

Chemical Safety Data Sheet MSDS / SDS

Dibenzoyl peroxide SDS

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

Section 1	Section 2	Section 3	Section 4	Section 5	Section 6	Section 7	Section 8
Section 9	Section 10	Section 11	Section 12	Section 13	Section 14	Section 15	Section 16

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

Product name: Dibenzoyl peroxide

CAS: 94-36-0

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**Organic peroxides, Type B
Eye irritation, Category 2

Skin sensitization, Category 1

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H241 Heating may cause a fire or explosion

H319 Causes serious eye irritation

H317 May cause an allergic skin reaction

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P234 Keep only in original packaging.

P235 Keep cool.

P240 Ground and bond container and receiving equipment.

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

P264 Wash ... thoroughly after handling.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

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

Response

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

P302+P352 IF ON SKIN: Wash with plenty of water/...

P333+P317 If skin irritation or rash occurs: Get medical help.

P321 Specific treatment (see ... on this label).

P362+P364 Take off contaminated clothing and wash it before reuse.

Storage

P403 Store in a well-ventilated place.

P410 Protect from sunlight.

P411 Store at temperatures not exceeding ...°C/...°F.

P420 Store separately.

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: Dibenzoyl peroxide

Common names and synonyms: Dibenzoyl peroxide

CAS number: 94-36-0

EC number: 202-327-6

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 and then wash skin with water and soap.

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. Give one or two glasses of water to drink. Refer for medical attention .

Most important symptoms/effects, acute and delayed

CONTACT WITH EYES OR SKIN: irritates eyes. Prolonged contact may irritate skin. (USCG, 1999)

Excerpt from ERG Guide 145 [Organic Peroxides (Heat and Contamination Sensitive)]: Fire may produce irritating, corrosive and/or toxic gases. Ingestion or contact (skin, eyes) with substance may cause severe injury or burns. Runoff from fire control or dilution water may cause pollution. (ERG, 2016)

Excerpt from ERG Guide 146 [Organic Peroxides (Heat, Contamination and Friction Sensitive)]: Fire may produce irritating, corrosive and/or toxic gases. Ingestion or contact (skin, eyes) with substance may cause severe injury or burns. Runoff from fire control or dilution water may cause pollution. (ERG, 2016)

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

For immediate first aid: Ensure that adequate decontamination has been carried out. If victim 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 victim quiet and maintain normal body temperature. Obtain medical attention. Organic peroxides

SECTION 5: Firefighting measures

Suitable extinguishing media

If material on fire or involved in fire: Burns with explosive violence. If it becomes ignited, material cannot be extinguished until it is consumed. Benzoyl peroxide (benzoyl peroxide, dry or wet with less than 30% water)

Specific hazards arising from the chemical

Special Hazards of Combustion Products: Suffocating smoke evolved Behavior in Fire: May explode (USCG, 1999)

Excerpt from ERG Guide 145 [Organic Peroxides (Heat and Contamination Sensitive)]: May explode from heat or contamination. May ignite combustibles (wood, paper, oil, clothing, etc.). May be ignited by heat, sparks or flames. May burn rapidly with flare-burning effect. Containers may explode when heated. Runoff may create fire or explosion hazard. (ERG, 2016)

Excerpt from ERG Guide 146 [Organic Peroxides (Heat, Contamination and Friction Sensitive)]: May explode from heat, shock, friction or contamination. May ignite combustibles (wood, paper, oil, clothing, etc.). May be ignited by heat, sparks or flames. May burn rapidly with flare-burning effect. Containers may explode when heated. Runoff may create fire or explosion hazard. (ERG, 2016)

Special protective actions for fire-fighters

Use water in large amounts. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Remove all ignition sources. Wash away remainder with plenty of water. Do NOT absorb in saw-dust or other combustible absorbents.

Environmental precautions

Evacuate danger area! Remove all ignition sources. Wash away remainder with plenty of water. Do NOT absorb in saw-dust or other combustible absorbents.

Methods and materials for containment and cleaning up

Cover the spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, clay cat litter (bentonite) and sand. Dampen this mixture thoroughly with water, then scoop into a beaker using a plastic or cardboard shovel. Treat as per waste disposal procedure. Wash the area of the spill thoroughly with soap and water.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. NO contact with flammables. NO contact with hot surfaces. Do NOT expose to friction or shock. Use non-sparking handtools. 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 combustible substances and reducing agents. Store only in original packaging. See Chemical Dangers. All precautions must be taken to guard against fire and explosion hazards. Keep in a cool place out of direct rays of the sun; away from sparks, open flames and other sources of heat; away from shock, rough handling, friction from grinding, etc. Isolated storage is required; keep away from possible contact with acids, alcohols, ethers or other reducing agents or polymerization catalysts such as dimethylaniline. Complete instructions on storage and handling available from manufacturer.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 5 mg/m³, as TWA; A4 (not classifiable as a human carcinogen).MAK: 5 mg/m³; peak limitation category: I(1)

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 goggles.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Solid. Crystals or granular powder.
Colour:	White.
Odour:	Faint, benzaldehyde-like odor.
Melting point/freezing point:	105 °C. Atm. press.:1.013 hPa. Remarks:As no information are given for the atmospheric pressure, it is assumed to be at normal pressure.

Boiling point or initial boiling point and boiling range:	176 °F
Flammability:	Combustible Solid (easily ignited and burns very rapidly).
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	93 °C
Auto-ignition temperature:	80 °C. Atm. press.:1.013 hPa.
Decomposition temperature:	103-105 °C
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	Insoluble in water
Partition coefficient n-octanol/water:	log Pow = 3.2. Temperature:22 °C.
Vapour pressure:	0.009 Pa. Temperature:25 °C. Remarks:Modified Grain Method.
Density and/or relative density:	1.33. Temperature:25 °C.
Relative vapour density:	no data available
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

May decompose explosively on shock, friction or concussion. May explode on heating above 103-105 °C. On combustion, forms

irritating and toxic fumes and gases of benzoic acid (see ICSC 0103) and carbon monoxide (see ICSC 0023). The substance is a strong oxidant. It reacts violently with combustible and reducing materials. Reacts violently with many organic acids, inorganic acids, alcohols and amines. This generates fire and explosion hazard.

Chemical stability

Very stable /srp: shelf life/ @ ordinary temp (25 deg c)

Possibility of hazardous reactions

Unstable to heat; decomposes with evolving oxygen, resulting in advancing fire. Sensitive to impact and friction. BENZOYL PEROXIDE is a white, odorless powder, moderately toxic. It is most dangerous when it contains less than 1% water. A moisture content of 3% allowed slow burning only, and at 5% ignition did not occur [McCloskey, C. M. et al., Chem. Abs., 1967, 66, 12613c]. Mixed with a large surplus of water (30% or more), it is relatively safe. In dry form, it is a very dangerous material. It will explode spontaneously when heated above melting point (103° C). An explosion which occurred when a screw-capped bottle of the peroxide was opened has been attributed to friction, which initiated a mixture of peroxide and organic dust in the cap threads [Lappin, G. R., Chem. Eng. News, 1948, 26, p.3518]. A violent explosion occurred during purification of the peroxide by Soxhlet extraction with hot chloroform [Anon., Sichere Chemiearb., 1976, 28, p. 49]. It is a powerful oxidizer, which ignites readily and burns rapidly. In contact with reducing agents, it may ignite by spontaneous chemical reaction. It must be kept in a cool place, in isolation and out of the sunlight or sources of heat. Also, avoid shock or friction. It reacts violently with inorganic or organic acids, alcohols, amines, metallic naphthenates and polymerization accelerators (e.g., N,N-dimethylaniline). Explosive or violent reaction upon contact with dimethyl sulfide, lithium aluminum hydride or aniline [Bretherick, 5th ed., 1995, p. 1140]. Mixture with carbon tetrachloride and ethylene explodes when exposed to heat [Bolt, R. O. et al., Chem. Eng. News, 1947, 25, p. 1866]. Ignition occurred upon contact with methyl methacrylate [MCA Case History No. 996], polymerization of vinyl acetate in ethyl acetate accelerated out of control leading to ignition and explosion [Vervain, 1973, p. 81]. At 50° C a mixture of dibenzoyl peroxide and charcoal reacts violently producing dense white smoke of benzoic acid, benzene, phenyls and carbon dioxide [Leleu, Cahiers, 1980, 99, p. 279].

Conditions to avoid

no data available

Incompatible materials

Special care must be taken to avoid contamination with combustible materials (wood, paper), various inorganic & organic acids, alkalis, alcohols, amines, easily oxidizable materials such as ethers, or materials used as accelerators in polymerization reactions.

Hazardous decomposition products

Explosive decomposition above the melting point ... forms flammable products.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD0 - mouse (male/female) - > 2 000 mg/kg bw. Remarks: No mortality.

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

Evaluation: There is inadequate evidence in humans for the carcinogenicity of benzoyl peroxide. There is limited evidence in experimental animals for the carcinogenicity of benzoyl peroxide. Overall evaluation: Benzoyl peroxide is not classifiable as to its carcinogenicity to humans (Group 3).

Reproductive toxicity

no data available

STOT-single exposure

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

STOT-repeated exposure

Repeated or prolonged contact may cause skin sensitization.

Aspiration hazard

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed, especially if powdered.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 - *Oncorhynchus mykiss* (previous name: *Salmo gairdneri*) - 0.06 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - *Daphnia magna* - 0.11 mg/L - 48 h.

Toxicity to algae: EC50 - *Pseudokirchneriella subcapitata* (previous names: *Raphidocelis subcapitata*, *Selenastrum capricornutum*) - 0.071 mg/L - 72 h.

Toxicity to microorganisms: EC50 - activated sludge of a predominantly domestic sewage - 35 mg/L - 30 min.

Persistence and degradability

In the Japanese MITI test, benzoyl peroxide (present at 100 ppm) reached 84 percent of its theoretical BOD in 21 days, using an activated sludge inoculum(1).

Bioaccumulative potential

An estimated BCF of 250 was calculated for benzoyl peroxide(SRC), using an experimental log Kow of 3.46(1,SRC) and a recommended regression-derived equation(2). According to a classification scheme(3), this BCF suggests that bioconcentration in aquatic organisms is high(SRC).

Mobility in soil

The Koc of benzoyl peroxide is estimated as approximately 1,800(SRC), using a measured log Kow of 3.46(1) and a regression-derived equation(2,SRC). According to a recommended classification scheme(3), this estimated Koc value suggests that benzoyl peroxide is expected to have low mobility in soil(SRC).

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: UN3108 (For reference only, please check.)

IMDG: UN3108 (For reference only, please check.)

IATA: UN3108 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: ORGANIC PEROXIDE TYPE E, SOLID (For reference only, please check.)

IMDG: ORGANIC PEROXIDE TYPE E, SOLID (For reference only, please check.)

IATA: ORGANIC PEROXIDE TYPE E, SOLID (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 5.2 (For reference only, please check.)

IMDG: 5.2 (For reference only, please check.)

IATA: 5.2 (For reference only, please check.)

Packing group, if applicable

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

IMDG: (For reference only, please check.)

IATA: (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

Carrier solvents used in commercial formulations may change physical and toxicological properties. Rinse contaminated clothing with plenty of water because of fire hazard.

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