SAFETY DATA SHEETS

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

Version: 1.0

Creation Date: Aug 10, 2017

Revision Date: Aug 10, 2017

1. Identification

1.1 GHS Product identifier

Product name	Benzophenone

1.2 Other means of identification

Product number	-
Other names	Diphenyl ketone

1.3 Recommended use of the chemical and restrictions on use

Identified uses	For industry use only. Food additives -> Flavoring Agents
Uses advised against	no data available

2. Hazard identification

2.1 Classification of the substance or mixture

Specific target organ toxicity – repeated exposure, Category 2

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 3

2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word

Warning

Hazard statement(s)	H373 May cause damage to organs through prolonged or repeated exposure H412 Harmful to aquatic life with long lasting effects
Precautionary statement(s)	
Prevention	P260 Do not breathe dust/fume/gas/mist/vapours/spray. P273 Avoid release to the environment.
Response	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
Benzophenone	Benzophenone	119-61-9	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

Rinse and then wash skin with water and soap.

In case of eye contact

Rinse with plenty of water (remove contact lenses if easily possible).

If swallowed

Rinse mouth.

4.2 Most important symptoms/effects, acute and delayed

Ingestion causes gastrointestinal disturbances. Contact causes eye irritation and, if prolonged, irritation of skin. (USCG, 1999)

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

/SRP:/ 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. /Ketones and related compounds/

---

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

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

5.2 Specific hazards arising from the chemical

Flash point data for this chemical are not available, but it is probably combustible.

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: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

---

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

Separated from strong oxidants. Store in an area without drain or sewer access.Conditions for safe storage, including any incompatibilities: Keep container tightly closed in a dry and well-ventilated place. Recommended storage temperature -20°C.

---

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	Orange Crystals
Colour	Orthorhombic prisms from alcohol (alpha); monoclinic prisms (beta)
Odour	Geranium-like odor
Melting point/ freezing point	5°C(lit.)
Boiling point or initial boiling point and boiling range	305°C(lit.)

Flammability	Combustible.
Lower and upper explosion limit / flammability limit	no data available
Flash point	138°C
Auto-ignition temperature	650°C
Decomposition temperature	>320°C
pH	no data available
Kinematic viscosity	no data available
Solubility	In water:insoluble (
Partition coefficient n-octanol/water (log value)	no data available
Vapour pressure	1 mm Hg (108 °C)
Density and/or relative density	1.11
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

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

CombustibleKetones, such as BENZOPHENONE, are reactive with many acids and bases liberating heat and flammable gases (e.g., H2). The amount of heat may be sufficient to start a fire in the unreacted portion of the ketone. Ketones react with reducing agents such as hydrides, alkali metals, and nitrides to produce flammable gas (H2) and heat. Ketones are incompatible with isocyanates, aldehydes, cyanides, peroxides, and anhydrides. They react violently with aldehydes, HNO3, HNO3 + H2O2, and HClO4. This compound can react with oxidizing materials.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Dust can form explosive mixture with air.

10.6 Hazardous decomposition products

When heated to decomp it emits acrid and irritating fumes.

---

11. Toxicological information

Acute toxicity

- Oral: no data available
- Inhalation: no data available
- 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

no data available

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: EC50; Species: Pimephales promelas (fathead minnow); Conditions: flow-through bioassay with measured concentrations, 25.3°C, dissolved oxygen 6.9 mg/L, hardness 47.9 mg/L calcium carbonate, alkalinity 34.0 mg/L calcium carbonate, and pH 7.72; Concentration: 15.3 mg/L for 96 hr (confidence limit: 14.4-16.3 mg/L); Effect: loss of equilibrium
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea); Conditions: freshwater; static; Concentration: 280 ug/L (95% confidence limit: 210 to 370 ug/L) for 1 day; Effect: intoxication, immobile /active ingredient
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: Benzophenone, present at 100 mg/L, reached 0% of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(1). In a separate screening test, benzophenone reached 12% of its theoretical BOD over an incubation period of 5 days using a sewage sludge inoculum(2). The removal of benzophenone from soil columns treated with feed solutions containing 5.8X10-5, 1.3X10-4, 1.1X10-4, and 2X10-3 ppm benzophenone was 15, 41, 45, and 40%, respectively(3). An increase in the column effluent concentration of benzophenone after mercuric chloride was added to the feed solution indicated that some biodegradation took place in the soil column(3).

12.3 Bioaccumulative potential

BCF values of 3.4-9.2 were measured using carp (Cyprinus carpio) which were exposed to benzophenone concentrations of 0.3 ppm over an 6-week period(1). According to a classification scheme(2), this BCF range suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

The Kd for benzophenone was measured to be 2.71 on a red earth soil from Australia with an organic matter content of 1.09%(1), corresponding to a Koc of about 430(SRC). The average Koc value from three soils was measured to be 517(2). According to a classification scheme(3), these Koc values suggest that benzophenone is expected to have moderate to low mobility in soil. Benzophenone was detected (concentration below 0.500 ug/L) in both the treated effluent applied at the top of a 2.4 m long, 32.5 cm diameter soil column and in the drainage collected from the bottom of the column after 23 days(4).

12.5 Other adverse effects

no data available

---

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
Benzophenone	Benzophenone	119-61-9	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 10, 2017

Revision Date Aug 10, 2017

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/

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.