Safety Data Sheet

According to the UN GHS revision 8

Creation Date: May 23, 2026
Revision Date: May 23, 2026

1. IDENTIFICATION

1.1 GHS Product identifier

Product name: Diphenyl oxide

Catalog Number: T0621

CAS Number: 101-84-8

1.2 Other means of identification

Other names: -

1.3 Recommended use of the chemical and restrictions on use

Identified uses:

1.4 Supplier's details

Company: Targetmol Chemicals Inc.

Address: 34 Washington Street, Wellesley Hills, Massachusetts 02481 USA

Tel/Fax: (781) 999-4286

1.5 Emergency phone number

Emergency phone number: 781-999-4286

Service hours: Monday to Friday, 9am-5pm (Standard timezone: UTC/GMT -5 hours).

2. HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture

Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
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):
H319 Causes serious eye irritation
H411 Toxic to aquatic life with long lasting effects

Precautionary statement(s):

Prevention: P273 Avoid release to the environment.

Response: P391 Collect spillage.

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.

2.3 Other hazards which do not result in classification

no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number
Diphenyl oxide	-	101-84-8	202-981-2

4. FIRST-AID MEASURES

4.1 Description of necessary first-aid measures

General advice

no data available

If inhaled

Fresh air, rest.

Following skin contact

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

Following eye contact

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

Following ingestion

Rinse mouth.

4.2 Most important symptoms/effects, acute and delayed

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. Ethers and related compounds

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

Inhalation may cause nausea because of disagreeable odor. Contact of liquid with eyes causes mild irritation. Prolonged exposure of skin to liquid causes reddening and irritation. Ingestion produces nausea. (USCG, 1999)

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

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

5.2 Specific hazards arising from the chemical

This chemical is combustible. (NTP, 1992)

5.3 Special protective actions for fire-fighters

Use water spray, powder, foam, carbon dioxide.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

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. If solid: sweep spilled substance into containers. If appropriate, moisten first to prevent dusting. Then store and dispose of according to local regulations.

6.2 Environmental precautions

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. If solid: sweep spilled substance into 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

Accidental release measures: Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Avoid breathing dust.; 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: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

NO open flames. 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.

7.2 Conditions for safe storage, including any incompatibilities

Separated from strong oxidants. Store in an area without drain or sewer access. Provision to contain effluent from fire extinguishing. Conditions for safe storage, including any incompatibilities. Keep container tightly closed in a dry and well-ventilated place. Storage class (TRGS 510): Non Combustible Solids.

Pure form: -20°C for 3 years | In solvent: -80°C for 1 year

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure limit values

TLV: 1 ppm as TWA; 2 ppm as STEL.MAK: 7.1 mg/m3, 1 ppm; peak limitation category: I(1); pregnancy risk group: C.EU-OEL: 7 mg/m3, 1 ppm as TWA; 14 mg/m3, 2 ppm as STEL

Biological limit values

no data available

8.2 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.

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

Eye/face protection

Wear safety spectacles.

Skin protection

Protective gloves.

Respiratory protection

Use ventilation. Use local exhaust.

Thermal hazards

no data available

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Viscous
Color	Transparent
Odour	Geranium-like odor
Melting point/freezing point	26-30°C
Boiling point or initial boiling point and boiling range	259°C
Flammability	Combustible Solid Class IIIB Combustible Liquid: Fl.P. at or above 200°F.
Lower and upper explosion limit/flammability limit	Lower flammable limit: 0.7% by volume; Upper flammable limit: 6.0% by volume
Flash point	115°C

Auto-ignition temperature	1148° F (USCG, 1999)
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	3.4909X10-3 Pa-sec at melting point
Solubility	DMSO: 50 mg/mL (293.75 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
N-octanol-water partition coefficient	log Kow = 4.21
Vapour pressure	<1 mm Hg (20 °C)
Density and/or relative density	1.073 g/cm3 at 25℃ (lit.)
Relative vapour density	>5.86 (25 °C, vs air)
Particle characteristics	no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

Reacts with strong oxidants. The substance can form explosive peroxides on exposure to air.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Combustible when exposed to heat or flame.DIPHENYL OXIDE can react with oxidizing materials. (NTP, 1992). A vigorous reaction occurred between the ether and chlorosulfuric acid.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Incompatible materials: Strong oxidizing agents.

10.6 Hazardous decomposition products

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

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral: LD50 Rat oral 2830 mg/kg body weight (95% confidence limits 2490-3210 mg/kg).
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

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

STOT-repeated exposure

Repeated or prolonged contact with skin may cause dermatitis.

Aspiration hazard

A harmful contamination of the air will not or will only very slowly be reached on evaporation of this substance at 20°C.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish: LC50; Species: Pimephales promelas (Fathead minnow) weight 0.12 g; Conditions: flow-through bioassay, water hardness 45.5 mg/L CaCO3, temp: 25 + or - 1 deg C, pH 7.5, dissolved oxygen greater than 60% of saturation; Concentration: 4.0 mg/L for 96 hr
Toxicity to daphnia and other aquatic invertebrates: LC50; Species: Daphnia magna (Water Flea) age < or =24 hr; Conditions: freshwater, static, 22 deg C, pH 7.4-9.4, dissolved oxygen 6.5-9.1 mg/L; Concentration: 1400 ug/L for 24 hr (95% confidence limit: 1100-1900 ug/L) /> or =80% purity
Toxicity to algae: no data available
Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: In a river die-away test using Ohio River water with weekly additions of settled sewage inoculum (1% by volume), diphenyl ether's theoretical CO2 evolution was found to be only 20% after 75 days of incubation(1); re-dosing tests found that diphenyl ether was oxidized slightly better after re-dosing(1); however, the overall test results indicated that diphenyl ether was resistant to biological action (1). Diphenyl ether, present at 100 mg/L, reached 6.3% of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test and is considered not readily biodegradable(2). Using a die-away study with spiked soil and sludge, diphenyl ether dissipated to below detectable levels after 3 months, loss processes were not confirmed and may have included volatilization and adsorption(3).

12.3 Bioaccumulative potential

Using a 4-day exposure period, a diphenyl ether steady-state BCF of 195 was measured in rainbow trout (Salmo gairdneri)(1). A steady-state BCF of 470 has also been reported for rainbow trout after 7 day exposure period at 16 ug/L(2). Using a 4-day exposure period a BCF of 590 was measured in rainbow trout(3). BCF ranges of 112-583 and 49-594 were calculated using carp (Cyprinus carpio) which were exposed to 0.3 and 0.03 ppm, respectively, over an 8-week period(4). According to a classification scheme(5), these data suggest that bioconcentration in aquatic organisms is moderate to high(SRC).

12.4 Mobility in soil

A Koc of 1950 for diphenyl ether can be determined(SRC) from a measured soil/water partition coefficient (Kd) of 12.4 in an Australian soil (organic matter content of 1.09%)(1). A log Koc of 3.29 has been reported(2), corresponding to a Koc of 1949(SRC). According to a classification scheme(3), these Koc values suggest that diphenyl ether is expected to have low mobility in soil.

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

no data available

14.2 UN Proper Shipping Name

no data available

14.3 Transport hazard class(es)

no data available

14.4 Packing group, if applicable

no data available

14.5 Environmental hazards

no data available

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

15. REGULATORY INFORMATION

15.1 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.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Listed.
Vietnam National Chemical Inventory	Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)	Listed.
Korea Existing Chemicals List (KECL)	Listed.

16. OTHER INFORMATION

Information on revision

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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/

Other Information

Health effects of exposure to the substance have not been investigated adequately.
