

Safety data sheet

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BASF Safety data sheet according to the United Nations' Globally Harmonized System (UN GHS)

Date / Revised: 10.07.2024

Version: 1.0

Product: **n-BUTYRALDEHYDE**

(ID no. 30036655/SDS_GEN_IL/EN)

Date of print 13.10.2025

1. Identification

Product identifier

n-BUTYRALDEHYDE

Chemical name: n-Butyraldehyde pure

CAS Number: 123-72-8

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: Chemical

Details of the supplier of the safety data sheet

Company:

BASF SE

67056 Ludwigshafen

GERMANY

Operating Division Petrochemicals

Telephone: +49 621 60-42151

E-mail address: sds-petrochemicals@basf.com

Emergency telephone number

International emergency number:

Telephone: +49 180 2273-112

2. Hazards Identification

Classification of the substance or mixture

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According to UN GHS criteria

Flam. Liq. 2
Acute Tox. 5 (oral)
Acute Tox. 5 (dermal)
Eye Irrit. 2B
Aquatic Acute 3

For the classifications not written out in full in this section the full text can be found in section 16.

Label elementsGlobally Harmonized System (GHS)

Pictogram:



Signal Word:

Danger

Hazard Statement:

H225	Highly flammable liquid and vapour.
H320	Causes eye irritation.
H303 + H313	May be harmful if swallowed or in contact with skin.
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 protection or face protection.
P243	Take action to prevent static discharges.
P273	Avoid release to the environment.
P241	Use explosion-proof electrical, ventilating and lighting equipment.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P242	Use non-sparking tools.
P264	Wash contaminated body parts 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 or shower.
P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P302 + P312	IF ON SKIN: Call a POISON CENTER or a doctor/physician if you feel unwell.
P370 + P378	In case of fire: Use ... to extinguish.
P337 + P313	If eye irritation persists: Get medical attention.

Precautionary Statements (Storage):

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P403 + P235

Store in a well-ventilated place. Keep cool.

Precautionary Statements (Disposal):

P501

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

Other hazards

According to UN GHS criteria

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.

See section 12 - Results of PBT and vPvB assessment.

3. Composition/Information on Ingredients

Substances

Chemical nature

Butyraldehyde (Content (W/W): > 99 %)

CAS Number: 123-72-8

EC-Number: 204-646-6

INDEX-Number: 605-006-00-2

Hazardous ingredients (GHS)

According to UN GHS criteria

Butyraldehyde

Content (W/W): > 99 % - < 100 %

CAS Number: 123-72-8

EC-Number: 204-646-6

INDEX-Number: 605-006-00-2

Flam. Liq. 2

Acute Tox. 5 (oral)

Acute Tox. 5 (dermal)

Eye Irrit. 2B

Aquatic Acute 3

H225, H320, H303 + H313, H402

For the classifications not written out in full in this section the full text can be found in section 16.

Mixtures

Not applicable

4. First-Aid Measures

Description of first aid measures

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.

If inhaled:

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

On skin contact:

Wash thoroughly with soap and water

On contact with eyes:

Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:

Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

Indication of any immediate medical attention and special treatment needed

Treatment: Symptomatic treatment (decontamination, vital functions).

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:

dry powder, water spray, carbon dioxide, alcohol-resistant foam

Unsuitable extinguishing media for safety reasons:

water jet

Additional information:

Use extinguishing measures to suit surroundings.

Special hazards arising from the substance or mixture

Highly flammable. Cool endangered containers with water-spray. See SDS section 7 - Handling and storage.

Advice for fire-fighters

Special protective equipment:

Wear a self-contained breathing apparatus. Special protective equipment for firefighters

Further information:

Evacuate area of all unnecessary personnel. Fight fire from maximum distance.

Extend fire extinguishing measures to the surroundings. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. Accidental Release Measures

High risk of slipping due to leakage/spillage of product.

Release of substance/product can cause fire or explosion. Shut off or stop source of leak. Shut off or stop released substance/product under safe conditions.

Pack in tightly closed containers for disposal.

Personal precautions, protective equipment and emergency procedures

Handle in accordance with good industrial hygiene and safety practice.

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

Environmental precautions

Discharge into the environment must be avoided.

Methods and material for containment and cleaning up

Pick up with suitable appliance and dispose of. Spills should be contained, solidified, and placed in suitable containers for disposal. Dispose of absorbed material in accordance with regulations.

7. Handling and Storage

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice.

Protection against fire and explosion:

Avoid all sources of ignition: heat, sparks, open flame. Ground all transfer equipment properly to prevent electrostatic discharge.

Conditions for safe storage, including any incompatibilities

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

Specific end use(s)

For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

8. Exposure Controls/Personal Protection

Control parameters

Components with occupational exposure limits

No occupational exposure limits known.

Exposure controls

Personal protective equipment

Respiratory protection:

Wear respiratory protection if ventilation is inadequate. Gas filter for gases/vapours of organic compounds (boiling point >65 °C, e. g. EN 14387 Type A)

Hand protection:

Chemical resistant protective gloves (EN ISO 374-1)

Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1):

butyl rubber (butyl) - 0.7 mm coating thickness

Manufacturer's directions for use should be observed because of great diversity of types.

Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.

Eye protection:

Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Avoid inhalation of vapour.

Wearing of closed work clothing is required additionally to the stated personal protection equipment.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

State of matter:	liquid	
Form:	liquid	
Colour:	colourless	
Odour:	aldehyde-like	
Odour threshold:	not determined	
Freezing point:	-99 °C (1.013 hPa)	(other)
Boiling point:	Literature data. 74,9 °C (1.013 hPa)	(other)

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Flammability:	Highly flammable.	(derived from flash - and boiling point)
Lower explosion limit:	For liquids not relevant for classification and labelling., The lower explosion point may be 5 - 15 °C below the flash point.	
Upper explosion limit:	For liquids not relevant for classification and labelling.	
Flash point:	-12 °C	(DIN 51755, closed cup)
Auto-ignition temperature:	195 °C	(DIN 51794)
Self-ignition temperature:	Temperature: 195 °C Pressure: 1.013 hPa	Test type: Self-ignition at high temperatures. (Method: DIN 51794)
Thermal decomposition:	not self-igniting No decomposition if stored and handled as prescribed/indicated.	
pH value:	6 - 7 (71 g/l, 20 °C)	
Viscosity, dynamic:	0,43 mPa.s (20 °C) Literature data.	
Thixotropy:	not thixotropic	
Solubility in water:	37 g/l (25 °C)	
Partitioning coefficient n-octanol/water (log Kow):	0,79	(OECD Guideline 107)
Vapour pressure:	116,4 hPa (20 °C) dynamic	(BASF method)
Relative density:	0,81 (20 °C, 1.013 hPa)	(OECD Guideline 109)
Density:	0,81 g/cm ³ (20 °C, 1.013 hPa) liquid	(OECD Guideline 109)
Relative vapour density (air):	2,48 (20 °C) Heavier than air.	(calculated)
<u>Particle characteristics</u>		
Particle size distribution:	(other) Test substance: The substance / product is marketed or used in a non solid or granular form.	

9.2. Other information

Information with regard to physical hazard classes

Explosives

Explosion hazard: Based on the chemical structure there is no indication of explosive properties. (other)

Impact sensitivity: not shock-sensitive
Based on the chemical structure there is no shock-sensitivity.

Oxidizing properties

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Fire promoting properties: Based on its structural properties (other)
the product is not classified as
oxidizing.

Pyrophoric properties

Self-ignition temperature:

Test type: Spontaneous self-
ignition at room-temperature.
(Method: other)

not self-igniting

Self-heating substances and mixtures

Self heating ability: It is not a substance capable of
spontaneous heating.

Substances and mixtures, which emit flammable gases in contact with water

Formation of flammable gases:

Forms no flammable gases in the presence of water.

Corrosion to metals

No corrosive effect on metal.

Other safety characteristics

pKA:

The substance does not dissociate.

Adsorption/water - soil:

KOC: 5,1; log KOC: 0,707

(calculated)

Surface tension:

(other)

Based on chemical structure, surface
activity is not to be expected.

Molar mass:

72,11 g/mol

SAPT-Temperature:

Study scientifically not justified.

Evaporation rate:

Value can be approximated from
Henry's Law Constant or vapor
pressure.

10. Stability and Reactivity**Reactivity**

Corrosion to metals: No corrosive effect on metal.

Formation of

Remarks:

flammable gases:

Forms no flammable gases in the
presence of water.

Chemical stability

The product is stable if stored and handled as prescribed/indicated.

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

Substances to avoid:

amines, amine compounds, lye, lye mixtures

Hazardous decomposition products

Hazardous decomposition products:

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

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:

Of low toxicity after single ingestion. Virtually nontoxic by inhalation. Of low toxicity after short-term skin contact.

Experimental/calculated data:

LD50 rat (oral): 4.167 mg/kg

Literature data.

LC50 rat (by inhalation): 49 mg/l 4 h

Literature data. The vapour was tested.

LD50 rabbit (dermal): > 2.000 mg/kg

Irritation

Assessment of irritating effects:

Not irritating to the skin. Eye contact causes irritation.

Experimental/calculated data:

Skin corrosion/irritation rabbit: non-irritant (OECD Guideline 404)

Serious eye damage/irritation rabbit: Irritant. (OECD Guideline 405)

Respiratory/Skin sensitization

Assessment of sensitization:

Skin sensitizing effects were not observed in animal studies.

Experimental/calculated data:

Buehler test guinea pig: Non-sensitizing.

Germ cell mutagenicity

Assessment of mutagenicity:

Most of the results from the available studies show no evidence of a mutagenic effect.

Carcinogenicity

Assessment of carcinogenicity:

No data available concerning carcinogenic effects.

Reproductive toxicity

Assessment of reproduction toxicity:

The results of animal studies gave no indication of a fertility impairing effect. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Developmental toxicity

Assessment of teratogenicity:

No indications of a developmental toxic / teratogenic effect were seen in animal studies. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Specific target organ toxicity (single exposure)

Assessment of STOT single:

Based on available data, the classification criteria are not met.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:

The substance may cause damage to the upper respiratory tract after repeated inhalation, as shown in animal studies.

Aspiration hazard

No data available.

12. Ecological Information

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) 25,8 mg/l, Pimephales promelas (Fish test acute, static)

Aquatic invertebrates:

EC50 (24 h) 195 mg/l, Daphnia magna (DIN 38412 Part 11, static)

Nominal concentration.

Aquatic plants:

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Toxic limit concentration (192 h) 83 mg/l (growth rate), *Scenedesmus quadricauda* (Growth Inhibition Test)

Microorganisms/Effect on activated sludge:

Toxic limit concentration (16 h) 100 mg/l, *Pseudomonas putida* (DIN 38412 Part 8, aquatic)

Chronic toxicity to fish:

LC50 (14 d) 13,7 mg/l, *Poecilia reticulata* (OECD Guideline 204, semistatic)

Chronic toxicity to aquatic invertebrates:

No data available regarding toxicity to daphnids.

Assessment of terrestrial toxicity:

No data available.

Persistence and degradability

Assessment biodegradation and elimination (H₂O):

Readily biodegradable (according to OECD criteria).

Elimination information:

46 - 57 % BOD of the ThOD (5 d) (OECD 301C; ISO 9408; 92/69/EWG, C.4-F) (aerobic, activated sludge)

Assessment of stability in water:

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

Information on Stability in Water (Hydrolysis):

No data available.

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:

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

Adsorption in soil: Adsorption to solid soil phase is not expected.

Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative). Self classification

Other adverse effects

The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

Additional information

Adsorbable organically-bound halogen (AOX):
This product contains no organically-bound halogen.

13. Disposal Considerations

Waste treatment methods

Dispose of in accordance with national, state and local regulations.

Contaminated packaging:
Disposal must be made according to official regulations.

14. Transport Information

Land transport

ADR

UN number or ID number: UN1129
UN proper shipping name: BUTYRALDEHYDE

Transport hazard class(es): 3
Packing group: II
Environmental hazards: no
Special precautions for user: Tunnel code: D/E

RID

UN number or ID number: UN1129
UN proper shipping name: BUTYRALDEHYDE

Transport hazard class(es): 3
Packing group: II
Environmental hazards: no
Special precautions for user: None known

Inland waterway transport

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ADN

UN number or ID number: UN1129
UN proper shipping name: BUTYRALDEHYDE

Transport hazard class(es): 3
Packing group: II
Environmental hazards: no
Special precautions for user: None known

Transport in inland waterway vessel
Not evaluated

Sea transport

IMDG

UN number or ID number: UN 1129
UN proper shipping name: BUTYRALDEHYDE

Transport hazard class(es): 3
Packing group: II
Environmental hazards: no
Marine pollutant: NO
Special precautions for user: EmS: F-E; S-D

Air transport

IATA/ICAO

UN number or ID number: UN 1129
UN proper shipping name: BUTYRALDEHYDE

Transport hazard class(es): 3
Packing group: II
Environmental hazards: No Mark as dangerous for the environment is needed
Special precautions for user: None known

Maritime transport in bulk according to IMO instruments

Maritime transport in bulk is not intended.

15. Regulatory Information**Safety, health and environmental regulations/legislation specific for the substance or mixture**

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If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

16. Other Information

Full text of classifications, hazard symbols and hazard statements, if mentioned in section 2 or 3:

Flam. Liq.	Flammable liquids
Acute Tox.	Acute toxicity
Eye Irrit.	Eye irritation
Aquatic Acute	Hazardous to the aquatic environment - acute
H225	Highly flammable liquid and vapour.
H320	Causes eye irritation.
H303 + H313	May be harmful if swallowed or in contact with skin.
H402	Harmful to aquatic life.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

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