



SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.0
Creation Date: July 15, 2019
Revision Date: July 15, 2019

SECTION 1: Identification

1.1 GHS Product identifier

Product name Carbazole

1.2 Other means of identification

Product number

-

Other names

diphenylenimine; DIPHENYLIMIDE; Carbazole

1.3 Recommended use of the chemical and restrictions on use

Identified uses

Industrial and scientific research use.

Uses advised against

no data available

1.4 Supplier's details

Company

Shanghai Yien Chemical Technology Co., Ltd

Address

Building 6, 28 Yingong Road, Fengxian District, Shanghai
Chemical Industry Zone, Shanghai, 201400, China

Telephone

+86-400-133-2688

1.5 Emergency phone number

Emergency phone
number

+86-400-133-2688

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

Germ cell mutagenicity, Category 2

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Warning

Hazard statement(s)

H341 Suspected of causing genetic defects
H411 Toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P203 Obtain, read and follow all safety instructions before use.

Response	P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
	P273 Avoid release to the environment.
Storage	P318 IF exposed or concerned, get medical advice.
Disposal	P391 Collect spillage.
	P405 Store locked up.
	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
Carbazole	Carbazole	86-74-8	201-696-0	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

4.2 Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this compound may include irritation. It may cause allergic reactions. It may also cause dermatitis, bronchitis, coughing, dyspnea and respiratory distress. ACUTE/CHRONIC HAZARDS: This compound may be harmful by ingestion, inhalation and skin absorption. It may cause irritation. When heated to decomposition it emits toxic fumes of carbon monoxide, carbon dioxide and nitrogen oxides. (NTP, 1992)

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

no data available

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Fires involving this material can be controlled with a dry chemical, carbon dioxide or Halon extinguisher. A water spray may also be used. (NTP, 1992)

5.2 Specific hazards arising from the chemical

Flash point data for this chemical are not available; however, it is probably combustible. (NTP, 1992)

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

6.2 Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

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

Materials which are toxic as stored or which can decompose into toxic components ... should be stored in a cool well ventilated place, out of the direct rays of the sun, away from areas of high fire hazard, & should be periodically inspected. incompatible materials should be isolated .

SECTION 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

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 tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. 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

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Solid. Crystalline.
Colour	Grey-white.
Odour	no data available
Melting point/freezing point	245 °C. Atm. press.:1 013 hPa. Remarks:The Merck-Index.;246.2 °C. Atm. press.:1 013 hPa. Remarks:ChemIDplus.;244 - 246 °C. Atm. press.:1 013 hPa. Remarks:Hawley, Gessner 1977.
Boiling point or initial boiling point and boiling range	355 °C. Atm. press.:1 013 hPa. Remarks:The Merck-Index.;352 - 354 °C. Atm. press.:1 013 hPa. Remarks:Hawley, Gessner 1977.
Flammability	no data available
Lower and upper explosion limit/flammability limit	no data available
Flash point	188 °C. Atm. press.:1 013 hPa.
Auto-ignition temperature	> 600 °C. Atm. press.:1 013 hPa.
Decomposition temperature	no data available
pH	EXTREMELY WEAK BASE
Kinematic viscosity	no data available
Solubility	Insoluble in water
Partition coefficient n-octanol/water	log Pow = 3.84. Temperature:22 °C.
Vapour pressure	Ca. 0 Pa. Temperature:25 °C. Remarks:Estimated.
Density and/or relative density	Ca. 1.1 g/cm ³ . Temperature:18 °C.
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

CARBAZOLE is an extremely weak base. It is incompatible with strong oxidizing agents. It reacts with nitrogen oxides. Potassium hydroxide fusion yields a salt. (NTP, 1992)

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

no data available

10.6 Hazardous decomposition products

When heated to decomposition it emits toxic fumes of /nitrogen oxides/.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD0 - rat (male/female) - > 16 000 mg/kg bw. Remarks:Limit dose.
- 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: No epidemiological data relevant to the carcinogenicity of carbazole were available. There is limited evidence in experimental animals for the carcinogenicity of carbazole. Overall evaluation: Carbazole is not classifiable as to its carcinogenicity to humans (Group 3).

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 - *Oryzias latipes* - 2.45 mg/L - 48 h. Remarks:(above water solubility).
- Toxicity to daphnia and other aquatic invertebrates: EC0 - *Daphnia magna* - > 113.4 µg/L - 48 h. Remarks:Measured as lack of ventricular movement in the animal's thorax.
- Toxicity to algae: EC10 - *Scenedesmus acuminatus* - > 0.4 mg/L - 96 h.
- Toxicity to microorganisms: IC50 - *Tetrahymena pyriformis* - 6.7 mg/L - 60 h.

12.2 Persistence and degradability

Based on measured biodegradation rates of 2.7-9.7 1/hr from batch fermentation screening studies using sewage inocula and 700-800 ppm carbazole, half-lives of 4.3 min-6.2 hr can be estimated for carbazole(1). After 14 days of incubation at 30 deg C, indigenous microorganisms removed 66% of carbazole (initial concn of 2.9 ug/ml) from contaminated groundwater taken from the American Creosote Works Superfund site, Pensacola, FL(2). Levels of indigenous carbazole mineralization varied from 0 to 46% after 60 days in mineralization experiments using C14 labeled carbazole in 3 southern Illinois soils(3). In the same experiment, the carbazole-degrading bacterium, *Xanthamonas* sp., was reintroduced and enhanced mineralization to 45% after 7 days in a soil where little

indigenous mineralization occurred(3). Carbazole initial concns of 500 and 5 ppm did not degrade after 90 and 15 days, respectively, in Chernozem loamy soil at 19 deg C based on thin layer chromatography(4).

12.3 Bioaccumulative potential

Based on static bioconcentration experiments with guppies (*Poecilia reticulata*), the log bioconcentration factor (log BCF) was determined to be 2.7 for carbazole(2). Log BCFs for carbazole in alga (*Oedogonium cardiacum*), snail (*Physa* sp.), mosquito larvae (*Culex pepiens*), and mosquito fish (*Gambusia affinis*) were measured to be 1.69, 2.13, 2.05, and 2.10, respectively; however, carbazole was metabolized to N-methyl and N-acetyl derivatives(1). The log BCF for carbazole in *Daphnia pulex* was experimentally determined to be 2.06(3).

12.4 Mobility in soil

Based on an experimental Koc range of 114 to 1180, the average Koc value in 21 soils has been determined to be 637(1). According to a suggested classification scheme(2), this Koc value suggests that carbazole will have low mobility in soil. In CA-Montmorillonite soil (0.06 % organic content) and Coyote Creek sediment (1.4% organic content), Koc values of 5300 and 12500 were measured for carbazole(3). Furthermore, sorption of carbazole to soil is nonlinear and highly correlated with organic content of soils; hence, mobility of carbazole in groundwater containing low organic content may be more than expected from estimated Koc values(1) based on the measured log Kow of 3.72(4) and water solubility of 1.8 mg/l at 25 deg C(5).

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.)

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.)

14.5 Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

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
Carbazole	Carbazole	86-74-8	201-696-0
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

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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/>

Any questions regarding this SDS, Please send your inquiry to sds@xixisys.com

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