

## GPS Safety Summary

Substance Name:

**1,3-diphenylguanidine (DPG)**

### 1. General Statement

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1,3-diphenylguanidine is a white to pale pink solid.

Principal usage is in rubber: DPG acts as middle-speed accelerator, suitable for natural and synthetic rubber, and also can be used as activator for kinds of thiazole, thiuram and sulfenamide. It acts also as compatibilizer with white fillers specially silica. It can be sold too as a peptizer for sulphur modified CR.

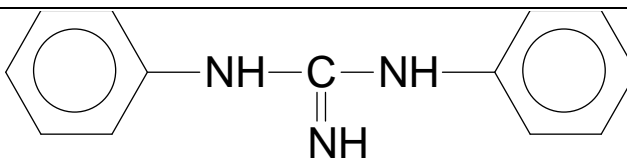
Its typical applications are tyre, rubber shoes or technical rubber goods.

DPG is manufactured, used and formulated within industrial settings.

### 2. Chemical Identity

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<b>Name:</b>	1,3-diphenylguanidine
<b>Brand names:</b>	DPG
<b>Chemical name (IUPAC):</b>	1,3-diphenylguanidine
<b>CAS number(s):</b>	102-06-7
<b>ES number:</b>	203-002-7
<b>Molecular formula:</b>	C <sub>13</sub> H <sub>13</sub> N <sub>3</sub>
<b>Structure:</b>	



### 3. Use and applications

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Accelerator in Rubber industry: including usage in tyres, and other rubber goods.

### 4. Physical / Chemical properties

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DPG is a solid having the following characteristics and properties:

Property	Value
Form	powder
Physical state (Liquid/solid/gaseous)	solid
Colour	White to pale pink
Odour	slight
Density	0.348 at 20°C
Melting / boiling point	MP 149°C
Flammability (optional) H statement in case classified	Not flammable (A10)
Explosive properties	Not explosive : due to structure
Self-ignition temperature	No data
Vapour pressure	3.7 x 10 <sup>-10</sup> Pa at 25°C
Mol weight	211 g/mol
Water solubility	325 mg/l at 25°C
Flash point	Not relevant (solid)
Octanol-water partition coefficient (LogKow)	2.42 at 21.1°C (OECD 117)

## 5. Health Effects

According to the CLP Regulation, 1,3-diphenylguanidine is classified as harmful if swallowed (Acute tox 4 – H302), irritating for skin (Skin Irr. 2 – H315), irritating for eyes (Eye Irr. 2 – H319), irritating for respiratory tract (STOT SE 3 – H335) and suspected of damaging fertility (Repro. Cat. 2 – H361f).

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Toxic if swallowed. Does not cause toxicity after dermal or inhalation exposure.
Irritation / corrosion Skin / eye/ respiratory tract	Skin contact does not cause skin irritation. Skin contact causes serious eye damage. May be irritating for respiratory tract.
Sensitisation	Not skin sensitising.
Toxicity after repeated exposure Oral / inhalation / dermal	Based on the available data, does not cause toxicity to internal organs after repeated exposure in animal studies by oral administration. No data is available by dermal route and by inhalation
Genotoxicity / Mutagenicity	Based on the available test data, does not expected to cause genetic effects.
Carcinogenicity	Does not cause cancer in the repeated animal studies.
Toxicity for reproduction	Suspected of damaging fertility in animal study.

## 6. Environmental Effects

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The potential of 1,3-diphenylguanidine for bioaccumulation is low. This product is not expected to persist in the environment. 1,3-diphenylguanidine is toxic to aquatic organisms. Do not release in the environment.

Effect Assessment	Result
Aquatic Toxicity	Toxic to aquatic life

Fate and behaviour	Result
Biodegradation	Inherently biodegradable. Not considered to be readily biodegradable
Bioaccumulation potential	Bioaccumulation is not expected
PBT / vPvB conclusion	Not considered to be PBT* or vPvB**

\*: Persistent, Bioaccumulative and Toxic (PBT)

\*\* : very Persistent and very Bioaccumulative (vPvB)

## 7. Exposure

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### 7.1 Human health

1,3-diphenylguanidine is manufactured, used and formulated within industrial settings. The primary routes of industrial exposure of 1,3-diphenylguanidine (DPG) are skin contact and inhalation, ingestion is not anticipated route of exposure. Workers may be exposed during the manufacture, mounting and dismounting, destruction of tyres, and manufacture of general rubber goods.

Based on the risk assessment, the exposure can be kept at a safe level (strictly below occupational exposure limits, when applied) when activities are carried out under conditions recommended in the Extended Safety Data Sheet (see Chap. 8 and Exposure Scenarios). Procedures, controls, suitable collective and personal risk management measures, good industrial hygiene practices and risk and communication through appropriate training of workers should be implemented.

In case of exposure to the substance, workers should follow the first aid measures recommended in Safety Data Sheet.

### 7.2 Environment

The assessment of the environmental exposure is made for all the uses and resulted life cycle stage of the substance from the manufacture to the waste stage.

All industrial aqueous releases that may contain the substance must be treated to avoid any exposure to the environment.

Disposal, treatment or recycling of industrial waste must comply with applicable regulations to preserve the environment.

DPG is manufactured and used in continuous or batch processes within industrial settings.

Based on the risk assessment, environmental exposure can be kept at a safe level when activities are carried out under conditions recommended in the extended Safety Data Sheet (see Chap. 6, and Exposure Scenarios).

Procedures, controls and risk management measures should be implemented on industrial manufacturing and application sites, effluents that may contain the substance must be treated to avoid any exposure to the environment.

## 8. Risk Management recommendations

Human health measures		
<b>Organizational</b>	Storage and handling precautions applicable to products: Dust forming. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. Provide water supplies, ocular fountains and showers near the point of use.	
<b>Engineering controls</b>	Keep in a well-ventilated place. Keep in a dry place. Store protected from moisture.	
<b>Protection</b>	<b>Eye/Face protection</b>	Tightly fitting safety goggles
	<b>Skin Protection</b>	Skin and body protection: Protective suit.
	<b>Hand protection</b>	Impervious gloves
	<b>Respiratory protection</b>	Effective dust mask.
Environment protective measures		
Destroy the product by incineration (in accordance with local and national regulations).		

## 9. Regulatory Information / Classification and Labelling



### 9.1 Regulatory Information

This substance has been registered under:

- EU Regulation EC 1907/2006 (REACH)
- HPV Chemical

### 9.2 Classification and labelling

Under GHS substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use. Substances registered for REACH are classified according CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification
According to REGULATION (EC) no 1272/2008: – Regulation EC no 1272/2008 – Table 3
Pictogram





### Hazard statement

- H361: Suspected of damaging fertility or the unborn child
- H302: Harmful if swallowed
- H319: Causes serious eye irritation.
- H335: May cause respiratory irritation.
- H315: Causes skin irritation
- H401: Toxic to aquatic life
- H411: Toxic to aquatic life with long lasting effects

According to the combination: official classification + self-classification

### Classification

According to REGULATION (EC) no 1272/2008:

### Pictogram



### Hazard statement

- H301: Toxic if swallowed
- H318: Causes serious eye damage
- H335: May cause respiratory irritation.
- H315: Causes skin irritation
- H361f : Suspected of damaging fertility
- H401: Toxic to aquatic life
- H411: Toxic to aquatic life with long lasting effects

## 10. Contact Information within Company

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For further information on this substance or product safety summary in general, please contact:

- [fds@mlpc-intl.com](mailto:fds@mlpc-intl.com)
- **ICCA portal where the GPS Safety Summary is posted:**  
<http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>

## 11. Date of Issues / Revision

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- Date of issue: 2014/05/14
- Date of revision:

## 12. Disclaimer

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The information contained in this paper is intended as advice only and whilst the information is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk.

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