SAFETY DATA SHEETS

According to Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Sixth revised edition

Version: 1.0

Creation Date: Aug 12, 2017

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1. Identification

1.1 GHS Product identifier

Product name	benzoic acid

1.2 Other means of identification

Product number	-
Other names	Benzoic acid

1.3 Recommended use of the chemical and restrictions on use

Identified uses	For industry use only. Preservatives and Antioxidants
Uses advised against	no data available

2. Hazard identification

2.1 Classification of the substance or mixture

Skin irritation, Category 2

Serious eye damage, Category 1

Specific target organ toxicity – repeated exposure, Category 1

2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word	Danger
Hazard statement(s)	H315 Causes skin irritation
	H318 Causes serious eye damage
	H372 Causes damage to organs through prolonged or repeated exposure
Precautionary statement(s)	
Prevention	P264 Wash ... thoroughly after handling.
	P280 Wear protective gloves/protective clothing/eye protection/face protection.
	P260 Do not breathe dust/fume/gas/mist/vapours/spray.
	P270 Do not eat, drink or smoke when using this product.
Response	P302+P352 IF ON SKIN: Wash with plenty of water/...
	P321 Specific treatment (see ... on this label).
	P332+P313 If skin irritation occurs: Get medical advice/attention.
	P362+P364 Take off contaminated clothing and wash it before reuse.
	P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P310 Immediately call a POISON CENTER/doctor/⋯
	P314 Get medical advice/attention if you feel unwell.
Storage	none
Disposal	P501 Dispose of contents/container to ...

2.3 Other hazards which do not result in classification

none

3. Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
benzoic acid	benzoic acid	65-85-0	none	100%

4. First-aid measures

4.1 Description of necessary first-aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

Fresh air, rest.

In case of skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

In case of eye contact

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

If swallowed

Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Dust may be irritating to nose and eyes. At elevated temperatures, fumes may cause irritation of eyes, respiratory system, and skin. (USCG, 1999)

4.3 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. /Organic acids and related compounds/

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

If material on fire or involved in fire: 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.

5.2 Specific hazards arising from the chemical

Behavior in Fire: Vapor from molten benzoic acid may form explosive mixture with air. Concentrated dust may form explosive mixture. (USCG, 1999)

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions

Personal protection: protective clothing and face shield. Sweep spilled substance into covered plastic containers. If appropriate, moisten first to prevent dusting. Wash away remainder with plenty of water.

6.3 Methods and materials for containment and cleaning up

Cover with soda ash or sodium bicarbonate. Mix and add water.

7. Handling and storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use.Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

The bulk material should be stored in well-closed container in a cool dry place.

8. Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

no data available

Biological limit values

no data available

8.2 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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

Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique(without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and

dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

Wear dust mask when handling large quantities.

Thermal hazards

no data available

9. Physical and chemical properties

Physical state	Colorless crystalline solid with faint pleasant odor.
Colour	Monoclinic tablets, plates, leaflets
Odour	Odorless or with a slight benzaldehyde odor
Melting point/ freezing point	316°C(lit.)
Boiling point or initial boiling point and boiling range	249°C(lit.)
Flammability	Combustible.
Lower and upper explosion limit / flammability limit	no data available
Flash point	121°C
Auto-ignition temperature	571.67°C
Decomposition temperature	no data available
pH	About 4 (solution in water)
Kinematic viscosity	1.26 cP at 130°C
Solubility	In water:Slightly soluble(r.t.). 1.7 g/L (0 °C), 2.7 g/L (18 °C), 3.44 g/L (25 °C), 5.51 g/L (40 °C), 21.45 g/L (75 °C), 56.31 g/L (100 °C)
Partition coefficient n-octanol/water (log value)	no data available
Vapour pressure	10 mm Hg (132 °C)
Density and/or relative density	1.2659 g/cm3 (15 °C), 1.0749 g/cm3 (130 °C)
Relative vapour density	4.21 (vs air)
Particle characteristics	no data available

10. Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

A 0.1% w/v aqueous solution of benzoic acid has been reported to be stable for at least 8 weeks when stored in polyvinyl chloride bottels, at room temperature.

10.3 Possibility of hazardous reactions

Slight, when exposed to heat or flame...Dust explosion possible if in powder or granular form, mixed with air.At high temperature BENZOIC ACID can react with oxidizing reagents.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Undergoes typical reactions of an organic acid, e.g. with alkalis or heavy metals. Preservative activity may be reduced by interaction with kaolin.

10.6 Hazardous decomposition products

When heated to decomp it emits acrid smoke and irritating fumes.

11. Toxicological information

Acute toxicity

- Oral: LD50 Cat oral 2000 mg/kg
- Inhalation: LC50 Rat inhalation >0.026 mg/L/1 hr
- Dermal: no data available

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

Cancer Classification: Group D Not Classifiable as to Human Carcinogenicity

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

12. Ecological information

12.1 Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Waterflea); Concentration: 500 mg/L for 24 hr, neutral pH; 102 mg/L for 24 hr, acid pH; Effect: immobilization /Conditions of bioassay not specified in source examined/ /from table
- Toxicity to algae: EC50; Species: Chlorella pyrenoides (Algae); Concentration: 60 mg/L for 3 hr; Effect: photosynthesis reduction /Conditions of bioassay not specified in source examined/ /from table
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: Benzoic acid is biodegradable under aerobic conditions by bacteria present in crude municipal wastewater at less than or equal to 200 g/cu m.

12.3 Bioaccumulative potential

Measured BCF values of <10, 14, and 21 were reported for Golden ide (Leuciscus idus melanotus)(1), trout(2), and mosquito fish (Gambusia affinis)(3), respectively. According to a classification scheme(4), this BCF range suggests the potential for bioconcentration in aquatic organisms is low(SRC). Bioconcentration factors of <10(1), 100, 138, 1800, 2800(3) and 10(4) have been reported in algae (Chorella fusca)(1), algae (Oedogonium cardiacum), mosquito larvae (Culex quinquifasciatus), daphnia (Daphnia magna) and snail (Physa), respectively(3).

12.4 Mobility in soil

Koc of benzoic acid is estimated as 15(SRC), using a log Kow of 1.87(1) and a regression-derived equation(2). An experimental log Koc of 1.50 (Koc = 31) has been reported, test details not available(3). According to a classification scheme(4), these Koc values suggest that benzoic acid is expected to have very high mobility in soil. The pKa of benzoic acid is 4.20(5), indicating that this compound will exist in anion form in the environment and anions generally do not adsorb more strongly to organic carbon and clay than their neutral counterparts(6). Freundlich adsorption constants of 0.23, 0 and 0 were reported using Ersum sandy till (pH 4.7; 0.25% OC), Tirstrup melt water sand (pH 6.1; 0.09% OC) and Djursland clayey till (pH 7.6; 0.22% OC), respectively, at 6°C. Soils were collected in North Sealand and Djursland, Jutland(7). Benzoic acid displayed negligible adsorption when using a montmorillonite (Volclay bentonite, Upton WY) clay(8).

12.5 Other adverse effects

no data available

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13. Disposal considerations

13.1 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.

14. Transport information

14.1 UN Number

ADR/RID: UN3077 IMDG: UN3077 IATA: UN3077

14.2 UN Proper Shipping Name

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

14.3 Transport hazard class(es)

ADR/RID: 9 IMDG: 9 IATA: 9

14.4 Packing group, if applicable

ADR/RID: III IMDG: III IATA: III

14.5 Environmental hazards

ADR/RID: no IMDG: no IATA: no

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

15. Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
benzoic acid	benzoic acid	65-85-0	none

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.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Listed.
Vietnam National Chemical Inventory	Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)	Listed.

16. Other information

Information on revision

Creation Date	Aug 12, 2017
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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/
