



Safety Data Sheet
4,4'-Methylenedianiline

1. Identification

Product name:	4,4'-Methylenedianiline	
Catalog#:	MSIG423	
IUPAC name:	4-[(4-Aminophenyl)methyl]aniline	
Product use restrictions:	Only for research and development use by, or directly under the supervision of, a technically qualified individual.	
Company:	MetaSci Inc. 1 Yonge St., Suite 1801 Toronto, M5E 1W7, ON, Canada	
Telephone:	(510) 429-8835	
Website:	www.metasci.ca	
Emergency contact number:	1-800-633-8253	United States & Canada
	1-801-629-0667	International

2. Hazard Identification

GHS Classification

Acute toxicity, Oral (Category 3)

Germ cell mutagenicity (Category 2)

Specific target organ toxicity - single exposure (Category 1), Liver, eye - retina

Specific target organ toxicity - repeated exposure (Category 2), Liver

Short-term (acute) aquatic hazard (Category 1)

Long-term (chronic) aquatic hazard (Category 1)

Pictogram



Signal word

Danger

Hazard statement(s)

H301

Toxic if swallowed.

H341

Suspected of causing genetic defects.

H370

Causes damage to organs.

H373

Causes damage to organs through prolonged or repeated exposure.

H410

Very 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.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310+P330	If swallowed: Immediately call a poison center or doctor. Rinse mouth.
P307+P311	IF EXPOSED: Call a poison center or doctor.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC) or not covered by GHS
None

3. Composition/Information on Ingredients

Synonyms: 4,4'-Diaminodiphenylmethane; MDA
CAS#: 101-77-9
Purity: >98% (HPLC)
EC#: 202-974-4

4. First Aid Measures

General information: Immediately remove any clothing contaminated by the product. Move out of dangerous area. Consult a physician and show this safety data sheet.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Obtain medical aid.

Skin contact: Immediately flush skin with running water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Obtain medical aid immediately.

Eye contact: Immediately flush open eyes with running water for at least 15 minutes. Obtain medical aid immediately.

Ingestion: Do NOT induce vomiting without medical advice. Rinse mouth with water. Never administer anything by mouth to an unconscious person. Obtain medical aid immediately.

Most important symptoms and effects, both acute and delayed: No further information available. Please see sections 2 and 11.

Indication of any immediate medical attention and special treatment needed: No further information available.

5. Fire Fighting Measures

Suitable extinguishing media: Use water spray, dry chemical, carbon dioxide, or chemical foam.



Specific hazards arising from the chemical: Nitrogen oxides, Carbon oxides

Advice for firefighters: As in any fire, wear a NIOSH-approved or equivalent, pressure-demand, self-contained breathing apparatus and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Wear protective equipment and keep unprotected personnel away. Ensure adequate ventilation. Remove all sources of ignition. Prevent further leak or spill if safe to do so. For personal protective equipment, please refer to section 8.

Environmental precautions: Do not let product enter drains, other waterways, or soil.

Methods and materials for containment and cleaning up: Prevent further leak or spill if safe to do so. Vacuum, sweep up, or absorb with inert material and place into a suitable disposal container. Consult local regulations for disposal. See section 13 for further disposal information.

7. Handling and Storage

Precautions for safe handling: Avoid contact with skin, eyes, and personal clothing. Wash hands thoroughly after handling. Avoid breathing fumes. Use only with adequate ventilation. Wear suitable protective clothing, gloves, and eye/face protection. Keep away from sources of ignition. Minimize dust generation and accumulation. Keep container tightly closed. Open and handle container with care. Do not eat, drink, or smoke while handling.

Conditions for safe storage, including any incompatibilities: Store in a tightly-closed container when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from sources of ignition. Air sensitive. Error, no match for Store long-term in a cool, dry place

8. Exposure Controls/Personal Protection

Exposure limits

OSHA PEL:	See 29 CFR 1910.1050. TWA 0.010 ppm ST 0.100 ppm.
NIOSH REL:	Potential Occupational Carcinogen. See Appendix A.
ACGIH TLV:	No data available.

Appropriate engineering controls: Avoid contact with skin, eyes, and clothing. Wash hands before breaks and immediately after handling the product. Facilities storing or utilizing this material should be equipped with an eyewash fountain. Use adequate general and local exhaust ventilation to keep airborne concentrations low.

Personal protection

Eyes:	Based on an evaluation of the eye or face hazards present, wear chemical splash-resistant safety glasses or goggles with side protection. A face shield may be appropriate in some workplaces. Use eyewear tested and approved under appropriate government
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standards such as OSHA 29 CFR 1910.133 or EU EN166.

Hands: Wear gloves selected based on an evaluation of the possible hazards to hands and skin, the duration of use, the physical conditions of the workplace, and the chemical resistance and physical properties of the glove material.

Skin and body: Protective clothing must be selected based on the hazards present in the workplace, the physical environment, the duration of exposure, and other factors. No fabric can provide protection against all potential hazards; therefore it is important to select the appropriate protective clothing for each specific hazard. At the minimum, wear a laboratory coat and close-toed footwear.

Respiratory: Respirators are not a substitute for accepted engineering control measures such as enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials. When respiratory personal protective equipment is appropriate based on an assessment of respiratory hazards in the workplace, use a NIOSH- or CEN-certified respirator.

9. Physical and Chemical Properties

Physical State:	Solid
Molecular Formula:	C ₁₃ H ₁₄ N ₂
Molecular Weight:	198.26
Odor:	No data available.
pH:	No data available.
Boiling Point Range:	398-399°C
Freezing/Melting Point:	87-95°C
Flash Point:	221-230°C
Evaporation Rate:	No data available.
Flammability (solid, gas):	Please see section 2.
Explosive limits:	No data available.
Vapor Pressure:	< 0.01 hPa at 25 °C (77 °F) - OECD Test Guideline 104
Vapor Density:	No data available.
Solubility:	water:1.01 g/l at 25 °C (77 °F) - OECD Test Guideline 105;
Relative Density:	1.15
Refractive Index:	No data available.
Volatility:	No data available.
Auto-ignition temperature:	No data available.
Decomposition Temperature:	No data available.
Partition Coefficient:	No data available.

10. Stability and Reactivity

Reactivity:	No data available.
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Chemical stability:	Stable under recommended temperatures and pressures.
Possibility of hazardous reactions:	No data available.
Conditions to avoid:	Dust generation. Air. Heat.
Incompatible materials:	Strong oxidizing agents.
Hazardous decomposition products:	Nitrogen oxides, Carbon oxides

11. Toxicological Information

RTECS#:	BY5425000
Acute toxicity:	LD50 Intraperitoneal-Rat-193mg/kg; LD50 Oral-Rat-517mg/kg; LD50 Subcutaneous-Rat-200mg/kg
Routes of exposure:	Inhalation, eye contact, skin contact, ingestion.
Symptoms related to the physical, chemical and toxicological characteristics:	Skin contact may result in inflammation characterized by itching, scaling, reddening, blistering, pain or dryness. Eye contact may result in redness, pain or severe eye damage. Inhalation may cause irritation of the lungs and respiratory system. Overexposure may result in serious illness or death.
Carcinogenicity	
IARC:	Group 2B - Possibly carcinogenic to humans.
NTP:	Anticipated carcinogen.
OSHA:	Not listed.
Acute toxic effects:	Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

12. Ecological Information

Ecotoxicity:	Toxicity to algae: static test ErC50 - Pseudokirchneriella subcapitata (green algae) - 14.4 mg/l - 72 h (OECD Test Guideline 201) Toxicity to daphnia and other aquatic invertebrates: static test EC50 - Daphnia magna (Water flea) - 0.35 mg/l - 48 h (OECD Test Guideline 202) Toxicity to fish: static test LC50 - Oncorhynchus mykiss (rainbow trout) - 39 mg/l - 96 h (OECD Test Guideline 203) semi-static test LC50 - Oryzias latipes - 20.6 mg/l - 96 h (OECD Test Guideline 203)
Persistence and degradability:	No data available.
Bioaccumulative potential:	No data available.
Mobility in soil:	No data available.
Other adverse effects:	No data available.



13. Disposal Considerations

Disposal of waste: Chemical waste generators must determine whether a discarded chemical is classified as hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification. Observe all federal, state and local regulations when disposing of the substance.

Disposal of packaging: Do not reuse containers. Dispose of as unused product.

14. Transportation Information

DOT (United States)

UN number: UN2651
Proper shipping name: 4,4'-Diaminodiphenyl methane
Transport hazard class: 6.1
Packing group: III

IATA

UN number: UN2651
Proper shipping name: 4,4'-Diaminodiphenylmethane
Transport hazard class: 6.1
Packing group: III

15. Regulatory Information

TSCA Chemical Inventory:

This product is on the EPA Toxic Substance Control Act (TSCA) inventory. The product is supplied solely for use in research and development by or under the supervision of a technically qualified individual as defined in 40 CFR § 720 et seq. The health risks have not been fully determined. Any information that is or becomes available will be supplied on the SDS.

Canada

DSL/NDSL: This product is listed in the Domestic Substance List (DSL).

California

Proposition 65: WARNING: Attention California residents: This product can expose you to chemicals known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov.

NFPA Rating: Health: 2
Flammability: 1
Instability: 0

16. Additional Information

Revision Date: 08/08/2019

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Disclaimer:



The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall MetaSci be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if MetaSci has been advised of the possibility of such damages.
