

SAFETY DATA SHEET



n-Butyraldehyde
10450

Version / Revision
Supersedes Version

5.02
5.01***

Revision Date
Issuing date

10-Feb-2021
10-Feb-2021

SECTION 1: Identification

1.1. Product identifier

Identification of the
substance/preparation

n-Butyraldehyde

CAS-No

123-72-8

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

Use of the Substance /
Preparation

Intermediate

Uses advised against

None

1.3. Details of the supplier of the safety data sheet

Supplier

OQ Chemicals Corporation
15375 Memorial Drive
West Memorial Place I
Suite 300
Houston, TX 77079
USA
Phone +1 346 378 7300

Product Information

Product Stewardship
FAX: +49 (0)208 693 2053
email: sc.psq@oq.com

1.4. Emergency telephone number

Emergency telephone number

NCEC +1 202 464 2554
available 24/7

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

This substance is classified in accordance with paragraph (d) of §1910.1200 (GHS-US classification).

Serious eye damage/eye irritation Category 2A, H319

Flammable liquid Category 2, H225

Environmental hazard Aquatic Acute 3; H402

OSHA Specified Hazards

Not applicable.

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2.2. Label elements

Labeling according to §1910.1200 (GHS-US labeling).

Hazard symbol(s)



Signal word

Danger

Hazard statements

H225: Highly flammable liquid and vapor.
H319: Causes serious 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.
P233: Keep container tightly closed.
P240: Ground and bond container and receiving equipment.
P241: Use explosion-proof electrical/ ventilating/ lighting equipment.
P242: Use non-sparking tools.
P243: Take precautionary measures against static discharge.
P264: Wash hands thoroughly after handling.
P273: Avoid release to the environment.
P280: Wear protective gloves/eye protection/face protection.

Response

P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313: If eye irritation persists: Get medical advice/ attention.

Storage

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

Disposal

P501: Dispose of contents/container in accordance with local regulation.

2.3. Other hazards

Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback
Vapours may form explosive mixture with air
Potential for exothermic hazard
Risk of receptacle bursting

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Auto ignition on large surfaces

Components of the product may be absorbed into the body by inhalation and ingestion

SECTION 3: Composition / information on ingredients

3.1. Substances

Component	CAS-No	Concentration (%)
Butyraldehyde	123-72-8	> 98,5

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation

Keep at rest. Aerate with fresh air. When symptoms persist or in all cases of doubt seek medical advice.

Skin

Wash off immediately with soap and plenty of water. When symptoms persist or in all cases of doubt seek medical advice.

Eyes

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Obtain medical attention.

Ingestion

Do not induce vomiting without medical advice. Call a physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

Main symptoms

shortness of breath.

Special hazard

Lung oedema.

4.3. Indication of any immediate medical attention and special treatment needed

General advice

Remove contaminated, soaked clothing immediately and dispose of safely. First aider needs to protect himself.

Treat symptomatically. In case of lung irritation, first treatment with cortisone spray. Control of circulatory system. Control of kidney function. Control of electrolyte metabolism.

SECTION 5: Firefighting measures

5.1. Extinguishing media

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Suitable extinguishing media

alcohol-resistant foam, dry chemical, carbon dioxide (CO₂), water spray

Unsuitable Extinguishing Media

Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Under conditions giving incomplete combustion, hazardous gases produced may consist of:

carbon monoxide (CO)

carbon dioxide (CO₂)

Combustion gases of organic materials must in principle be graded as inhalation poisons

Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback

Vapours may form explosive mixture with air

Risk of receptacle bursting

5.3. Advice for firefighters

Special protective equipment for firefighters

Fire fighter protection should include a self-contained breathing apparatus (NIOSH-approved or EN 133) and full fire-fighting turn out gear.

Precautions for firefighting

Cool containers / tanks with water spray. Dike and collect water used to fight fire. Keep people away from and upwind of fire.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: For personal protective equipment see section 8. Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition.

For emergency responders: Personal protection see section 8.

6.2. Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

6.3. Methods and material for containment and cleaning up

Methods for containment

Stop the flow of material, if possible without risk. Dike spilled material, where this is possible.

Methods for cleaning up

Soak up with inert absorbent material. DO NOT use combustible materials such as sawdust. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Take

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necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

6.4. Reference to other sections

For personal protective equipment see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms. Refill and handle product only in closed system.

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Advice on the protection of the environment

See Section 8: Environmental exposure controls.

Incompatible products

acids and bases
amines
oxidizing agents

7.2. Conditions for safe storage, including any incompatibilities

Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material. Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback. Vapours may form explosive mixture with air.

Technical measures/Storage conditions

Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Handle under nitrogen, protect from moisture. Store at temperatures not exceeding 30 °C/ 86 °F.

Suitable material

stainless steel, aluminium

Unsuitable material

mild steel

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Exposure limits United States of America

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No exposure limits established regarding ACGIH, OSHA Z-1 and OSHA Z-2.

8.2. Exposure controls

Appropriate Engineering controls

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Individual protection measures, such as personal protective equipment

General industrial hygiene practice

Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Ensure that eyewash stations and safety showers are close to the workstation location.

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Eye protection

Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

Hand protection

Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Suitable material	butyl-rubber
Evaluation	according to EN 374: level 3
Glove thickness	approx 0,3 mm
Break through time	< 60 min

Suitable material	polyvinylchloride
Evaluation	Information derived from practical experience
Glove thickness	approx 0.8 mm

Skin and body protection

Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

Respiratory protection

Respirator with filter for organic vapour. Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (vapor or mist). Equipment should conform to NIOSH.

Environmental exposure controls

If possible use in closed systems. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. Observe the exposure limits, clean exhaust air if needed. If recycling is not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of leakage into

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the atmosphere, or of entry into waterways, soil or drains.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	liquid
Colour	colourless
Odour	pungent
Odour threshold	No data available
pH	3 (50 g/l in water @ 20 °C (68 °F)) OECD 105
Melting point/range	< 4 °F (< -20 °C) @ 1013 hPa
Boiling point/range	167 °F (75 °C) @ 1 atm (101,3 kPa)
Method	OECD 103
Flash point	19,9 °F (-6,7 °C) @ 1013 hPa
Method	closed cup, ASTM D-93
Evaporation rate	7,8 (n-Butyl acetate = 1)
Flammability (solid, gas)	Does not apply, the substance is a liquid
Lower explosion limit	1,7 Vol %
Upper explosion limit	12,5 Vol %

Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
144	14,4	0,142	20	68	

Vapour density 2,5 (Air = 1) @ 20 °C (68 °F)

Relative density

Values	@ °C	@ °F	Method
0,81	20	68	OECD 109

Solubility 50 g/l @ 20 °C (68 °F), in water, OECD 105

log Pow 1,3 @ 20 °C (68 °F) OECD 107

Autoignition temperature 374 °F (190 °C) @ 1013 hPa

Method ASTM E 659

Decomposition temperature No data available

Viscosity 0,43 mPa*s @ 68 °F (20 °C)

Method dynamic, ISO 3219

9.2. Other information

Molecular weight 72,11

Molecular formula C₄ H₈ O

log Koc 0,707 calculated

Oxidizing properties Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties

Refractive Index 1,379 @ 68 °F (20 °C)

Heat of combustion 2479 kJ/mol @ 25 °C (77 °F)

Explosive properties Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties

Surface tension 70 mN/m (1 g/l @ 20°C (68°F)), OECD 115

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SECTION 10: Stability and Reactivity

10.1. Reactivity

The reactivity of the product corresponds to the typical reactivity shown by the substance group as described in any text book on organic chemistry.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions occur in the presence of acids, base or oxidizing agents. This reaction is exothermic and may create heat. When finely distributed, self-ignition is possible. May form explosive peroxides.***

10.4. Conditions to avoid

Avoid contact with heat, sparks, open flame and static discharge. Avoid any source of ignition.

10.5. Incompatible materials

bases, amines, acids, oxidizing agents.

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure Ingestion, Inhalation, Eye contact, Skin contact

Butyraldehyde, CAS: 123-72-8

Main symptoms

shortness of breath.

Target Organ Systemic Toxicant - Single exposure

Based on available data, the classification criteria are not met for:
STOT SE

Target Organ Systemic Toxicant - Repeated exposure

Based on available data, the classification criteria are not met for:
STOT RE

Acute toxicity

Butyraldehyde (123-72-8)

Routes of Exposure	Endpoint	Values	Species	Method
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Oral	LD50	> 2000 mg/kg	rat	Weight of evidence
Dermal	LD50	> 2000 mg/kg (4 h)	rabbit	EPA OPP 81-2
Inhalative	LC50	> 5,4 mg/l (4h)	rat	OECD 403

Butyraldehyde, CAS: 123-72-8

Assessment

Based on available data, the classification criteria are not met for:

Acute oral toxicity

Acute dermal toxicity

Acute inhalation toxicity

STOT SE

Irritation and corrosion

Butyraldehyde (123-72-8)

Target Organ Effects	Species	Result	Method	
Skin	rabbit	No skin irritation	OECD 404	4h
Eyes	rabbit	irritating	84/449/EEC B.5	24h
Respiratory tract	mouse	RD50: 1015-1532 ppm		10 min

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Assessment

The available data lead to the classification given in section 2

Sensitization

Butyraldehyde (123-72-8)

Target Organ Effects	Species	Evaluation	Method	
Skin	guinea pig	not sensitizing	OECD 406	

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Assessment

Based on available data, the classification criteria are not met for:

Skin sensitization

For respiratory sensitization, no data are available

Subacute, subchronic and prolonged toxicity

Butyraldehyde (123-72-8)

Type	Dose	Species	Method	
Subchronic toxicity	LOAEL: 75 mg/kg/d (13 weeks)	rat, male/female	Oral	
Subchronic toxicity	NOAEC: 0,15 mg/l/d (12 weeks)	rat, male/female	Inhalation	

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Assessment

Based on available data, the classification criteria are not met for:

STOT RE

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Carcinogenicity, Mutagenicity, Reproductive toxicity					
Butyraldehyde (123-72-8)					
Type	Dose	Species	Evaluation	Method	
Mutagenicity		Salmonella typhimurium	negative	Ames test	In vitro study
Mutagenicity		V79 cells, Chinese hamster	positive (without metabolic activation)	Gene mutations SLRL	In vitro study
Mutagenicity		CHO (Chinese Hamster Ovary) cells	negative	Chromosomal Aberration	In vitro study
Mutagenicity		CHO (Chinese Hamster Ovary) cells	positive	In-vitro Sister Chromatid Exchange (ECS)	In vitro study
Mutagenicity		CHO (Chinese Hamster Ovary) cells	negative	In-vitro Sister Chromatid Exchange (ECS)	in vivo
Mutagenicity		human hepatocytes rat, hepatocytes	negative	DNA-damage	In vitro study
Mutagenicity		mouse Drosophila melanogaster	negative	Weight of evidence Gene mutations SLRL Chromosomal Aberration Micronucleus	in vivo
Reproductive toxicity	LOAEC: 150 ppm	rat, parental		Inhalation	rat, parental read across
Reproductive toxicity	NOAEC: 1500 ppm	rat, parental		Inhalation	Reproductive toxicity: read across
Developmental Toxicity	NOAEC: 3 mg/l	rat		OECD 412	Maternal toxicity read across
Developmental Toxicity	NOAEC: 12 mg/l	rat		OECD 412	Developmental toxicity read across
Carcinogenicity	No data available				
Mutagenicity		human lymphocytes	negative (without metabolic activation)	In-vitro Sister Chromatid Exchange (ECS)	
Mutagenicity		mouse	positive	micronucleus test	in vivo
Reproductive toxicity	NOAEC: 750 ppm	rat, 1. Generation, male/female		Inhalation	read across

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CMR Classification

The available data on CMR properties are summarized in the table above. They do not indicate a classification into categories 1A or 1B

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Evaluation

Did not show reprotoxic effects in animal experiments

No cancer study was conducted

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Aspiration toxicity

no data available

Other adverse effects

Components of the product may be absorbed into the body by inhalation and ingestion.

Note

Handle in accordance with good industrial hygiene and safety practice. Further details on substance data can be found in the registration dossier under the following link:

<http://echa.europa.eu/information-on-chemicals/registered-substances>.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity

Butyraldehyde (123-72-8)

Species	Exposure time	Dose	Method
Daphnia magna (Water flea)	24h	EC50: 195 mg/l	DIN 38412, part 11
Pimephales promelas (fathead minnow)	96h	LC50: 25,8 mg/l	EPA-660/3-75-009
Pseudomonas putida	16 h	EC0: 100 mg/l (MIC)	DIN 38412, part 8

Long term toxicity

Butyraldehyde (123-72-8)

Type	Species	Dose	Method
Mortality	Poecilia reticulata (guppy)	LC50: 13,7 mg/l/14d	OECD 204

12.2. Persistence and degradability

Butyraldehyde, CAS: 123-72-8

Biodegradation

46 - 57 % (4-6 d), activated sludge, non-adapted, aerobic, OECD 301 C.

Abiotic Degradation

Butyraldehyde (123-72-8)

Type	Result	Method
Photolysis	Half-life (DT50): 5 h	calculated SRC AOP v1.92
Hydrolysis	No data available	

12.3. Bioaccumulative potential

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Type	Result	Method
log Pow	1,3 @ 20 °C (68 °F)	measured, OECD 107
BCF	3,162	calculated

12.4. Mobility in soil

Butyraldehyde (123-72-8)		
Type	Result	Method
Surface tension	70 mN/m (1 g/l @ 20°C (68°F))	OECD 115
Adsorption/Desorption	Koc: 5,1	calculated
Distribution to environmental compartments	no data available	

12.5. Results of PBT and vPvB assessment

Butyraldehyde, CAS: 123-72-8

PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

12.6. Other adverse effects

Butyraldehyde, CAS: 123-72-8

No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product Information

Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

Uncleaned empty packaging

Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

SECTION 14: Transport information

D.O.T. (49CFR)

14.1. UN number

UN 1129

14.2. UN proper shipping name

Butyraldehyde

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14.3. Transport hazard class(es)	3
14.4. Packing group	II
14.5. Environmental hazards	no
14.6. Special precautions for user	
Emergency Response Guide	129

ICAO-TI / IATA-DGR

14.1. UN number	UN 1129
14.2. UN proper shipping name	(Butyraldehyde)
14.3. Transport hazard class(es)	3
14.4. Packing group	II
14.5. Environmental hazards	no
14.6. Special precautions for user	no data available

IMDG

14.1. UN number	UN 1129
14.2. UN proper shipping name	(Butyraldehyde)
14.3. Transport hazard class(es)	3
14.4. Packing group	II
14.5. Environmental hazards	no
14.6. Special precautions for user	
EmS	F-E, S-D

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Product name	Butyraldehyde
Ship type	3
Pollution category	Y

SECTION 15: Regulatory information

Federal and State Regulations

Components of the product are listed in the quoted regulations. For details please refer to the regulations directly. This list is not exhaustive, please check for other applicable regulations.

Federal Regulations

This product is listed on the TSCA inventory

Section 313 Supplier Notification

This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372:

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Component	CAS-No	Concentration (%)
Butyraldehyde	123-72-8	> 98,5

This information must be included in all SDSs that are copied and distributed for this material.

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CERCLA Hazardous Substance

CERCLA RQ 100 LBS

EPCRA SARA Title III 313

de minimis concentration 1.0 %

State Regulations

Butyraldehyde, CAS: 123-72-8

IL Chemical Safety Act

MA Hazardous Substances List

MA RTK List

MN Hazardous Substances List

NJ RTK List

NY RTK List

PA RTK List

RI RTK List

International Inventories

Butyraldehyde, CAS: 123-72-8

AICS (AU)

DSL (CA)

IECSC (CN)

EC-No. 2046466 (EU)

ENCS (2)-494 (JP)

ISHL (2)-494 (JP)

KECI KE-03746 (KR)

INSQ (MX)

PICCS (PH)

TSCA (US)

NZIoC (NZ)

TCSI (TW)

SECTION 16: Other information

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Hazard Rating Systems

NFPA (National Fire Protection Association)

Health Hazard 3

Fire Hazard 3

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Reactivity 2

HMIS (Hazardous Material Information System)

Health Hazard 3

Flammability 3

Physical Hazard 0

Training advice

For effective first-aid, special training / education is needed.

Sources of key data used to compile the datasheet

Information contained in this safety data sheet is based on OQ owned data and public sources deemed valid or acceptable. The absence of data elements required by OSHA, ANSI or Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.

Further information for the safety data sheet

Changes against the previous version are marked by ***. Observe national and local legal requirements. For more information, other material safety data sheets or technical data sheets please consult the OQ homepage (www.chemicals.oq.com).

The use of a comma in section 3 and section 7 to 12 is the same as a period.

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End of Safety Data Sheet