

## Chemical Safety Data Sheet MSDS / SDS

**1,3-Diphenylguanidine**

Revision Date:2024-12-21 Revision Number:1

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

Product name : 1,3-Diphenylguanidine  
CBnumber : CB5671991  
CAS : 102-06-7  
EINECS Number : 203-002-1  
Synonyms : DPG, 1,3-Diphenylguanidine

**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  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 400-158-6606

**SECTION 2: Hazards identification****Classification of the substance or mixture**

Acute toxicity - Category 4, Oral  
Skin irritation, Category 2  
Eye irritation, Category 2  
Specific target organ toxicity – single exposure, Category 3  
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2  
Reproductive toxicity, Category 2

**Label elements****Pictogram(s)**

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Signal word : Danger

**Hazard statement(s)**

H301 Toxic if swallowed  
H302 Harmful if swallowed  
H315 Causes skin irritation

H319 Causes serious eye irritation

H335 May cause respiratory irritation

H361 Suspected of damaging fertility or the unborn child

H411 Toxic to aquatic life with long lasting effects

#### **Precautionary statement(s)**

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

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

P264 Wash hands thoroughly after handling.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P273 Avoid release to the environment.

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

P281 Use personal protective equipment as required.

P391 Collect spillage. Hazardous to the aquatic environment

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

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

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P308+P313 IF exposed or concerned: Get medical advice/attention.

P405 Store locked up.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P501 Dispose of contents/container to.....

#### **Prevention**

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

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.

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

#### **Response**

P301+P317 IF SWALLOWED: Get medical help.

P330 Rinse mouth.

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.

P318 IF exposed or concerned, get medical advice.

#### **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.

#### **Other hazards**

no data available

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## SECTION 3: Composition/information on ingredients

### **Substance**

Product name	: 1,3-Diphenylguanidine
Synonyms	: DPG, 1,3-Diphenylguanidine
CAS	: 102-06-7
EC number	: 203-002-1
MF	: C13H13N3
MW	: 211.26

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## SECTION 4: First aid measures

### **Description of first aid measures**

#### **If inhaled**

Fresh air, rest.

#### **Following skin contact**

Rinse skin with plenty of water or shower.

#### **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.

### **Most important symptoms and effects, both acute and delayed**

**SYMPTOMS:** Symptoms of exposure to this compound may include irritation of the skin, eyes, mucous membranes and respiratory tract. Other symptoms include tearing, reddening and swelling of the skin and eyes; skin sensitization (with possible blistering) and dermatitis. Inhalation may result in runny nose, dry throat, sneezing, coughing and chest discomfort. Ingestion may result in nausea, vomiting and diarrhea.

Conjunctivitis may occur. Eye contact may also cause punctuate corneal epithelial defects and edema of the lids and conjunctiva.

**ACUTE/CHRONIC HAZARDS:** This compound is toxic by ingestion. It is harmful if inhaled or absorbed through the skin. It is a severe eye irritant. It is also an irritant of the skin, eyes, mucous membranes and respiratory tract. When heated to decomposition it emits toxic fumes of carbon monoxide, carbon dioxide, nitrogen oxides and organic amines. (NTP, 1992)

### **Indication of any immediate medical attention and special treatment needed**

Basic treatment: Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if needed. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary . Monitor for shock and treat if necessary . Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool . Cover skin burns with dry sterile dressings after decontamination . Poison A and B

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## SECTION 5: Firefighting measures

### 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)

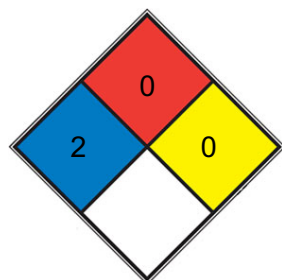
### Specific Hazards Arising from the Chemical

This chemical is combustible. (NTP, 1992)

### Advice for firefighters

In case of fire in the surroundings, use appropriate extinguishing media.

### NFPA 704



**HEALTH 2** Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury (e.g. [diethyl ether](#), ammonium phosphate, iodine)

**FIRE 0** Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride)

**REACT 0** Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium,[N2](#))

**SPEC.**  
**HAZ.**

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## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Personal protection: P2 filter respirator for harmful particles. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting.

## Environmental precautions

Personal protection: P2 filter respirator for harmful particles. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting.

## 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.

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# SECTION 7: Handling and storage

## 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.

## Conditions for safe storage, including any incompatibilities

Separated from food and feedstuffs.

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# SECTION 8: Exposure controls/personal protection

## Control parameters

### Occupational Exposure limit values

no data available

### Biological limit values

no data available

## Exposure 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

### Eye/face protection

Wear safety goggles.

### Skin protection

Protective gloves.

### Respiratory protection

Use local exhaust.

### Thermal hazards

no data available

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# SECTION 9: Physical and chemical properties

## Information on basic physicochemical properties

Physical state	Powder
Colour	Pale Cream
Odour	Slight odor
Melting point/freezing point	147 - 150 °C. Remarks:Specifications MLPC.;149.04 °C. Remarks:Batch 09031467678.;149.29 °C. Remarks:Batch 09101468506.
Boiling point or initial boiling point and boiling range	> 250 °C. Atm. press.:Ca. 1 010 hPa. Remarks:No base deviation.
Flammability	Combustible.
Lower and upper explosion limit/flammability limit	no data available
Flash point	Ca. 174.1 °C.
Auto-ignition temperature	no data available
Decomposition temperature	170°C
pH	10.2 (10g/l, H2O)
Kinematic viscosity	no data available
Solubility	Soluble in alcohol, chloroform, hot benzene, hot toluene, and dilute mineral acids
Partition coefficient n-octanol/water	log Pow = 2.42. Temperature:21.1 °C.
Vapour pressure	Ca. 0.007 Pa. Temperature:81 °C.;Ca. 0.055 Pa. Temperature:90 °C.;Ca. 0.59 Pa. Temperature:Ca. 100 °C.
Density and/or relative density	Ca. 0.348. Temperature:20 °C.
Relative vapour density	no data available
Particle characteristics	no data available

## SECTION 10: Stability and reactivity

### Reactivity

Decomposes on burning. This produces toxic fumes. The solution in water is a medium strong base.

### Chemical stability

no data available

### Possibility of hazardous reactions

1,3-DIPHENYLGUANIDINE behaves as an amine. Amines are chemical bases. They neutralize acids to form salts plus water. These acid-base reactions are exothermic. The amount of heat that is evolved per mole of amine in a neutralization is largely independent of the strength of the amine as a base. Amines may be incompatible with isocyanates, halogenated organics, peroxides, phenols (acidic), epoxides, anhydrides, and acid halides. Flammable gaseous hydrogen is generated by amines in combination with strong reducing agents, such as hydrides. This chemical is incompatible with strong oxidizers. (NTP, 1992)

### Conditions to avoid

no data available

## Incompatible materials

no data available

## Hazardous decomposition products

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

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# SECTION 11: Toxicological information

## Acute toxicity

- Oral: LD50 Rat oral 375 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

Test Type: Ames test

Test system: Salmonella typhimurium TA100, TA1535, TA98, TA1537, Escherichia coli WP2 uvrA

Method: Guidelines for Screening Mutagenicity Testing of Chemicals(Chemical Substances Control Law of Japan) and OECD Test Guideline 471

Metabolic activation: with and without metabolic activation

Result:Negative

Test Type: Chromosome aberration test in vitro

Test system: Chinese hamster CHL/IU cells

Method: Guidelines for Screening Mutagenicity Testing of Chemical(Chemical Substances Control Law of Japan) and OECD Test Guideline 473

Metabolic activation: with and without metabolic activation

Result:Negative

## Carcinogenicity

no data available

## Reproductive toxicity

no data available

## STOT-single exposure

The substance is mildly irritating to the eyes.

### **STOT-repeated exposure**

Animal tests show that this substance possibly causes toxic effects upon human reproduction.

### **Aspiration hazard**

No indication can be given about the rate at which a harmful concentration of this substance in the air is reached on evaporation at 20°C.

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## **SECTION 12: Ecological information**

### **Toxicity**

Toxicity to fish: LC50 - Pimephales promelas - 4.2 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - 17 mg/L - 48 h.

Toxicity to algae: EC50 - Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) - 2.6 mg/L - 72 h.

Toxicity to microorganisms: EC50 - activated sludge, industrial - 147 mg/L - 3 h. Remarks:Respiration rate.

### **Persistence and degradability**

N,N-Diphenylguanidine, present at 100 mg/L, reached 0% of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/L and the Japanese MITI test(1). N,N-Diphenylguanidine present at 20 mg/L in river water or sea water was 18% and 9% degraded, respectively, after a 3-day cultivation period(2). Therefore this compound is not expected to biodegrade rapidly.

### **Bioaccumulative potential**

BCFs of <2 and <20 were measured for N,N-diphenylguanidine(SRC) using orange-red killifish (*Oryzias latipes*) which were exposed over a 6-week period(1). According to a classification scheme(2), these BCFs suggest the potential for bioconcentration in aquatic organisms is low(SRC).

### **Mobility in soil**

Using a structure estimation method based on molecular connectivity indices(1), the Koc for N,N-diphenylguanidine can be estimated to be 5,900(SRC). According to a classification scheme(2), this estimated Koc value suggests that N,N-diphenylguanidine is expected to be immobile in soil. The pKa of N,N-diphenylguanidine is 10.12(3), indicating that this compound will primarily exist in the protonated form in the environment and cations generally adsorb more strongly to organic carbon and clay than their neutral counterparts(4).

### **Other adverse effects**

no data available

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## **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.

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## SECTION 14: Transport information

### UN Number

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### UN Proper Shipping Name

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### Transport hazard class(es)

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### Packing group, if applicable

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

### Special precautions for user

no data available

### Transport in bulk according to IMO instruments

no data available

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## 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**

Not Listed.

**New Zealand Inventory of Chemicals (NZIoC)**

Listed.

**PICCS**

Listed.

**Vietnam National Chemical Inventory**

Listed.

**IECSC**

Listed.

**Korea Existing Chemicals List (KECL)**

Listed.

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## 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?pagelD=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pagelD=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 information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability

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