

SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.2
Creation Date: July 15, 2019
Revision Date: August 08, 2025

SECTION 1: Identification

1.1 GHS Product identifier

Product name Biphenyl

1.2 Other means of identification

Product number CCPD100132
Other names 1,1'-Biphenyl; Bibenzene; PHPH

1.3 Recommended use of the chemical and restrictions on use

Identified uses For laboratory and Industrial use only.
Uses advised against no data available

1.4 Supplier's details

Company CATO Research Chemicals Inc.
Address 3/F,Building B,No.179 BASIGO, Guangpu Rd East,Huangpu Dist,Guangzhou
Telephone +86-20-81960175

1.5 Emergency phone number

Emergency phone number +86-20-81960175
Service hours 'Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Skin irritation, Category 2
Eye irritation, Category 2
Specific target organ toxicity – single exposure, Category 3
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Warning

Hazard statement(s)

H315 Causes skin irritation
H319 Causes serious eye irritation
H335 May cause respiratory irritation
H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P264 Wash ... thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.

Response	P302+P352 IF ON SKIN: Wash with plenty of water/... P321 Specific treatment (see ... on this label). P332+P317 If skin irritation occurs: Get medical help. 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. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P319 Get medical help if you feel unwell. P391 Collect spillage.
Storage	P403+P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up.
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

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Biphenyl	Biphenyl	92-52-4	202-163-5	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention.

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. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

CALL FOR MEDICAL AID. VAPOR, MIST OR DUST: Irritating to eyes, nose, throat and skin. Flush affected area with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. SOLID OR LIQUID: Irritating to skin and eyes, nose and throat. Remove contaminated clothing and shoes. Flush affected areas with plenty water. IF IN EYES, hold eyelids open and flush with plenty of water. If swallowed, do not induce vomiting. Harmful if inhaled or swallowed. Causes irritation to eyes, skin and mucous membrane and upper respiratory tract. Causes central nervous system depression, paralysis and convulsion in animals. May cause headache, diffuse gastrointestinal pain, nausea, indigestion, numbness and aching of limbs, and general fatigue. Liver function test may show abnormalities. Chronic exposure is mostly characterized by central nervous system symptoms, fatigue, headache, tremor, insomnia, sensory impairment, and mood changes. Such symptoms are rare however. (USCG, 1999)

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

Exposure treatment. Inhalation: Call for medical aid. Remove the victim to fresh air. If not breathing give artificial respiration. If breathing is difficult give oxygen. Ingestion: Do not induce vomiting. Skin: Wash with soap and copious amounts of water. Eyes: Flush with copious amounts of water for at least 15 min.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Carbon dioxide, dry chemical, water spray, mist, fog.

5.2 Specific hazards arising from the chemical

Combustible. Emits toxic fumes under fire conditions. (USCG, 1999)

5.3 Special protective actions for fire-fighters

Use water spray, foam, powder, carbon dioxide.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal protection: filter respirator for organic gases and particulates 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. Carefully collect remainder. Then store and dispose of according to local regulations.

6.2 Environmental precautions

Personal protection: filter respirator for organic gases and particulates 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. Carefully collect remainder. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

Environmental considerations: Air spill: Apply water spray or mist to knock down vapors.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames. Closed system, dust explosion-proof electrical equipment and lighting. Prevent deposition of dust. Prevent build-up of electrostatic charges (e.g., by grounding). 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 food and feedstuffs and oxidants. Provision to contain effluent from fire extinguishing. Store in an area without drain or sewer access. Materials... toxic as stored or which can decompose into toxic components... should be stored in a cool... ventilated place, out of... sun, away from fire hazard... /and/ be periodically inspected. ...Incompatible materials should be isolated...

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 0.2 ppm as TWA.MAK: skin absorption (H); carcinogen category: 3B

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 goggles or eye protection in combination with breathing protection if powder.

Skin protection

Protective gloves.

Respiratory protection

Avoid inhalation of dust and mist. Use local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Solid. Flakes.
Colour	White.
Odour	Pleasant, peculiar odor
Melting point/freezing point	69.45°C.
Boiling point or initial boiling point and boiling range	255.25 °C. Atm. press.:760 mm Hg. Remarks:Reported boiling point is 255.25 ± 0.05 °C.
Flammability	Combustible Solid
Lower and upper explosion limit/flammability limit	Lower flammable limit: 0.6% by volume (at 232 deg F, 111 deg C); Upper flammable limit: 5.8% by volume (at 311 deg F,155 deg C)
Flash point	113 °C.;115 °C.
Auto-ignition temperature	566 °C. Atm. press.:101.3 kPa. Remarks:Measurements determined at ambient atmospheric pressure, but exact barometric pressure is not reported.
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	dynamic viscosity (in mPa s) = 0.95. Temperature:100.0°C.;dynamic viscosity (in mPa s) = 0.57. Temperature:150.0°C.;dynamic viscosity (in mPa s) = 0.38. Temperature:200.0.
Solubility	Insoluble in water

Partition coefficient n-octanol/water	log Pow = 4.008. Temperature:25 °C. Remarks:SD +/- 0.022, pH not reported.
Vapour pressure	0.001 kPa. Temperature:25 °C. Remarks:+/- 0.03.
Density and/or relative density	0.97 g/cm ³ . Temperature:100 °C.;1.17 g/cm ³ . Temperature:24.5 °C.
Relative vapour density	5.31 (USCG, 1999) (Relative to Air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Reacts with oxidants.

10.2 Chemical stability

Very stable in acidic & alkaline media.

10.3 Possibility of hazardous reactions

Slight when exposed to heat or flame; can react with oxidizing materials.Dust explosion possible if in powder or granular form, mixed with air.BIPHENYL is incompatible with oxidizers. (NTP, 1992)

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Reacts with oxidants causing fire and explosion hazard.

10.6 Hazardous decomposition products

This substance decomposes on heating producing toxic gases, acrid smokes and fumes.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 - rat (male/female) - 2 400 mg/kg bw. Remarks:One to five days with most deaths occurring within two days.
- Inhalation: LC50 Mouse inhalation 0.275 mg/L/4 hr
- Dermal: LD50 - rabbit (male/female) - > 5 010 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

Cancer Classification: Group D Not Classifiable as to Human Carcinogenicity

Reproductive toxicity

No information is available on the reproductive or developmental effects of biphenyl in humans. Limited data indicate that biphenyl does not cause teratogenic effects (birth defects) in animals. Some evidence (not significant) of fetotoxicity has been observed in rats exposed to high levels of biphenyl via gavage (experimentally placing the chemical in the stomach).

STOT-single exposure

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

STOT-repeated exposure

The substance may have effects on the liver and nervous system. This may result in impaired functions.

Aspiration hazard

A harmful concentration of airborne particles can be reached quickly when dispersed.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 - Pimephales promelas - 3 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: LC50 - Daphnia magna - 0.36 mg/L - 48 h.
- Toxicity to algae: EC50 - Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum) - 2.5 mg/L - 96 h.

- Toxicity to microorganisms: NOEC - Colpidium colpoda - ≥ 6.3 mg/L - 18 h.

12.2 Persistence and degradability

Several organisms have been found that can grow on biphenyl and use it as the sole carbon source.

12.3 Bioaccumulative potential

Bioconcentration factors for biphenyl in golden orfe (*Leuciscus idus melanotus*) and the amphipod *Rhepoxynius abronius*, have been measured as 280(1) and 4,500(2). Measured BCF values for rainbow trout (*Salmo gairdneri*) were reported as 437(3) and 1,318(4). According to a classification scheme(5), these BCF values indicate that bioconcentration in aquatic organisms is high to very high(SRC). Bivalve molluscs, *Mercenaria mercenaria* L., exposed to waste crankcase oil containing biphenyl for 2 days, did not significantly depurate biphenyl over a 45 day period in clean water(6).

12.4 Mobility in soil

In three soils, the log Koc was determined to be in the range 2.94-3.52 (Koc of 871-3,331)(1). The experimental mean log Koc value in five soils was 3.16 (Koc of 1,445)(3). The log Koc value in humic acids was determined to be 3.27 (Koc of 1,862)(4). According to a recommended classification scheme(2), these log Koc values indicate biphenyl may have low to slight mobility in soil(SRC). A log Koc of 5.09 was measured using soot columns and an SRM-1650 soot standard obtained from NIST(5). A retardation factor (Rf) of 2.1 was measured for biphenyl using soil columns filled with a surface soil (organic carbon = 12.6%, 60.3% sand, 24.0% silt, 15.7% clay, porosity = 0.7)(6). A retardation factor of 2.2-2.3 was measured for biphenyl on columns packed with low carbon aquifer material(7). The sorption of biphenyl on HDTMA clays indicated that sorption occurs via partition interactions with the HDTMA-derived organic phase. The greater the HDTMA content and the larger spacings of high charge HDTMA clays increased biphenyl's sorption(8).

12.5 Other adverse effects

no data available

SECTION 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.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN3077 (For reference only, please check.) IMDG: UN3077 (For reference only, please check.) IATA: UN3077 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)	IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)	IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)
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14.3 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.)

14.4 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.)
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14.5 Environmental hazards

ADR/RID: Yes	IMDG: Yes	IATA: Yes
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14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 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
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Biphenyl	Biphenyl	92-52-4	202-163-5
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.
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.

SECTION 16: Other information

Information on revision

Creation Date July 15, 2019
Revision Date August 08, 2025

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

Do NOT take working clothes home.

Any questions regarding this SDS, Please send your inquiry to info@cato-chem.com

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