



## Safety Data Sheet

acc. to OSHA HCS

Printing date 04/30/2018

Reviewed on 04/30/2018

### 1 Identification

· **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

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

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

· **Manufacturer/Supplier:**

VHG Labs, Inc  
LGC Standards  
276 Abby Road  
Manchester, NH 03103  
UNITED STATES OF AMERICA

Tel : +1 (603) 622-7660  
Fax : +1 (603) 622-5180

eMail : [custsvc@vhglabs.com](mailto:custsvc@vhglabs.com)  
Web : [www.vhglabs.com](http://www.vhglabs.com)

· **Information department:**

Product safety department  
eMail : [sds-request@lgcgroup.com](mailto:sds-request@lgcgroup.com)

· **Emergency telephone number:**

INFOTRAC 24-hour Emergency telephone number:  
800-535-5053 (US & Canada);  
352-323-3500 (International)

### 2 Hazard(s) identification

· **Classification of the substance or mixture**



GHS06 Skull and crossbones

Acute Tox. 2      H310 Fatal in contact with skin.



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.

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GHS07

Acute Tox. 4      H302 Harmful if swallowed.  
Skin Sens. 1      H317 May cause an allergic skin reaction.

**· Label elements****· GHS label elements**

The substance is classified and labeled according to the Globally Harmonized System (GHS).

**· Hazard pictograms**

GHS06   GHS07   GHS08   GHS09

**· Signal word** *Danger***· Hazard statements**

H302 Harmful if swallowed.  
H310 Fatal in contact with skin.  
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/vapors/spray.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P310 Immediately call a poison center/doctor.  
P321 Specific treatment (see on this label).  
P405 Store locked up.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**· Classification system:****· NFPA ratings (scale 0 - 4)**

Health = 3  
Fire = 1  
Reactivity = 0

**· HMIS-ratings (scale 0 - 4)**

Health = 3  
Fire = 1  
Reactivity = 0

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- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization: Substances**
- **CAS No. Description**  
101-77-9 4,4'-diaminodiphenylmethane
- **Identification number(s) -**
- **EC number:** 202-974-4
- **Index number:** 612-051-00-1
- **RTECS:** BY 5425000

### 4 First-aid measures

- **Description of first aid measures**
- **General information:**  
Immediately remove any clothing soiled by the product.  
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **After inhalation:**  
Supply fresh air and to be sure call for a doctor.  
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** Rinse mouth. Do not induce vomiting.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture**  
During heating or in case of fire poisonous gases are produced.
- **Advice for firefighters**
- **Protective equipment:**  
Mouth respiratory protective device.  
Wear self-contained respiratory protective device.

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### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**  
Mount respiratory protective device.  
Avoid formation of dust.
- **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.
- **Methods and material for containment and cleaning up:**  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.
- **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.
- **Protective Action Criteria for Chemicals**
  - PAC-1: 0.1 ppm
  - PAC-2: 3.4 ppm
  - PAC-3: 20 ppm

### 7 Handling and storage

- **Handling:**
- **Precautions for safe handling**  
Ensure good ventilation/exhaustion at the workplace.  
Store in cool, dry place in tightly closed receptacles.  
Open and handle receptacle with care.
- **Information about protection against explosions and fires:** Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**  
Please refer to the manufacturers 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 receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

### 8 Exposure controls/personal protection

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

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**· Control parameters****· Components with limit values that require monitoring at the workplace:****101-77-9 4,4'-diaminodiphenylmethane**

PEL	Short-term value: 0.1 ppm Long-term value: 0.01 ppm see 29 CFR 1910.1050
REL	See Pocket Guide App. A
TLV	Long-term value: 0.81 mg/m <sup>3</sup> , 0.1 ppm Skin

**· Additional information:** The lists that were valid during the creation were used as basis.**· 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.

**· Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

**· 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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### 9 Physical and chemical properties

**· Information on basic physical and chemical properties****· General Information****· Appearance:**

· <b>Form:</b>	Crystalline
· <b>Color:</b>	Off white
· <b>Odor:</b>	Amine-like
· <b>Odor threshold:</b>	Not determined.

**· pH-value:** Not applicable.**· Change in condition**

· <b>Melting point/Melting range:</b>	92 °C (197.6 °F)
· <b>Boiling point/Boiling range:</b>	398 °C (748.4 °F)

**· Flash point:** 221 °C (429.8 °F)**· Flammability (solid, gaseous):** Not determined.**· Ignition temperature:** >500 °C (>932 °F)**· Decomposition temperature:** Not determined.**· Auto igniting:** Not determined.**· Danger of explosion:** Not determined.**· Explosion limits:**

· <b>Lower:</b>	Not determined.
· <b>Upper:</b>	Not determined.

**· Vapor pressure at 20 °C (68 °F):** 0.06 hPa (0 mm Hg)**· Density at 20 °C (68 °F):** 1.1 g/cm<sup>3</sup> (9.1795 lbs/gal)**· Relative density** Not determined.**· Vapor density** Not applicable.**· Evaporation rate** Not applicable.**· Solubility in / Miscibility with****Water at 20 °C (68 °F):** 1.25 g/l**· Partition coefficient (n-octanol/water):** 1.59 Log P**· Viscosity:****Dynamic:** Not applicable.**Kinematic:** Not applicable.**· Other information** No further relevant information available.

### 10 Stability and reactivity

**· Reactivity** Stable under normal conditions.**· Chemical stability** Stable under normal conditions.

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- **Thermal decomposition / conditions to be avoided:**  
Formation of toxic gases is possible during heating or in case of fire.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** Heat.
- **Incompatible materials:** Strong oxidizing agents.
- **Hazardous decomposition products:** Formation of toxic gases is possible during heating or in case of fire.

### 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

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

- **Primary irritant effect:**
- **on the skin:** Based on available data, the classification criteria are not met.
- **on the eye:** Based on available data, the classification criteria are not met.
- **Sensitization:** Sensitization possible through skin contact.
- **Additional toxicological information:**
- **Carcinogenic categories**
- **IARC (International Agency for Research on Cancer) 2B**
- **NTP (National Toxicology Program) R**
- **OSHA-Ca (Occupational Safety & Health Administration) Substance is listed.**

### 12 Ecological information

- **Toxicity**

- **Aquatic toxicity:**

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

- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Toxic for fish
- **Additional ecological information:**
- **General notes:**  
Water hazard class 3 (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

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- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

### 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Dispose in accordance with national regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

### 14 Transport information

- **UN-Number**
- **DOT, ADR, IMDG, IATA** UN2651
- **DOT** 4,4'-Diaminodiphenyl methane
- **ADR** 2651 4,4'-Diaminodiphenyl methane, ENVIRONMENTALLY HAZARDOUS
- **IMDG** 4,4'-DIAMINODIPHENYLMETHANE, MARINE POLLUTANT
- **IATA** 4,4'-DIAMINODIPHENYLMETHANE

- **Transport hazard class(es)**

- **DOT**



- **Class** 6.1 Toxic substances
- **Label** 6.1

- **ADR, IMDG**



- **Class** 6.1 Toxic substances

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· <b>Label</b>	6.1
· <b>IATA</b>	
	
· <b>Class</b>	6.1 Toxic substances
· <b>Label</b>	6.1
· <b>Packing group</b>	
· <b>DOT, ADR, IMDG, IATA</b>	III
· <b>Environmental hazards:</b>	Environmentally hazardous substance, solid; Marine Pollutant
· <b>Marine pollutant:</b>	Yes (DOT) Symbol (fish and tree)
· <b>Special marking (ADR):</b>	Symbol (fish and tree)
· <b>Special precautions for user</b>	Warning: Toxic substances
· <b>Danger code (Kemler):</b>	60
· <b>EMS Number:</b>	F-A,S-A
· <b>Stowage Category</b>	A
· <b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
· <b>Transport/Additional information:</b>	
· <b>DOT</b>	
· <b>Remarks:</b>	Special marking with the symbol (fish and tree).
· <b>ADR</b>	
· <b>Excepted quantities (EQ)</b>	Code: E1 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 1000 g
· <b>UN "Model Regulation":</b>	UN 2651 4,4'-DIAMINODIPHENYL METHANE, 6.1, III, ENVIRONMENTALLY HAZARDOUS

### 15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara
- Section 355 (extremely hazardous substances): Substance is not listed.
- Section 313 (Specific toxic chemical listings): Substance is listed.
- TSCA (Toxic Substances Control Act): Substance is listed.
- Proposition 65
- Chemicals known to cause cancer: Substance is listed.
- Chemicals known to cause reproductive toxicity for females: Substance is not listed.
- Chemicals known to cause reproductive toxicity for males: Substance is not listed.

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- **Chemicals known to cause developmental toxicity:** Substance is not listed.
- **Carcinogenic categories**
- **EPA (Environmental Protection Agency)** Substance is not listed.
- **TLV (Threshold Limit Value established by ACGIH)** A3
- **NIOSH-Ca (National Institute for Occupational Safety and Health)** Substance is listed.
- **GHS label elements**  
The substance is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS06   GHS07   GHS08   GHS09

- **Signal word** *Danger*
- **Hazard statements**  
*H302 Harmful if swallowed.*  
*H310 Fatal in contact with skin.*  
*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/vapors/spray.*  
*P280 Wear protective gloves/protective clothing/eye protection/face protection.*  
*P310 Immediately call a poison center/doctor.*  
*P321 Specific treatment (see on this label).*  
*P405 Store locked up.*  
*P501 Dispose of contents/container in accordance with local/regional/national/international regulations.*
- **National regulations:**
- **Additional classification according to Decree on Hazardous Materials:**  
*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.*
- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 16 Other information

The information in this Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining

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*the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes. Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, we cannot warn of all of the potential dangers of use or interaction with other chemicals or materials. We warrant that the chemical meets the specifications set forth on the label. We (LGC/VHG/ARMI) disclaim any other warranties, expressed or implied with regard to the product supplied hereunder, its merchantability or its fitness for a particular purpose. The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. Read all precautionary information.*

· **Date of preparation / last revision** 04/30/2018 / 2

· **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

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

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

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Acute Tox. 4: Acute toxicity – Category 4

Acute Tox. 2: Acute toxicity – Category 2

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.