

Chemical Safety Data Sheet MSDS / SDS

Benzaldehyde

Revision Date:2024-12-21 Revision Number:1

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

Product name : Benzaldehyde
CBnumber : CB6852588
CAS : 100-52-7
EINECS Number : 202-860-4
Synonyms : benzaldehyde,benzaldehyd

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
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing
Telephone : 400-158-6606

SECTION 2: Hazards identification**Classification of the substance or mixture**

Acute toxicity - Category 4, Oral

Label elements**Pictogram(s)**

☐

Signal word : Warning

Hazard statement(s)

H227 Combustible liquid
H302 Harmful if swallowed
H315 Causes skin irritation
H317 May cause an allergic skin reaction
H320 Causes eye irritation
H335 May cause respiratory irritation
H336 May cause drowsiness or dizziness
H341 Suspected of causing genetic defects

H371 May cause damage to organs

H401 Toxic to aquatic life

Precautionary statement(s)

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P262 Do not get in eyes, on skin, or on clothing.

P264 Wash hands thoroughly after handling.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P272 Contaminated work clothing should not be allowed out of the workplace.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P370+P378 In case of fire: Use ... for extinction.

P405 Store locked up.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P501 Dispose of contents/container to.....

Prevention

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

Response

P301+P317 IF SWALLOWED: Get medical help.

P330 Rinse mouth.

Storage

none

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

no data available

SECTION 3: Composition/information on ingredients

Substance

Product name : Benzaldehyde
Synonyms : benzaldehyde,benzaldehyd
CAS : 100-52-7
EC number : 202-860-4
MF : C7H6O

SECTION 4: First aid measures

Description of 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 and effects, both acute and delayed

Inhalation of concentrated vapor may irritate eyes, nose and throat. Liquid is irritating to the eyes. Prolonged contact with the skin may cause irritation. (USCG, 1999)

Indication of any immediate medical attention and special treatment needed

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 if 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.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific Hazards Arising from the Chemical

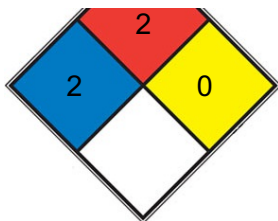
Excerpt from ERG Guide 129 [Flammable Liquids (Water-Miscible / Noxious)]: HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water. (ERG, 2016)

Advice for firefighters

Use water spray, foam, powder, carbon dioxide.

NFPA 704





- HEALTH 2** Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury (e.g. [diethyl ether](#), ammonium phosphate, iodine)
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- FIRE 2** Must be moderately heated or exposed to relatively high ambient temperature before ignition can occur and multiple finely divided suspended solids that do not require heating before ignition can occur. Flash point between 37.8 and 93.3 °C (100 and 200 °F). (e.g. diesel fuel, [sulfur](#))
-
- REACT 0** Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium, [N₂](#))
-
- SPEC.**
- HAZ.**
-

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 and spilled liquid in sealable containers as far as possible. 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 and spilled liquid in sealable containers as far as possible. 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

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. Methods and materials for containment and cleaning up: Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames. Above 63°C use a closed system and ventilation. 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

Separated from incompatible materials. See Chemical Dangers. Well closed. Ventilation along the floor. Cool. Store in an area without drain or sewer access. Keep in the dark. Store under nitrogen. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Air, light, and moisture sensitive.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	Benzaldehyde			
CAS No.	100-52-7			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m ³	ppm	mg/m ³
Canada - Ontario	?	?	4	17
Finland	1	4,4	4 (1)	17,4 (1)
Hungary	?	5	?	10
Latvia	?	5	?	?
Poland	?	10	?	40
	Remarks			
Finland	(1) Ceiling limit value			

Biological limit values

no data available

Exposure 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

Eye/face protection

Wear safety spectacles or face shield.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties

Information on basic physicochemical properties

Physical state neat

Colour	Pale yellow
Odour	Characteristic odor or volatile oil of almond
Melting point/freezing point	-26 °C.
Boiling point or initial boiling point and boiling range	179 °C. Atm. press.:Unknown. Remarks:Atmospheric pressure unknown.
Flammability	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit	1.4-8.5%(V)
Flash point	62 °C.
Auto-ignition temperature	192 °C. Remarks:Pressure unknown.
Decomposition temperature	no data available
pH	5.9 (1g/l, H ₂ O)
Kinematic viscosity	dynamic viscosity (in mPa s) = 1.321. Temperature:25.0°C.
Solubility	H ₂ O: soluble100mg/mL
Partition coefficient n-octanol/water	log Pow = 1.4. Temperature:25 °C. Remarks:PH unknown.
Vapour pressure	4 mm Hg (45 °C)
Density and/or relative density	1.05. Temperature:15 °C.;1.043. Temperature:25 °C.
Relative vapour density	3.7 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

Reactivity

The substance can form explosive peroxides under special conditions. Reacts violently with aluminium, bases, iron, oxidants and phenol. This generates fire and explosion hazard.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Combustible liquid. A nontoxic, combustible liquid, reacts with oxidizing reagents. BENZALDEHYDE must be blanketed with an inert gas at all times since it is oxidized readily by air to benzoic acid [Kirk-Othmer, 3rd ed., Vol. 3, 1978, p. 736]. In contact with strong acids or bases it will undergo an exothermic condensation reaction [Sax, 9th ed., 1996, p. 327]. A violent reaction was observed on contact with peroxyacids (peroxyformic acid) [D'Ans, J. et al., Ber., 1915, 48, p. 1136]. An explosion occurred when pyrrolidine, benzaldehyde, and propionic acid were heated to form porphyrins.

Conditions to avoid

no data available

Incompatible materials

Incompatible materials: Strong oxidizing agents, strong reducing agents, strong bases, alkali metals, aluminum, iron, phenols, oxygen.

Hazardous decomposition products

Combustion may produce irritants and toxic gases.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 - rat (male) - ca. 1 430 mg/kg bw.
- Inhalation: LC50 - rat (male/female) - 1 - 5 mg/L air.
- Dermal: LD50 - rabbit (male/female) - > 2 000 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.

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 - 12.4 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - 50 mg/L - 24 h.

Toxicity to algae: TTsc - Scenedesmus quadricauda - 34 mg/L - 7 d.

Toxicity to microorganisms: IC50 - activated sludge - 740 mg/L - 3 h. Remarks:O2.

Persistence and degradability

AEROBIC: Benzaldehyde had a 5 day theoretical BOD of 36% using the AFNOR T test and inoculum from 3 polluted surface waters(1). Using a sewage inocula and standard dilution water, benzaldehyde had a 10-day theoretical BOD of 62%(2). Theoretical BODs of 41-70% were observed (at 500 ppm concentration) in Warburg respirometers using 3 different activated sludge seeds and 6 days of incubation(3). Theoretical BOD of 13% was observed (at 500 ppm concentration) in a Warburg respirometer using a digester sludge seed acclimated to benzene and 6 hr incubation(4). Theoretical BODs of 30-38% were observed (at 250 ppm concentration) in Warburg respirometers using activated sludge seeds acclimated to phenol, benzyl alcohol or anthranilic acid and 12 hr incubation(5). About 99% of initial benzaldehyde was removed (based upon COD) in 5 days of incubation using an activated sludge inocula that had been acclimated to benzaldehyde for 20 days(6). Five-day theoretical BODs of 77.2% and 63.5% were measured using the standard dilution method and seawater dilution method, respectively(7). Benzaldehyde, present at 100 mg/L, reached 66% of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/L and the Japanese MITI test which classified the compound as readily biodegradable(8).

Bioaccumulative potential

An estimated BCF of 4.4 was calculated in fish for benzaldehyde(SRC), using a log Kow of 1.48(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.

Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of benzaldehyde can be estimated to be 11(SRC). According to a classification scheme(2), this estimated Koc value suggests that benzaldehyde is expected to have very 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: UN1990 (For reference only, please check.)

IMDG: UN1990 (For reference only, please check.)

IATA: UN1990 (For reference only, please check.)

UN Proper Shipping Name

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

IMDG: BENZALDEHYDE (For reference only, please check.)

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

Transport hazard class(es)

ADR/RID: 9 (For reference only, please check.)

IMDG: 9 (For reference only, please check.)

IATA: 9 (For reference only, please check.)

Packing group, if applicable

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

IMDG: III (For reference only, please check.)

IATA: III (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

Not 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

Rinse contaminated clothing with plenty of water because of fire hazard. Check for peroxides prior to distillation; eliminate if found.

Disclaimer:

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.