Type of value: LC50
Species: rat (male)
Value: > 23.9 mg/l (similar to OECD guideline 403)
Exposure time: 4 h
The vapour was tested.

Dermal

Type of value: LD50
Species: rabbit
Value: 5,583 mg/kg

Assessment other acute effects

No applicable information available.

Irritation / corrosion

Assessment of irritating effects: Not irritating to the skin. Eye contact causes irritation.

Skin

Species: rabbit
Result: non-irritant
Method: OECD Guideline 404

Eye

Species: rabbit
Result: Irritant.

Sensitization

Assessment of sensitization: Skin sensitizing effects were not observed in animal studies.

Mouse ear swelling test (MEST)

Species: mouse
Result: Non-sensitizing.

Aspiration Hazard

No aspiration hazard expected.

Chronic Toxicity/Effects

Repeated dose toxicity

Assessment of repeated dose toxicity: The substance may cause damage to the upper respiratory tract after repeated inhalation, as shown in animal studies.
Overexposure may cause blood abnormalities.

Genetic toxicity

Assessment of mutagenicity: In the majority of studies performed with microorganisms and in mammalian cell culture, a mutagenic effect was not found. A mutagenic effect was also not observed in in vivo tests. The substance was not mutagenic in bacteria. The substance induced chromosomal aberrations in a mammalian cell culture test. The substance was not mutagenic in studies with mammals.

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Carcinogenicity

Assessment of carcinogenicity: In long-term studies in rats and mice in which the substance was given by inhalation, a carcinogenic effect was not observed.

Reproductive toxicity

Assessment of reproduction toxicity: Repeated inhalative uptake of the substance did not cause damage to the reproductive organs. The results of animal studies gave no indication of a fertility impairing effect. The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Teratogenicity

Assessment of teratogenicity: No indications of a developmental toxic / teratogenic effect were seen in animal studies.

Other Information

development of pulmonary edema

Symptoms of Exposure

Overexposure may cause:., dyspnea, coughing

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

12. Ecological Information

Toxicity

Aquatic toxicity

Assessment of aquatic toxicity:

Acutely harmful for aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish

LC50 (96 h) 23 mg/l, Pimephales promelas (APHA 1971, static)

Aquatic invertebrates

EC50 (48 h) 277 mg/l, Daphnia magna (Directive 79/831/EEC, static)

The details of the toxic effect relate to the nominal concentration.

Aquatic plants

EC50 (72 h) 83.7 mg/l (growth rate), Desmodesmus subspicatus (DIN 38412 Part 9, static)

Chronic toxicity to fish

No data available regarding toxicity to fish.

Chronic toxicity to aquatic invertebrates

No data available regarding toxicity to daphnids.

Assessment of terrestrial toxicity

No data available concerning terrestrial toxicity.

Microorganisms/Effect on activated sludge

Toxicity to microorganisms

DIN 38412 Part 8 aquatic

bacterium/EC50 (17 h): 468 mg/l

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Persistence and degradability

Assessment biodegradation and elimination (H2O)

Readily biodegradable (according to OECD criteria).

Elimination information

80 - 90 % BOD of the ThOD (14 d) (OECD 301C; ISO 9408; 92/69/EEC, C.4-F) (aerobic, Inoculum conforming to MITI requirements (OECD 301C))

Assessment of stability in water

According to structural properties, hydrolysis is not expected/probable.

Bioaccumulative potential

Assessment bioaccumulation potential

Significant accumulation in organisms is not to be expected.

Bioaccumulation potential

No data available.

Mobility in soil

Assessment transport between environmental compartments

The substance will slowly evaporate into the atmosphere from the water surface.

Adsorption to solid soil phase is not expected.

Additional information

Sum parameter

Chemical oxygen demand (COD): 1,992 mg/g

Adsorbable organically-bound halogen (AOX):

This product contains no organically-bound halogen.

13. Disposal considerations

Waste disposal of substance:

Dispose of in a RCRA-licensed facility. Do not discharge into waterways or sewer systems without proper authorization. Dispose of in accordance with national, state and local regulations.

Container disposal:

Empty containers with less than 1 inch of residue may be landfilled at a licensed facility. Dispose of container and any rinsate in an environmentally safe manner. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

RCRA: D001

14. Transport Information

Land transport

USDOT

Hazard class: 3

Packing group: II

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ID number: UN 2045
Hazard label: 3
Proper shipping name: ISOBUTYL ALDEHYDE (ISOBUTYRALDEHYDE)

Sea transport

IMDG

Hazard class: 3
Packing group: II
ID number: UN 2045
Hazard label: 3
Marine pollutant: NO
Proper shipping name: ISOBUTYL ALDEHYDE (ISOBUTYRALDEHYDE)

Air transport

IATA/ICAO

Hazard class: 3
Packing group: II
ID number: UN 2045
Hazard label: 3
Proper shipping name: ISOBUTYRALDEHYDE

15. Regulatory Information

Federal Regulations

Registration status:

Chemical TSCA, US released / listed

EPCRA 311/312 (Hazard categories): Refer to SDS section 2 for GHS hazard classes applicable for this product.

CERCLA RQ

100 LBS

CAS Number

78-84-2; 123-72-8

Chemical name

isobutyraldehyde; butyraldehyde

State regulations

State RTK

PA

NJ

CAS Number

78-84-2

78-84-2

Chemical name

isobutyraldehyde

isobutyraldehyde

NFPA Hazard codes:

Health: 2 Fire: 3 Reactivity: 1 Special:

HMIS III rating

Health: 2 Flammability: 3 Physical hazard: 1

16. Other Information

SDS Prepared by:

BASF NA Product Regulations

SDS Prepared on: 2019/06/24

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