

SAFETY DATA SHEET

according to 1907/2006/EC, Article 3

Version no. : 2.0
Prepared on : 28.02.2026
Revised on : -

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

1.1 Product identifiers

Product name 4,4'-Diaminodiphenylmethane
Product Number PSR50261
Brand PureSynth research chemicals
CAS No. 101-77-9

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

Identified uses Scientific research and development

1.3 Details of the supplier of the safety data sheet

Company PureSynth Research Chemicals GmbH
64683 Einhausen Marie-Curie-StraBe. 3, Germany

1.4 Emergency telephone number

Worldwide Helpline No.: 1800-8908-260

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Acute toxicity, (Category 3)	H301: Toxic if swallowed.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Germ cell mutagenicity, Category 2	H341: Suspected of causing genetic defects
Carcinogenicity, Category 1B	H350: May cause cancer.
Specific target organ toxicity - single exposure, Category 1, Liver, eye - retina	H370: Causes damage to organs.
Specific target organ toxicity - repeated exposure, Category 2, Liver	H373: May cause damage to organs through prolonged or repeated exposure.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

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Pictogram



Signal word

Danger

Hazard statement(s)

H301	Toxic if swallowed.
H317	May cause an allergic skin reaction.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H370	Causes damage to organs (Liver, eye - retina).
H373	May cause damage to organs (Liver) through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.
H410	

Precautionary statement(s)

Prevention:

P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P302 + P352	IF ON SKIN: Wash with plenty of water.

2.3 Other hazards: This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition / information on ingredients

3.1 Substances

Common names & Synonyms	Mol. formula	CAS number
4,4'-Methylenedianiline	C ₃ H ₅ Cl ₃	101-77-9
Component	Classification	Concentration
4,4'- Diaminobiphenylmethane	M-Factor (Acute aquatic toxicity): 1Acute toxicity estimate Acute oral toxicity: 100 mg/kg	>= 90 - <= 100

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice	Show this safety data sheet to the doctor in attendance.
If inhaled	After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.
In case of skin contact	In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.
In case of eye contact	After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed	If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.
Most important symptoms and effects, both acute and delayed	The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
Indication of any immediate medical attention and special treatment needed	No data available

SECTION 5: Firefighting measures

Extinguishing media	
Suitable extinguishing media	Water Foam Carbon dioxide (CO ₂) Dry powder
Unsuitable extinguishing media	For this substance/mixture no limitations of extinguishing agents are given.
Special hazards arising from the substance or mixture	Combustible. Vapours are heavier than air and may spread along floors. Forms explosive mixtures with air on intense heating. Development of hazardous combustion gases or vapours possible in the event of fire. Hazardous combustion products: Carbon oxides Nitrogen oxides (NO _x)
Advice for firefighters	Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.
Further information	Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures	Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.
Environmental precautions	Do not let product enter drains.
Methods and materials for containment and cleaning up	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.
Reference to other sections	For disposal see section 13.

SECTION 7: Handling and storage

Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2

Conditions for safe storage, including any incompatibilities

Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorised persons.

Storage class (TRGS 510): 6.1C: Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects.

Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls / Personal protection

Control parameters

Ingredients with workplace control parameters.

Exposure controls

Appropriate engineering controls

No data available

Personal protective equipment:

Eye / face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses.

Hand protection

Material: Nitrile rubber
Break through time: 480 min
Glove thickness: 0.11 mm
Protective index: Full Contact

Material: Nitrile rubber
Break through time: 480 min
Glove thickness: 0.11 mm
Protective index: Splash contact

Skin protection

Remarks: This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves protective clothing

Body Protection

Protective clothing

Respiratory protection

required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system. Recommended Filter type: Filter type ABEK The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Control of environmental exposure

Do not let product enter drains.

SECTION 9: Physical and chemical properties

Appearance	Form: solid flakes Colour: light yellow
Odour	No data available
pH - Value	No data available
Density	1.05 g/cm ³ (100 °C)
Boiling Point	249 - 253 °C (20 hPa)
Melting Point	88 - 92 °C
Solubility in water	1.01 g/l (25 °C) pH: 7 Method: OECD Test Guideline 105 GLP: yes soluble
Flash point	221 °C Method: closed cup < 1 Pa (25 °C)
Vapour pressure	Method: OECD Test Guideline 104 GLP: yes
Auto -ignition temperature	No data available
Vapour density	No data available
Flammability (solid, gas)	Method: Flammability (solids) GLP: yes Remarks: The product is not flammable.
Evaporation rate	No data available
Partition coefficient: n- octanol / water	log Pow: 1.55 (25 °C) pH: 6.82 – 6.94 Method: OECD Test Guideline 107 GLP: yes Bioaccumulation is not expected.
Viscosity	No data available
Explosive properties	No data available
Upper / lower flammability or explosive limits	Upper explosion limit: 12.6 %(V) Lower explosion limit: 3.2 %(V)
Oxidizing properties	None

Other safety information: No data available

SECTION 10: Stability and reactivity

Reactivity	Forms explosive mixtures with air on intense heating. A range from approx. 15 Kelvin below the flash point is to be rated as critical. The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed
Chemical stability	The product is chemically stable under standard ambient conditions (room temperature).
Possibility of hazardous reactions	No data available

Condition to avoid	Strong heating.
Incompatible materials	Oxidizing agents
Hazardous decomposition products	In the event of fire: see section 5

SECTION 11: Toxicological information

Acute toxicity	<p>LD50 Oral - Rat - 100 mg/kg Remarks: Liver: Other changes. (RTECS) Acute toxicity estimate Oral - 100 mg/kg (ATE value derived from LD50/LC50 value) LC50 Inhalation - Rat - male and female - 6 h - > 0.46 mg/l - dust/mist</p> <p>(OECD Test Guideline 403) LD50 Dermal - Rat - male and female - > 2500 mg/kg Remarks: (50% solution) (ECHA)</p>
Skin corrosion/irritation	<p>Skin – Rabbit Result: No skin irritation - 24 h Remarks: (ECHA)</p>
Serious eye damage/eye irritation	<p>Eyes - Rabbit Result: No eye irritation Remarks: (ECHA)</p>
Respiratory or skin sensitization	<p>Maximisation Test - Guinea pig Result: positive (OECD Test Guideline 406) (Regulation (EC) No 1272/2008, Annex VI)</p>
Germ cell mutagenicity	<p>Suspected of causing genetic defects. Test Type: Ames test Test system: Escherichia coli/Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: Positive results were obtained in some in vitro tests. Test Type: Mutagenicity (mammal cell test): chromosome aberration. Test system: Human lymphocytes Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 473 Result: negative</p> <p>Test Type: Chromosome aberration test Species: Mouse Cell type: Bone marrow Application Route: Intraperitoneal injection</p> <p>Result: positive Test</p> <p>Type: sister chromatid exchange assay Species: Mouse Cell type: Bone marrow Application Route: Intraperitoneal injection</p>

Carcinogenicity	Result: positive Presumed to have carcinogenic potential for humans
Reproductive toxicity	No data available
Specific target organ toxicity - single exposure	Causes damage to organs. - Liver, eye – retina Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Specific target organ toxicity - repeated exposure	May cause damage to organs through prolonged or repeated exposure. - Liver Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Aspiration hazard	No data available
Additional Information	Endocrine disrupting properties Product: Assessment: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. Repeated dose toxicity - Guinea pig - male - Inhalation - 10 Days Remarks: (ECHA) Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer., Fever, Vomiting, prolonged or repeated exposure can cause: Kidney injury may occur., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

Toxicity

Toxicity to fish	LC50 (<i>Oryzias latipes</i>): 20.6 mg/l End point: mortality Exposure time: 96 h Test Type: semi-static test Analytical monitoring: yes Method: OECD Test Guideline 203 GLP: yes
Toxicity to daphnia and other aquatic invertebrates	EC50 (<i>Daphnia magna</i> (Water flea)): 0.35 mg/l End point: Immobilization Exposure time: 48 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 202 GLP: yes
Toxicity to algae	ErC50 (<i>Pseudokirchneriella subcapitata</i> (green algae)): 14,4 mg/l Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes
Toxicity to bacteria	EC50 (activated sludge): > 100 mg/l NOEC: 0.005 mg/l

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

End point: reproduction rate
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Analytical monitoring: yes
Method: OECD Test Guideline 211
GLP: yes

Persistence and degradability

Test Type: aerobic
Inoculum: activated sludge
Concentration: 0.5 mg/l
Result: Not readily biodegradable. Biodegradation: 46 %
Exposure time: 28 d
Method: OECD Test Guideline 301B
GLP: yes

Bioaccumulative potential

Bioaccumulation: Species: Cyprinus carpio (Carp) Temperature: 25 °C
Bioconcentration factor (BCF): 3 - 14
Partition coefficient: n-: log Pow: 1.55 (25 °C)
octanol/water pH: 6.82 – 6.94
Method: OECD Test Guideline 107
GLP: yes
Remarks: Bioaccumulation is not expected.

Mobility in soil

No data available

Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Assessment: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Other adverse effects

No data available

SECTION 13: Disposal considerations

Waste treatment methods

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

Products

Contaminated packaging

Dispose of as unused product.

SECTION 14: Transport information

	UN no.	UN proper shipping name	Hazard Class(es)	Packaging group	Marine Pollutant
ADR / RID	2651	4,4'-DIAMINODIPHENYLMETHANE	6.1	III	NO
IMDG	2651	4,4'-DIAMINODIPHENYLMETHANE	6.1	III	YES
IATA	2651	4,4'-Diaminodiphenylmethane	6.1	III	NO

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)	Conditions of restriction for the following entries should be considered: Number on list 28: 4,4'-Diaminobiphenylmethane Number on list 43: 4,4'- Diaminobiphenylmethane Number on list 75: If you intend to use this product as tattoo ink, please contact your vendor.
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).	4,4'-Diaminobiphenylmethane
Regulation (EU) No 2024/590 on substances that deplete the ozone layer	Not applicable
Regulation (EU) 2019/1021 on persistent organic pollutants (recast)	Not applicable
REACH - List of substances subject to authorisation (Annex XIV)	4,4'-Diaminobiphenylmethane
This product contains a substance listed on Annex XIV of the REACH Regulation (EC) Nr. 1907/2006.	
Listed substance	4,4'-Diaminobiphenylmethane
After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.	
Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	H2 ACUTE TOXIC
	E1 ENVIRONMENTAL HAZARDS

Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16: Other information

The information in this SDS is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. The user must be determined suitability of this information for his application.