Chemical Safety Data Sheet MSDS / SDS

Butyraldehyde SDS

Revision Date:2024-04-25 Revision Number:1

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

Product identifier

Product name: Butyraldehyde

CAS: 123-72-8

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

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

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SECTION 2: Hazards identification

Classification of the substance or mixture

Flammable liquids, Category 2

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour

Precautionary statement(s)

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 action to prevent static discharges.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

Response

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower].
P370+P378 In case of fire: Use ... to extinguish.

Storage

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

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Butyraldehyde
Common names and synonyms:	Butyraldehyde
CAS number:	123-72-8
EC number:	204-646-6
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower.

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Rest.

Most important symptoms/effects, acute and delayed

Inhalation will cause irritation and possibly nausea, vomiting, headache, and loss of consciousness. Contact with eyes causes burns. Skin contact may be irritating. (USCG, 1999)

Indication of immediate medical attention and special treatment needed, if necessary

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Aldehydes and Related Compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may spread fire. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use foam, dry chemical, or carbon dioxide.

Specific hazards arising from the chemical

Behavior in Fire: Vapors are heavier than air and may travel considerable distance to a source of ignition and flash back. Fires are difficult to control due to ease of reignition. (USCG, 1999)

Special protective actions for fire-fighters

Use foam, powder, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Environmental precautions

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

Contaminated wastewaters containing butyraldehyde are produced during the MFR of poly(vinyl butyral) and poly(vinyl formal ethylal). On tha basis of lab tests, a scheme for treating wastewater is recommended. After neutralization with sodium hydroxide or calcium oxide, the organic fraction is distilled from the wastewater and incinerated.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Fireproof. Separated from incompatible materials. See Chemical Dangers. Cool. Keep in the dark. Store in an area without drain or sewer access.On contact with air butyraldehyde is oxidized readily to the butyric acids. Therefore, storage under inert gas is mandatory.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	Butyraldehyde			
CAS No.	123-72-8			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m3	ppm	mg/m3
Austria	20	64	20	64
Finland	25	74	?	?
Germany (AGS)	20	64	20 (1)	64 (1)
Latvia	?	5	?	?
People's Republic of China	?	5	?	10 (1)
	Remarks			
Germany (AGS)	(1) 15 minutes average value			
People's Republic of China	(1) 15 minutes average value			

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety spectacles.

Skin protection

Protective gloves.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Liquid.
Colour:	Colourless.
Odour:	Characteristic, pungent, aldehyde odor
Melting point/freezing point:	< -20 °C. Atm. press.:101.3 kPa.
Boiling point or initial boiling point and boiling range:	75 °C. Atm. press.:101.3 kPa.
Flammability:	Highly flammable.
Lower and upper explosion limit/flammability limit:	Lower: 1.9% by volume; Upper: 12.5% by volume.
Flash point:	< 10 °C. Atm. press.:101.3 kPa.
Auto-ignition temperature:	190 °C. Atm. press.:101.3 kPa.

Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	dynamic viscosity (in mPa s) = 0.43. Temperature:20°C.
Solubility:	Miscible with water
Partition coefficient n-octanol/water:	log Pow = 1.3. Temperature:20 °C.
Vapour pressure:	14.4 kPa. Temperature:20 °C. Remarks:Experimental results.;14.8 kPa. Temperature:25 °C. Remarks:Literature search in HSDB and ChemIDplus Lite. Both gave the result 14.8 kPa at 25°C.;14.8 kPa. Temperature:25 °C. Remarks:Literature search in SRC PhysProp Database.
Density and/or relative density:	0.81. Temperature:20 °C.
Relative vapour density:	2.5 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

The substance can presumably form explosive peroxides. The substance may polymerize. Reacts with amines, oxidants, strong bases and acids.

Chemical stability

no data available

Possibility of hazardous reactions

Highly flammable liquid.The vapour is heavier than air and may travel along the ground; distant ignition possible.A colorless liquid, BUTYRALDEHYDE can react with oxidizing materials. In contact with strong acids or bases it will undergo an exothermic condensation reaction. The dry aldehyde may undergo some polymerization reaction. Reacts vigorously with chlorosulfonic acid, nitric acid, sulfuric acid (oleum). [Sax, 9th ed., 1996, p. 607].

Conditions to avoid

no data available

Incompatible materials

Incompatible with oxidizing materials.

Hazardous decomposition products

When heated to decomposition it emits acrid smoke and fumes.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 - rat (male/female) - ca. 5 890 mg/kg bw. Remarks:SD: 5540 mg/kg bw - 6250 mg/kg bw.

Inhalation: LC50 Rat inhalation 60,000 ppm/0.5 hr

Dermal: LD50 - guinea pig - > 20 000 mg/kg bw.

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract.

STOT-repeated exposure

no data available

Aspiration hazard

No indication can be given about the rate at which a harmful concentration of this substance in the air is reached on evaporation at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 - Pimephales promelas - 25.8 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC0 - Daphnia magna - 100 mg/L - 24 h.

Toxicity to algae: toxic threshold concentration, MIC - Scenedesmus quadricauda - 83 mg/L - 8 d.

Toxicity to microorganisms: Toxic Threshold Concentration, MIC - Pseudomonas putida - 100 mg/L - 16 h.

Persistence and degradability

AEROBIC: Butyraldehyde, present at 100 mg/L, reached 100% of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/L and the Japanese MITI test(1). Butyraldehyde had a 5-day theoretical BOD of 28% using the AFNOR T test and an inoculum from 3 polluted surface waters(2). Using a sewage inocula and standard dilution water, butyraldehyde had a 5-day theoretical BOD of 43%(3). Theoretical BODs of 43.4, 59.8, and 68% were measured after 5, 10, and 50 days, respectively, using a sewage seed(4). A 5-day theoretical BOD of 106% was reported for a sewage inocula(5). Using an electrolytic respirometer and an activated sludge inocula, theoretical BODs of 46-57% were observed after 90-135 hr of incubation(6).

Bioaccumulative potential

An estimated BCF of 3 was calculated in fish for butyraldehyde(SRC), using a log Kow of 0.88(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

The Koc of butyraldehyde is estimated as 72(SRC), using a log Kow of 0.88(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that butyraldehyde is expected to have high mobility in soil.

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN1129 (For reference only, please check.)
IMDG: UN1129 (For reference only, please check.)
IATA: UN1129 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: BUTYRALDEHYDE (For reference only, please check.)
IMDG: BUTYRALDEHYDE (For reference only, please check.)

IATA: BUTYRALDEHYDE (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.)
IMDG: 3 (For reference only, please check.)
IATA: 3 (For reference only, please check.)

Packing group, if applicable

ADR/RID: II (For reference only, please check.)
IMDG: II (For reference only, please check.)
IATA: II (For reference only, please check.)

Environmental hazards

ADR/RID: No
IMDG: No
IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Check for peroxides prior to distillation; eliminate if found.