

SAFETY DATA SHEET

according to REACH Regulation (EC) No. 1907/2006, as amended by UK REACH Regulations SI 2019/758



Isobutyraldehyde
10280

Version / Revision 9
Supersedes Version 8.00***

Revision Date 17-Nov-2022
Issuing date 17-Nov-2022

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

1.1. Product identifier

Identification of the substance/preparation

Isobutyraldehyde

CAS-No 78-84-2
EC No. 201-149-6

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

Identified uses Distribution of substance
Intermediate
Monomer
laboratory chemicals***

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.
P337 + P313: If eye irritation persists: 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
Auto ignition on large surfaces
Hazardous polymerisation may occur
Polymerization is a highly exothermic reaction and may generate sufficient heat to cause thermal decomposition and/or rupture containers
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)

Endocrine disrupting assessments

The substance is not listed on the candidate list according to Art. 59(1), REACH. The substance was not assessed as having endocrine disrupting properties according to regulation 2017/2100/EU or 2018/605/EU.

SECTION 3: Composition / information on ingredients

3.1. Substances

Component	CAS-No	1272/2008/EC	Concentration (%)
Isobutyraldehyde	78-84-2	Flam. Liq. 2; H225 Eye Irrit. 2; H319	> 97
Water	7732-18-5	-	< 2,50

Remarks

Substance manufactured in Europe contains the following stabilizer(s):. Triethanolamine.
For full text of Hazard- and EU Hazard-statements see SECTION 16.

SECTION 4: First aid measures

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4.1. Description of first aid measures

Inhalation

Keep at rest. Breathe 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, abdominal pain, circulatory collapse, cough.

Special hazard

Lung oedema, Lung irritation.

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. Symptoms may be delayed.

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

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.

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Precautions for firefighting

Cool containers / tanks with water spray. Dike and collect water used to fight fire. Water run-off and vapor cloud may be corrosive. 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 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

Further info may be available in the appropriate Exposure scenarios in the annex to this SDS.***

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. Do not use compressed air for filling, discharging or handling.

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

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reducing 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. Hazardous polymerisation may occur. Polymerization is a highly exothermic reaction and may generate sufficient heat to cause thermal decomposition and/or rupture containers.

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. Keep at temperatures between 15 and 33 °C (59 and 91 °F). Oxidization creates acids and peroxides, that may lead to corrosive damages in storage and handling equipment.

Suitable material

stainless steel, aluminium

Unsuitable material

mild steel

Temperature class

T4

7.3. Specific end use(s)

Distribution of substance

Intermediate

Monomer

laboratory chemicals***

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

Isobutyraldehyde, CAS: 78-84-2

Workers

DN(M)EL - long-term exposure - systemic effects - Inhalation

Low hazard (no threshold derived)

DN(M)EL - acute / short-term exposure - systemic effects - Inhalation

No hazard identified

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DN(M)EL - long-term exposure - local effects - Inhalation	120 mg/m ³
DN(M)EL - acute / short-term exposure - local effects - Inhalation	Low hazard (no threshold derived)
DN(M)EL - long-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - local effects - eyes	Low hazard (no threshold derived)

General population

DN(M)EL - long-term exposure - systemic effects - Inhalation	Low hazard (no threshold derived)
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - local effects - Inhalation	60 mg/m ³
DN(M)EL - acute / short-term exposure - local effects - Inhalation	Low hazard (no threshold derived)
DN(M)EL - long-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - systemic effects - Oral	No hazard identified
DN(M)EL - acute / short-term exposure - systemic effects - Oral	No hazard identified
DN(M)EL - local effects - eyes	Low hazard (no threshold derived)

Environment

PNEC aqua - freshwater	0,023 mg/l
PNEC aqua - marine water	0,002 mg/l
PNEC aqua - intermittent releases	0,23 mg/l
PNEC STP	10 mg/l
PNEC sediment - freshwater	0,086 mg/kg dw
PNEC sediment - marine water	0,009 mg/kg dw
PNEC Air	No hazard identified
PNEC soil	0,004 mg/kg
Secondary poisoning	No potential for bioaccumulation

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

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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.

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	approx 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 AX 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

Physical state	liquid
Colour	colourless
Odour	pungent
Odour threshold	0,2 mg/m ³
Melting point/freezing point	-65,9 °C
Boiling point or initial boiling point and boiling range	64,4 °C @ 1013 hPa
Flammability	Ignitable
Lower explosion limit	1,6 Vol %
Upper explosion limit	10,6 Vol %

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Flash point	-23 °C @ 1013 hPa					
Method	DIN 51755					
Autoignition temperature	180 °C @ 1013 hPa					
Method	ASTM E 659					
Decomposition temperature	No data available					
pH	No data available					
Kinematic Viscosity	0,551 mm ² /s @ 20 °C					
Method	ISO 3219					
Solubility	60 g/l @ 25 °C, in water					
Partition coefficient n-octanol/water (log value)	0,77 @ 25 °C (77 °F) OECD 107					
Vapour pressure						
	Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
	230	23	0,227	25	77	
Density and/or relative density						
	Values	@ °C	@ °F			Method
	0,78	25,8	78,4			DIN 51757
Relative vapour density	2,5 (Air = 1) @ 20 °C (68 °F)					
Particle characteristics	not applicable					

9.2. Other information

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
Molecular weight	72,11
Molecular formula	C ₄ H ₈ O
log K_{oc}	0,18 @ 25°C (77 °F) calculated
Refractive index	1,373 @ 20 °C
Heat of combustion	600 kcal/kg
Evaporation rate	9,6 (n-Butyl acetate = 1)

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. Stable up to approximately 49 °C.

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

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bases, amines, acids, oxidizing agents, reducing agents.

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

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

Acute toxicity				
Isobutyraldehyde (78-84-2)				
Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	3730 mg/kg	rat, female	OECD 401
Dermal	LD50	5583 mg/kg	rabbit male	Draize Test
Inhalative	LC50	> 23,6 mg/l (4h)	rat, male	OECD 403

Isobutyraldehyde, CAS: 78-84-2

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				
Isobutyraldehyde (78-84-2)				
Target Organ Effects	Species	Result	Method	
Skin	rabbit	No skin irritation	OECD 404	4h
Eyes	rabbit	irritating	OECD 405	24h
Respiratory tract	mouse male	RD50: 8,9 mg/l		10 min

Isobutyraldehyde, CAS: 78-84-2

Assessment

The available data lead to the classification given in section 2

Sensitization				
Isobutyraldehyde (78-84-2)				
Target Organ Effects	Species	Evaluation	Method	
Skin	mouse female	not sensitizing	MEST	3 - 30 % Substance

Isobutyraldehyde, CAS: 78-84-2

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				
Isobutyraldehyde (78-84-2)				
Type	Dose	Species	Method	
Subchronic toxicity	NOAEL: > 1450 mg/kg/d	rat, male/female mouse, male/female	OECD 408	Inhalation Oral read across

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Subchronic toxicity	NOAEC: 6 mg/l/d (13 weeks)	mouse, male/female rat, male/female	OECD 413	Inhalation
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Assessment

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

Carcinogenicity, Mutagenicity, Reproductive toxicity					
Isobutyraldehyde (78-84-2)					
Type	Dose	Species	Evaluation	Method	
Mutagenicity		CHO (Chinese Hamster Ovary) cells	negative	OECD 476 (Mammalian Gene Mutation)	In vitro study
Mutagenicity		V79 cells, Chinese hamster	positive (without metabolic activation)	OECD 473 (Chromosomal Aberration)	In vitro study
Mutagenicity		Salmonella typhimurium Escherichia coli	negative	OECD 471 (Ames)	In vitro study
Mutagenicity		mouse male	negative	Chromosomal Aberration	Bone marrow
Mutagenicity		rat male	negative	Chromosomal Aberration	Bone marrow
Mutagenicity		rat male	negative	OECD 489 Comet Assay	In vitro study
Reproductive toxicity	NOAEL: \geq 7,5 mg/l/d	Rat, prenatal male/female rat, 1. Generation, male/female rat 2. Generation, male/female		EPA OPPTS 870.3800 Inhalation	read across
Developmental Toxicity	NOAEC: 3 mg/l/d	rat		OECD 414, Inhalative	Maternal toxicity
Developmental Toxicity	NOAEC: 12 mg/l/d	rat		OECD 414, Inhalative	Teratogenicity
Carcinogenicity	NOAEC: \geq 5,9 mg/l/d (103 weeks)	rat mouse male/female		OECD 451, Inhalative	

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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

Evaluation

In vitro tests did not show mutagenic effects

Isobutyraldehyde, CAS: 78-84-2

Main symptoms

shortness of breath, abdominal pain, circulatory collapse, cough.

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:

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STOT RE

11.2. Information on other hazards

Endocrine disrupting properties

The substance has not been identified as having endocrine disrupting properties in accordance with section 2.3.

Isobutyraldehyde, CAS: 78-84-2

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			
Isobutyraldehyde (78-84-2)			
Species	Exposure time	Dose	Method
Daphnia magna (Water flea)	48h	EC50: 277 mg/l	79/831/EEC.C2
Desmodesmus subspicatus	72h	EC50: 84 mg/l (Growth rate)	DIN 38412, part 9
Pimephales promelas (fathead minnow)	96h	LC50: 23 mg/l	
Pseudomonas putida	17 h	EC50: 468 mg/l	DIN 38412, part 8
Activated sludge (bacteriae)	14 d	NOEC: 100 mg/l	OECD 301 C

12.2. Persistence and degradability

Isobutyraldehyde, CAS: 78-84-2

Biodegradation

80 - 90 % (14 d), BOD, activated sludge, non-adapted, aerobic, OECD 301 C.

Abiotic Degradation		
Isobutyraldehyde (78-84-2)		
Type	Result	Method
Hydrolysis	No data available	
Photolysis	Half-life (DT50): 16,54 h	calculated

12.3. Bioaccumulative potential

Isobutyraldehyde (78-84-2)		
Type	Result	Method
log Pow	0,77 @ 25 °C (77 °F)	OECD 107
BCF	Significant bioaccumulation not to be expected	

12.4. Mobility in soil

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Isobutyraldehyde, CAS: 78-84-2

No data available

Isobutyraldehyde (78-84-2)

Type	Result	Method
Surface tension	Surface activity not expected	
Adsorption/Desorption	log K _{oc} : 0,18 @ 25 °C	
Distribution to environmental compartments	Air: 90,5 % Soil: 0,0044 % Water: 9,46 % Sediment: 0,00445 %	Calculation according Mackay, Level I

12.5. Results of PBT and vPvB assessment

Isobutyraldehyde, CAS: 78-84-2

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. Endocrine disrupting properties

The substance has not been identified as having endocrine disrupting properties in accordance with section 2.3.

12.7. Other adverse effects

Isobutyraldehyde, CAS: 78-84-2

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 or ID number	UN 2045
14.2. UN proper shipping name	Isobutyraldehyde
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)

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Classification Code F1
Hazard Number 33

ADN

14.1. UN number or ID number UN 2045
14.2. UN proper shipping name Isobutyraldehyde
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

ADN

14.1. UN number or ID number UN 2045
14.2. UN proper shipping name Isobutyraldehyde
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

ICAO-TI / IATA-DGR

14.1. UN number or ID number UN 2045
14.2. UN proper shipping name Isobutyraldehyde
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 or ID number UN 2045
14.2. UN proper shipping name Isobutyraldehyde
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. Maritime transport in bulk according to IMO instruments
Product name Butyraldehyde
Ship type 3
Pollution category Y
Hazard class S/P

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SECTION 15: Regulatory information

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

Regulation 1272/2008, Annex VI

not listed

DI 2012/18/EU (Seveso III)

Category

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

DI 1999/13/EC (VOC Guideline)

Component	Status
Isobutyraldehyde CAS: 78-84-2	regulated

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

Component	Status
Isobutyraldehyde CAS: 78-84-2	The substance will not be pre-registered

For details and further information please refer to the original regulation.

International Inventories

Isobutyraldehyde, CAS: 78-84-2

AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2011496 (EU)
ENCS (2)-494 (JP)
ISHL (2)-494 (JP)
KECI 97-3-9 (KR)
KECI KE-24862 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)
NZIoC (NZ)
TCSI (TW)

National regulatory information Great Britain

Releases to air (Pollution Inventory Substances)

Component	Annual reporting level threshold
Isobutyraldehyde CAS: 78-84-2	50 kg

Releases to water (Pollution Inventory Substances)

not subject

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Releases to sewer (Pollution Inventory Substances)

not subject

For details and further information please refer to the original regulation

15.2. Chemical safety assessment

The Chemical Safety Report (CSR) has been generated. For Exposure Scenarios see the annex.***

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 Chemicals 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

Annex to the extended Safety Data Sheet (eSDS) ***

General information

A quantitative approach used to conclude safe use for:

Long-term local effects via inhalation

Assessment tool used:

EasyTRA

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A qualitative approach used to conclude safe use for:
For dermal/eye local exposure
In the absence of environmental hazards no environmental risk assessment was carried out***

Operational conditions and risk management measures

Wear protective gloves and eye/face protection

Refer to section 8.2***

1* Distribution of substance*****

2* Industrial use resulting in manufacture of another substance (use of intermediates)*****

3* Monomer*****

4* Use in laboratories*****

Number of the ES 1***

Short title of the exposure scenario

Distribution of substance***

Process categories [PROC]

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)***

Environmental release categories [ERC]

ERC2: Formulation of preparations (mixtures)***

Product characteristics

Refer to attached safety data sheets***

Processes and activities covered by the exposure scenario

Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, distribution and associated laboratory activities.***

Further explanations

Assumes an advanced standard of occupational Health and Safety Management System

Covers percentage substance in the product up to 100 % (unless stated differently)

liquid

Industrial use

Indoor use***

Contributing Scenarios ***

Number of the contributing scenario

1***

Contributing exposure scenario controlling worker exposure for PROC 8a***

Frequency and duration of use

Covers frequency up to: 5 workdays/week. 4 h (half shift)***

Technical conditions and measures to control dispersion from source towards the worker

Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative).***

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection. Wear suitable gloves tested to EN374.***

Number of the contributing scenario

2***

Contributing exposure scenario controlling worker exposure for PROC 8b***

Frequency and duration of use

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Covers frequency up to: 5 workdays/week. 4 h (half shift)***

Technical conditions and measures to control dispersion from source towards the worker

Effectiveness of LEV (local exhaust ventilation): 95 % (inhalative).***

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection. Wear suitable gloves tested to EN374.***

Number of the contributing scenario

3***

Contributing exposure scenario controlling worker exposure for PROC 9***

Frequency and duration of use

Covers frequency up to: 5 workdays/week. 4 h (half shift)***

Technical conditions and measures to control dispersion from source towards the worker

Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative).***

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection. Wear suitable gloves tested to EN374.***

Exposure estimation and reference to its source ***

Human exposure prediction (oral, dermal, inhalative)

EE(inhal): Estimated inhalative exposure [mg/m³].***

Proc 8a	EE(inhal): 75.11***
Proc 8b	EE(inhal): 22.53***
Proc 9	EE(inhal): 60.09***

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio.***

Proc 8a	RCR(inhal): 0.626***
Proc 8b	RCR(inhal): 0.188***
Proc 9	RCR(inhal): 0.501***

Number of the ES 2***

Short title of the exposure scenario

Industrial use resulting in manufacture of another substance (use of intermediates)***

List of use descriptors ***

Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises***

Environmental release categories [ERC]

ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)***

Product characteristics

Refer to attached safety data sheets***

Processes and activities covered by the exposure scenario

Use as an intermediate (not related to Strictly Controlled Conditions). Includes incidental exposures during recycling/ recovery,

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material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).***

Further explanations

Assumes an advanced standard of occupational Health and Safety Management System
Covers percentage substance in the product up to 100 % (unless stated differently).

liquid

Industrial use

Indoor use***

Contributing Scenarios ***

Number of the contributing scenario 1***
Contributing exposure scenario controlling worker exposure for PROC 1***

Frequency and duration of use

Covers frequency up to: 5 workdays/week. 4 h (half shift)***

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection. Wear suitable gloves tested to EN374.***

Number of the contributing scenario 2***
Contributing exposure scenario controlling worker exposure for PROC 2***

Frequency and duration of use

Covers frequency up to: 5 workdays/week. 4 h (half shift)***

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection. Wear suitable gloves tested to EN374.***

Number of the contributing scenario 3***
Contributing exposure scenario controlling worker exposure for PROC 3***

Frequency and duration of use

Covers frequency up to: 5 workdays/week. 4 h (half shift)***

Technical conditions and measures to control dispersion from source towards the worker

Provide enhanced general ventilation by mechanical means. 70 %.***

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection. Wear suitable gloves tested to EN374.***

Number of the contributing scenario 4***
Contributing exposure scenario controlling worker exposure for PROC 4***

Frequency and duration of use

Covers frequency up to: 5 workdays/week. 4 h (half shift)***

Technical conditions and measures to control dispersion from source towards the worker

Provide enhanced general ventilation by mechanical means. 70 %.***

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection. Wear suitable gloves tested to EN374.***

Human exposure prediction (oral, dermal, inhalative)

EE(inhal): Estimated inhalative exposure [mg/m³].***

Proc 1	EE(inhal): 0.030***
Proc 2	EE(inhal): 75.11***
Proc 3	EE(inhal): 45.07***
Proc 4	EE(inhal): 90.13***

Risk characterisation

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RCR(inhal): inhalative risk characterisation ratio.***

Proc 1	RCR(inhal): 0.00***
Proc 2	RCR(inhal): 0.626***
Proc 3	RCR(inhal): 0.375***
Proc 4	RCR(inhal): 0.751***

Number of the ES 3***

Short title of the exposure scenario

Monomer***

List of use descriptors

Process categories [PROC]

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises***

Environmental release categories [ERC]

ERC6c: Industrial use of monomers for manufacture of thermoplastics***

Product characteristics

Refer to attached safety data sheets***

Processes and activities covered by the exposure scenario

Manufacture of polymers from monomers in continuous and batch processes, including sparging, discharging and reactor maintenance and immediate polymer product formation (i.e. compounding, pelletisation, product off-gassing)***

Further explanations

Assumes an advanced standard of occupational Health and Safety Management System

Covers percentage substance in the product up to 100 % (unless stated differently)

liquid

Industrial use

Indoor use***

Number of the contributing scenario

1***

Contributing exposure scenario controlling worker exposure for PROC 2***

Frequency and duration of use

Covers frequency up to: 5 workdays/week. 4 h (half shift)***

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection. Wear suitable gloves tested to EN374.***

Number of the contributing scenario

2***

Contributing exposure scenario controlling worker exposure for PROC 4***

Frequency and duration of use

Covers frequency up to: 5 workdays/week. 4 h (half shift)***

Technical conditions and measures to control dispersion from source towards the worker

Provide enhanced general ventilation by mechanical means.***

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection. Wear suitable gloves tested to EN374.***

Human exposure prediction (oral, dermal, inhalative)

EE(inhal): Estimated inhalative exposure [mg/m³].***

Proc 2	EE(inhal): 75.11***
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Proc 4 EE(inhal): 90.132***

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio.***

Proc 2 RCR(inhal): 0.626***
Proc 4 RCR(inhal): 0.751***

Number of the ES 4***

Short title of the exposure scenario

Use in laboratories***

Process categories [PROC]

PROC15: Use as laboratory reagent***

Environmental release categories [ERC]

ERC8b: Wide dispersive indoor use of reactive substances in open systems***

Product characteristics

Refer to attached safety data sheets***

Processes and activities covered by the exposure scenario

Use of the substance within laboratory settings, including material transfers and equipment cleaning***

Further explanations

Assumes an advanced standard of occupational Health and Safety Management System

Covers percentage substance in the product up to 100 % (unless stated differently)

liquid

Industrial use

Indoor use***

Number of the contributing scenario

1***

Contributing exposure scenario controlling worker exposure for PROC 15***

Frequency and duration of use

Covers frequency up to: 5 workdays/week. 4 h (half shift)***

Technical conditions and measures to control dispersion from source towards the worker

Provide enhanced general ventilation by mechanical means. 70 %.***

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection. Wear suitable gloves tested to EN374.***

Human exposure prediction (oral, dermal, inhalative)

EE(inhal): Estimated inhalative exposure [mg/m³].***

Proc 15 EE(inhal): 45.07***

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio.***

Proc 15 RCR(inhal): 0.375***

associated uses:

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe***

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