

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 30.04.2018

Version number 3

Revision: 30.04.2018

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

· **1.1 Product identifier**

· **Product name: Bis-(4-aminophenyl)methane**

· **Part number: DRE-C10648000**

· **CAS Number:**

101-77-9

· **EC number:**

202-974-4

· **Index number:**

612-051-00-1

· **1.2 Relevant identified uses of the substance or mixture and uses advised against**

No further relevant information available.

· **Application of the substance / the mixture** Reference material for laboratory use only

· **1.3 Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**

LGC Limited  
Queens Road  
Teddington  
Middlesex TW11 0LY  
UNITED KINGDOM

Tel : +44 (0) 20 8943 7000  
Fax : +44 (0) 20 8943 2767  
eMail : gb@lgcstandards.com  
Web : www.lgcstandards.com

· **Further information obtainable from:**

Product safety department  
eMail : sds-request@lgcgroup.com

· **1.4 Emergency telephone number:** +44 (0) 20 8943 7000 (Monday - Friday : 8am - 5pm)

**SECTION 2: Hazards identification**

· **2.1 Classification of the substance or mixture**

· **Classification according to Regulation (EC) No 1272/2008**



GHS08 health hazard

Muta. 2                    H341 Suspected of causing genetic defects.

Carc. 1B                    H350 May cause cancer.

STOT SE 1                    H370 Causes damage to organs.

STOT RE 2                    H373 May cause damage to organs through prolonged or repeated exposure.



GHS09 environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.



GHS07

Skin Sens. 1                    H317 May cause an allergic skin reaction.

· **2.2 Label elements**

· **Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labelled according to the CLP regulation.

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· **Hazard pictograms**



GHS07 GHS08 GHS09

· **Signal word** *Danger*

· **Hazard statements**

- H317 *May cause an allergic skin reaction.*
- H341 *Suspected of causing genetic defects.*
- H350 *May cause cancer.*
- H370 *Causes damage to organs.*
- H373 *May cause damage to organs through prolonged or repeated exposure.*
- H411 *Toxic to aquatic life with long lasting effects.*

· **Precautionary statements**

- P260 *Do not breathe dust/fume/gas/mist/vapours/spray.*
- P273 *Avoid release to the environment.*
- P280 *Wear protective gloves/protective clothing/eye protection/face protection.*
- P321 *Specific treatment (see on this label).*
- P405 *Store locked up.*
- P501 *Dispose of contents/container in accordance with local/regional/national/international regulations.*

· **Additional information:**

*Restricted to professional users.*

· **2.3 Other hazards**

· **Results of PBT and vPvB assessment**

- **PBT:** *Not applicable.*
- **vPvB:** *Not applicable.*

**SECTION 3: Composition/information on ingredients**

· **3.1 Chemical characterisation: Substances**

· **CAS No. Description**

101-77-9 4,4'-diaminodiphenylmethane

· **Identification number(s)** *None*

· **EC number:** 202-974-4

· **Index number:** 612-051-00-1

· **RTECS:** BY 5425000

· **Additional information:** *For the wording of the listed hazard phrases refer to section 16.*

· **SVHC**

101-77-9	4,4'-diaminodiphenylmethane
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**SECTION 4: First aid measures**

· **4.1 Description of first aid measures**

· **General information:**

*Immediately remove any clothing soiled by the product.  
Symptoms of poisoning may occur even after several hours; therefore medical observation for at least 48 hours after the accident is recommended.*

· **After inhalation:**

*Supply fresh air and call a doctor.  
In case of unconsciousness place patient in recovery position for transport.*

· **After skin contact:** *Immediately wash with water and soap and rinse thoroughly.*

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- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** Rinse mouth. Do not induce vomiting.
- **4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **4.3 Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:** Use fire extinguishing methods suitable for surrounding conditions.
- **5.2 Special hazards arising from the substance or mixture**  
During heating or in case of fire poisonous gases are produced.
- **5.3 Advice for firefighters**
- **Protective equipment:**  
Mouth respiratory protective device.  
Wear self-contained respiratory protective device.

### SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**  
Mount respiratory protective device.  
Avoid formation of dust.
- **6.2 Environmental precautions:**  
Inform respective authorities in case of seepage into water course or sewage system.  
Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**  
Dispose of contaminated material as waste according to item 13.  
Ensure adequate ventilation.
- **6.4 Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

### SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**  
Ensure good ventilation/extraction at the workplace.  
Store in cool, dry place in tightly closed receptacles.  
Open and handle receptacle with care.
- **Information about fire - and explosion protection:** Keep respiratory protective device available.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**  
Please refer to the manufacturer's certificate for specific storage and transport temperature conditions.  
Store only in the original receptacle.  
Keep container in a well-ventilated place. Keep away from sources of ignition and heat.
- **Information about storage in one common storage facility:** Store away from foodstuffs.
- **Further information about storage conditions:** Keep container tightly sealed.
- **7.3 Specific end use(s)** No further relevant information available.

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**SECTION 8: Exposure controls/personal protection**

· **Additional information about design of technical facilities:** No further data; see item 7.

· **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**

**101-77-9 4,4'-diaminodiphenylmethane**

WEL	Long-term value: 0.08 mg/m <sup>3</sup> , 0.01 ppm Carc; Sk, BMGV
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· **Ingredients with biological limit values:**

**101-77-9 4,4'-diaminodiphenylmethane**

BMGV	50 µmol/mol creatinine Medium: urine Sampling time: post shift for inhalation and pre-shift next day for dermal exposure Parameter: total MDA
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· **Additional information:** Lists used were valid at the time of SDS preparation.

· **8.2 Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

- Keep away from foodstuffs, beverages and feed.
- Immediately remove all soiled and contaminated clothing
- Wash hands before breaks and at the end of work.
- Store protective clothing separately.

· **Respiratory protection:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

· **Protection of hands:**

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.  
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation  
The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374



Protective gloves

· **Material of gloves** Nitrile rubber, NBR

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles



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### SECTION 9: Physical and chemical properties

#### · 9.1 Information on basic physical and chemical properties

##### · General Information

##### · Appearance:

Form: Crystalline

Colour: Off white

· Odour: Amine-like

· Odour threshold: Not determined.

· pH-value: Not applicable.

##### · Change in condition

Melting point/freezing point: 92 °C

Initial boiling point and boiling range: 398 °C

· Flash point: 221 °C

· Flammability (solid, gas): Not determined.

· Ignition temperature: >500 °C

· Decomposition temperature: Not determined.

· Auto-ignition temperature: Not determined.

· Explosive properties: Not determined.

##### · Explosion limits:

Lower: Not determined.

Upper: Not determined.

· Vapour pressure at 20 °C: 0.06 hPa

· Density at 20 °C: 1.1 g/cm<sup>3</sup>

· Relative density: Not determined.

· Vapour density: Not applicable.

· Evaporation rate: Not applicable.

· Solubility in / Miscibility with  
water at 20 °C:

1.25 g/l

· Partition coefficient: n-octanol/water: 1.59 Log P

##### · Viscosity:

Dynamic: Not applicable.

Kinematic: Not applicable.

· 9.2 Other information: No further relevant information available.

### SECTION 10: Stability and reactivity

· 10.1 Reactivity: Stable under normal conditions.

· 10.2 Chemical stability: Stable under normal conditions.

##### · Thermal decomposition / conditions to be avoided:

Formation of toxic gases is possible during heating or in case of fire.

· 10.3 Possibility of hazardous reactions: No dangerous reactions known.

· 10.4 Conditions to avoid: Heat.

· 10.5 Incompatible materials: Strong oxidizing agents.

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- **10.6 Hazardous decomposition products:**  
Formation of toxic gases is possible during heating or in case of fire.

### SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity** Based on available data, the classification criteria are not met.

**LD/LC50 values relevant for classification:**

Oral	LD50	517 mg/kg (rat)
Dermal	LD50	200 mg/kg (rabbit)

- **Primary irritant effect:**
- **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
- **Serious eye damage/irritation** Based on available data, the classification criteria are not met.
- **Respiratory or skin sensitisation**  
May cause an allergic skin reaction.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**  
Muta. 2, Carc. 1B
- **Germ cell mutagenicity**  
Suspected of causing genetic defects.
- **Carcinogenicity**  
May cause cancer.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure**  
Causes damage to organs.
- **STOT-repeated exposure**  
May cause damage to organs through prolonged or repeated exposure.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

### SECTION 12: Ecological information

**12.1 Toxicity****Aquatic toxicity:**

EC50/48 h	0.35 mg/l (daphnia) (OECD 202)
LC50/96 h	39 mg/l (fish)

- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Toxic for fish
- **Additional ecological information:**
- **General notes:**  
Water hazard class 3 (German Regulation) (Assessment by list): extremely hazardous for water  
Do not allow product to reach ground water, water course or sewage system, even in small quantities.  
Danger to drinking water if even extremely small quantities leak into the ground.  
Also poisonous for fish and plankton in water bodies.  
Toxic for aquatic organisms
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

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### SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **European waste catalogue**  
Waste disposal key numbers from EWC have to be assigned depending on origin and processing.
- **Uncleaned packaging:**
- **Recommendation:** Dispose of in accordance with national regulations.
- **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

### SECTION 14: Transport information

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>· <b>14.1 UN-Number</b></li> <li>· <b>ADR, IMDG, IATA</b></li> <li>· <b>ADR</b></li> <li>· <b>IMDG</b></li> <li>· <b>IATA</b></li> </ul>                       | UN2651<br>2 6 5 1 4, 4'-DIAMINODIPHENYLMETHANE,<br>ENVIRONMENTALLY HAZARDOUS<br>4, 4'-DIAMINODIPHENYLMETHANE, MARINE<br>POLLUTANT<br>4,4'-DIAMINODIPHENYLMETHANE   |
| <ul style="list-style-type: none"> <li>· <b>14.3 Transport hazard class(es)</b></li> <li>· <b>ADR, IMDG</b></li> </ul>  | <div style="display: flex; align-items: center; gap: 10px;">   </div> <ul style="list-style-type: none"> <li>· <b>Class</b></li> <li>· <b>Label</b></li> </ul> |
| <ul style="list-style-type: none"> <li>· <b>IATA</b></li> </ul>   | <div style="display: flex; align-items: center; gap: 10px;">  </div> <ul style="list-style-type: none"> <li>· <b>Class</b></li> <li>· <b>Label</b></li> </ul>   |
| <ul style="list-style-type: none"> <li>· <b>14.4 Packing group</b></li> <li>· <b>ADR, IMDG, IATA</b></li> </ul>   | 6.1 Toxic substances.<br>6.1<br><hr style="border-top: 1px dashed black;"/> 6.1 Toxic substances.<br>6.1   |
| <ul style="list-style-type: none"> <li>· <b>14.5 Environmental hazards:</b></li> <li>· <b>Marine pollutant:</b></li> <li>· <b>Special marking (ADR):</b></li> </ul>                                   | III<br>Environmentally hazardous substance, solid; Marine<br>Pollutant<br>Symbol (fish and tree)<br>Symbol (fish and tree)   |
| <ul style="list-style-type: none"> <li>· <b>14.6 Special precautions for user</b></li> <li>· <b>Danger code (Kemler):</b></li> <li>· <b>EMS Number:</b></li> <li>· <b>Stowage Category</b></li> </ul> | Warning: Toxic substances.<br>60<br>F-A,S-A<br>A   |
| <ul style="list-style-type: none"> <li>· <b>14.7 Transport in bulk according to Annex II of Marpol and the IBC Code</b></li> </ul>  | Not applicable.  |

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**· Transport/Additional information:****· ADR****· Limited quantities (LQ)**

5 kg

**· Excepted quantities (EQ)**

Code: E1

Maximum net quantity per inner packaging: 30 g

Maximum net quantity per outer packaging: 1000 g

**· Transport category**

2

**· Tunnel restriction code**

E

**· UN "Model Regulation":**UN 2651 4,4'-DIAMINODIPHENYLMETHANE, 6.1, III,  
ENVIRONMENTALLY HAZARDOUS**SECTION 15: Regulatory information****· 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****· Philippines Inventory of Chemicals and Chemical Substances** Substance is listed.**· Australian Inventory of Chemical Substances** Substance is listed.**· Standard for the Uniform Scheduling of Medicines and Poisons S7****· Directive 2012/18/EU****· Named dangerous substances - ANNEX I** Substance is not listed.**· Seveso category**

H3 STOT SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE

E2 Hazardous to the Aquatic Environment

**· Qualifying quantity (tonnes) for the application of lower-tier requirements** 50 t**· Qualifying quantity (tonnes) for the application of upper-tier requirements** 200 t**· LIST OF SUBSTANCES SUBJECT TO AUTHORISATION (ANNEX XIV)** Sunset date: 2014-08-21**· REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 28, 43**· National regulations:****· Additional classification according to Decree on Hazardous Materials, Annex II:**

Carcinogenic hazardous material group I (extremely dangerous).

Carcinogenic hazardous material group II (very dangerous).

Carcinogenic hazardous material group III (dangerous).

**· Information about limitation of use:**

Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.

**· Other regulations, limitations and prohibitive regulations****· Substances of very high concern (SVHC) according to REACH, Article 57**

101-77-9 | 4,4'-diaminodiphenylmethane

**· 15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.**SECTION 16: Other information**

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The information in this safety data sheet (SDS) has been prepared with due care and is true and accurate to the best of our knowledge. The user must determine the suitability of the information for its particular purpose, ensure compliance with existing laws and regulations, and be aware that other or additional safety or performance considerations may arise when using, handling and/ or storing the material. The information in this SDS does not purport to be all inclusive or a guarantee as to the properties of the material supplied, and should be used only as a guide. LGC makes no warranties or representations as to the accuracy and completeness of the information contained herein, shall not be held responsible for the suitability of this information for the user's intended purposes or the consequences of such use, and shall not be liable for any damage or loss, howsoever arising, direct or otherwise.

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern

vPvB: very Persistent and very Bioaccumulative

Skin Sens. 1: Skin sensitisation – Category 1

Muta. 2: Germ cell mutagenicity – Category 2

Carc. 1B: Carcinogenicity – Category 1B

STOT SE 1: Specific target organ toxicity (single exposure) – Category 1

STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2

**Sources**

Tables 3.1 and 3.2 from Annex 6 of EC 1272/2008, EC 1907/2006, EH40/2005 as amended 2011, Registry of Toxic Effects of Chemical Substances (RTECS), The Dictionary of Substances and their Effects, 1st Edition, IUCLID.

- **Data compared to the previous version altered.** All sections have been updated.