

SAFETY DATA SHEET



n-Butyraldehyde
10450

Version / Revision
Supersedes Version

5
4.02***

Revision Date
Issuing date

25-Jun-2021
25-Jun-2021

SECTION 1: Identification of the substance / mixture and of the company / undertaking

1.1. Product identifier

Identification of the
substance/preparation

n-Butyraldehyde

CAS-No
EC No.

123-72-8
204-646-6

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

Identified uses

Transported isolated intermediate (1907/2006)

Uses advised against

None

1.3. Details of the supplier of the safety data sheet

Company/Undertaking
Identification

OQ Chemicals GmbH
Rheinpromenade 4A
D-40789 Monheim
Germany

Product Information

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

1.4. Emergency telephone number

Emergency telephone number +44 (0) 1235 239 670 (UK)
available 24/7

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation)

Flammable liquid Category 2, H225

Serious eye damage/eye irritation Category 2, H319

Additional information

For full text of Hazard- and EU Hazard-statements see SECTION 16.

2.2. Label elements

Labelling according to Regulation 1272/2008/EC and its amendments (CLP Regulation).

Hazard pictograms

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Signal word

Danger

Hazard statements

H225: Highly flammable liquid and vapour.
H319: Causes serious eye irritation.

Precautionary statements

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
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.
P313: Get medical advice/attention.
P403 + P235: Store in a well ventilated place. Keep cool.

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
Auto ignition on large surfaces
Components of the product may be absorbed into the body by inhalation and ingestion

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

SECTION 3: Composition / information on ingredients

3.1. Substances

Component	CAS-No	1272/2008/EC	Concentration (%)
Butyraldehyde	123-72-8	Flam. Liq. 2; H225 Eye Irrit. 2; H319	> 98,5

For full text of Hazard- and EU Hazard-statements see SECTION 16.

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

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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

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.



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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 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.

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

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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

Temperature class
T4

7.3. Specific end use(s)

Transported isolated intermediate (1907/2006)

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Exposure limits European Union

No exposure limits established

Exposure limits UK

No exposure limits established.

DNEL & PNEC

This substance is registered as intermediate under strictly controlled conditions.

8.2. Exposure controls

Special adaptations (REACH)

Not applicable.

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.

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

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

Equipment should conform to EN 166

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 A filter. Full mask with above mentioned filter according to producers using requirements or self-contained breathing apparatus. Equipment should conform to EN 136 or EN 140 and EN 143.

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

Additional advice

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 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	< -20 °C @ 1013 hPa
Boiling point/range	75 °C @ 1013 hPa
Method	OECD 103
Flash point	-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

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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, in water, OECD 105			
log Pow		1,3 @ 20 °C (68 °F), OECD 107			
Autoignition temperature		190 °C @ 1013 hPa			
Method		ASTM E 659			
Decomposition temperature		No data available			
Viscosity		0,43 mPa*s @ 20 °C			
Method		dynamic, ISO 3219			
Explosive properties		Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties			
Oxidizing properties		Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties			

9.2. Other information

Molecular weight	72,11
Molecular formula	C ₄ H ₈ O
log Koc	0,707 calculated
Refractive index	1,379 @ 20 °C
Heat of combustion	2479 kJ/mol @ 25 °C (77 °F)
Surface tension	70 mN/m (1 g/l @ 20°C (68°F)), OECD 115

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

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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

Acute toxicity				
Butyraldehyde (123-72-8)				
Routes of Exposure	Endpoint	Values	Species	Method
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

Butyraldehyde, CAS: 123-72-8

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	

Butyraldehyde, CAS: 123-72-8

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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Butyraldehyde, CAS: 123-72-8

Assessment

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

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

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

Evaluation

Did not show reprotoxic effects in animal experiments
No cancer study was conducted

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

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	

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12.3. Bioaccumulative potential

Butyraldehyde (123-72-8)		
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.

Hazardous waste according to European Waste Catalogue (EWC)

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

ADR/RID

14.1. UN number

UN 1129

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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	
ADR Tunnel restriction code	(D/E)
Classification Code	F1
Hazard Number	33
<u>ADN</u>	ADN Container
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	
Classification Code	F1
Hazard Number	33
<u>ADN</u>	ADN Tanker
14.1. UN number	UN 1129
14.2. UN proper shipping name	Butyraldehyde
14.3. Transport hazard class(es)	3
Subsidiary Risk	N3
14.4. Packing group	II
14.5. Environmental hazards	no
14.6. Special precautions for user	
Classification Code	F1
<u>ICAO-TI / IATA-DGR</u>	
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
<u>IMDG</u>	
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

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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

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulation 1272/2008, Annex VI

Butyraldehyde, CAS: 123-72-8

Classification Flam. Liq. 2; H225
Hazard pictograms GHS02 Flame
Signal word Danger
Hazard statements H225

DI 2012/18/EU (Seveso III)

Category Annex I, part 1:
P5a - c; depending on conditions

DI 1999/13/EC (VOC Guideline)

Component	Status
Butyraldehyde CAS: 123-72-8	regulated

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)

National regulatory information Great Britain

Releases to air (Pollution Inventory Substances)

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not subject

Releases to water (Pollution Inventory Substances)

not subject

Releases to sewer (Pollution Inventory Substances)

not subject

The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019 No. 758 ***

Component	Status
Butyraldehyde CAS: 123-72-8	The substance will not be pre-registered.***

For details and further information please refer to the original regulation

15.2. Chemical safety assessment

The Chemical Safety Report (CSR) is not required.

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3

H225: Highly flammable liquid and vapour.

H319: Causes serious eye irritation.

Abbreviations

A table of terms and abbreviations can be found under the following link:

http://echa.europa.eu/documents/10162/13632/information_requirements_r20_en.pdf

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 annex is not required because the substance is registered as an intermediate under REACH

Disclaimer

For industrial use only. The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. OQ makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.

End of Safety Data Sheet

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