# TCI AMERICA

## SAFETY DATA SHEET

**Revision number:** 1
**Revision date:** 07/06/2018

### *1. IDENTIFICATION*

**Product name:** 4,4'-Diaminodiphenylmethane
**Product code:** M0220

**Product use:** For laboratory research purposes.
**Restrictions on use:** Not for drug or household use.

Company:
TCI America
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Portland, OR 97203 U.S.A.
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**Emergency telephone number:**
Chemical Emergencies:
TCI America (8:00am - 5:00pm) PST
+1-503-286-7624
Transportation Emergencies:
Chemtrec 24-Hour
+1-800-424-9300 (U.S.A.)
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**Responsible department:**
TCI America
Environmental Health Safety and Security
+1- 503-286-7624

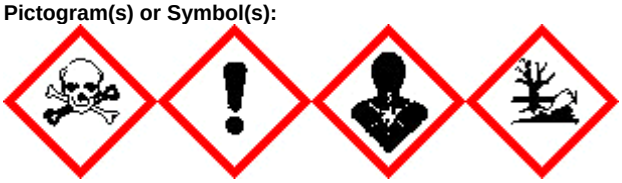
### *2. HAZARD(S) IDENTIFICATION*

**OSHA Haz Com: CFR 1910.1200:**
**WHMIS 2015:**
Acute Toxicity - Oral [Category 4]
Acute Toxicity - Dermal [Category 3]
Sensitization - Skin [Category 1]
Germ Cell Mutagenicity [Category 2]
Carcinogenicity [Category 1B]
Toxic to Reproduction [Category 2]
Specific Target Organ Toxicity (Single Exposure) [Category 1]
Specific Target Organ Toxicity (Repeated Exposure) [Category 1]
Specific Target Organ Toxicity (Repeated Exposure) [Category 2]
Aquatic Hazard (Acute) [Category 1]
Aquatic Hazard (Long-Term) [Category 1]

**Signal word:** Danger!

**Hazard Statement(s):**
Harmful if swallowed
Toxic in contact with skin
May cause an allergic skin reaction
Suspected of causing genetic defects
May cause cancer
Suspected of damaging fertility or the unborn child
Very toxic to aquatic life
Very toxic to aquatic life with long lasting effects
Causes damage to: Liver Visual System Heart Kidney Central Nervous System
Causes damage to organs through prolonged or repeated exposure: Liver Heart
May cause damage to organs through prolonged or repeated exposure: Blood System Thyroid Gland Kidney

**Pictogram(s) or Symbol(s):**



**Precautionary Statement(s):**

**[Prevention]** Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust, fume, mist, vapors or spray. Avoid release to the environment. Do not eat, drink or smoke when using this product. Contaminated work clothing must not be allowed out of the workplace. Wash hands and face thoroughly after handling. Wear protective gloves, protective clothing, face protection.

**[Response]** If swallowed: Call a poison center or doctor if you feel unwell. Rinse mouth. If on skin: Wash with plenty of soap and water. Call a poison center or doctor if you feel unwell. Take off immediately all contaminated clothing and wash it before reuse. If exposed: Call a poison center or doctor. Collect

spillage.
**[Storage]** Store locked up.
**[Disposal]** Dispose of contents and container in accordance with local, regional, national regulations (e.g. US: 40 CFR Part 261, EU:91/156/EEC, JP: Waste Disposal and Cleaning Act, etc.).

**Hazards not otherwise classified: [HNOC]** Causes mild skin irritation.

## *3. COMPOSITION/INFORMATION ON INGREDIENTS*

**Substance/mixture:** Substance
**Components:** 4,4'-Diaminodiphenylmethane
**Percent:** >98.0%(T)
**CAS RN:** 101-77-9
**Molecular Weight:** 198.27
**Chemical Formula:** $C_{13}H_{14}N_2$
**Synonyms:** 4,4'-Methylenedianiline

## *4. FIRST-AID MEASURES*

**Description of first aid measures**

**Inhalation:** Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician.
**Skin contact:** Remove/Take off immediately all contaminated clothing. Gently wash with plenty of soap and water. Call a POISON CENTER or doctor/physician.
**Eye contact:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Call a POISON CENTER or doctor/physician.
**Ingestion:** Call a POISON CENTER or doctor/physician. Rinse mouth.

**Symptoms/effects:**

**Acute:** Redness.
**Delayed:** Carcinogenic to humans. May cause heritable genetic damage in humans. May cause skin sensitization.

**Indication of any immediate medical attention:**
Not available.
**Notes to physician:**
No data available

## *5. FIRE-FIGHTING MEASURES*

**Suitable extinguishing media:** Dry chemical, foam, water spray, carbon dioxide.

**Specific hazards arising from the chemical:** Take care as it may decompose upon combustion or in high temperatures to generate poisonous fume.
**Hazardous combustion products:** These products include: Carbon oxides Nitrogen oxides
**Other specific hazards:** Closed containers may explode from heat of a fire.

**Advice for firefighters:** Wear self-contained breathing apparatus if possible.

## *6. ACCIDENTAL RELEASE MEASURES*

**Personal precautions, protective equipment and emergency procedures:** Use personal protective equipment. Keep people away from and upwind of spill/leak. Entry to non-involved personnel should be controlled around the leakage area by roping off, etc.
**Environmental precautions:** Be careful not to let it flow into rivers, etc., since adverse effects on the environment are concerned.
**Methods and materials for containment and cleaning up:** Sweep dust to collect it into an airtight container, taking care not to disperse it. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

## *7. HANDLING AND STORAGE*

**Precautions for safe handling:** Handling is performed in a well ventilated place. Wear suitable protective equipment. Prevent dispersion of dust. Wash hands and face thoroughly after handling.
Use a closed system if possible. Use a local exhaust if dust or aerosol will be generated.
Avoid all contact!

**Conditions for safe storage, including any incompatibilities**

**Storage conditions:** Keep container tightly closed. Store in a cool and dark place.
Store under inert gas. Store locked up.
Store away from incompatible materials such as oxidizing agents.
Air-sensitive
**Packaging material:** Comply with laws.

## *8. EXPOSURE CONTROLS / PERSONAL PROTECTION*

**Exposure limits:**

| | |
|---|---|
| **ACGIH TLV(TWA):** | 0.1 ppm (skin) |
| **JSOH OELs(TWA):** | 0.4 mg/m$^3$ (skin) |

**Appropriate engineering controls:** Follow safe industrial engineering/laboratory practices when handling any chemical. Install a closed system or local exhaust. Also install safety shower and eye bath.

**Personal protective equipment**

| | |
|---|---|
| **Respiratory protection:** | Dust respirator, self-contained breathing apparatus(SCBA), supplied air respirator, etc. Use respirators approved under appropriate government standards and follow local and national regulations. |
| **Hand protection:** | Impervious gloves. |
| **Eye protection:** | Safety goggles. A face-shield, if the situation requires. |
| **Skin and body protection:** | Impervious protective clothing. Protective boots, if the situation requires. |

## *9. PHYSICAL AND CHEMICAL PROPERTIES*

| | |
|---|---|
| **Physical state (20°C):** | Solid |
| **Form:** | Pellet |
| **Colour:** | White - Pale yellow |
| **Odour:** | Weakly Amine-like |
| **Odor threshold:** | No data available |
| **Odour threshold:** | No data available |

| | | | |
|---|---|---|---|
| **Melting point/freezing point:** | 91°C (196°F) | pH: | No data available |
| **Boiling point/range:** | 257°C /2.4kPa (495°F) | **Vapour pressure:** | No data available. |
| **Decomposition temperature:** | No data available | **Vapour density:** | 6.8 |
| **Relative density:** | No data available | **Dynamic Viscosity:** | No data available |
| **Kinematic viscosity:** | No data available | | |
| **Log Pow:** | No data available | **Evaporation rate(Butyl Acetate=1):** | No data available |
| **Flash point:** | No data available | **Autoignition temperature:** | No data available |
| **Flammability(solid, gas):** | No data available | **Flammability or explosive limits:** | |
| | | **Lower:** | No data available |
| | | **Upper:** | No data available |

**Solubility(ies):**

| | |
|---|---|
| **[Water]** | Very slightly soluble (1g/L, 25°C) |
| **[Other solvents]** | |
| **Very soluble:** | Ether, Alcohols, Benzene, Acetone |

## *10. STABILITY AND REACTIVITY*

| | |
|---|---|
| **Reactivity:** | No data available |
| **Chemical stability:** | Stable under proper conditions. |
| **Possibility of hazardous reactions:** | No special reactivity has been reported. |
| **Incompatible materials:** | Oxidizing agents |
| **Hazardous decomposition products:** | Carbon dioxide, Carbon monoxide, Nitrogen oxides (NOx) |

## *11. TOXICOLOGICAL INFORMATION*

**RTECS Number:** BY5425000

**Acute Toxicity:**
orl-rat LD50:517 mg/kg
ipr-rat LD50:193 mg/kg
skn-rbt LD50:200 mg/kg

**Skin corrosion/irritation:**
No data available

**Serious eye damage/irritation:**
eye-rbt 100 mg/24H MOD

**Respiratory or skin sensitization:**
No data available

**Germ cell mutagenicity:**
dnd-rat-ipr 370 umol/kg
mmo-sat 250 ug/plate (+S9)
mmo-sat 1 nmol/plate/20M

**Carcinogenicity:**
orl-rat TDLo:320 mg/kg
scu-rat TDLo:1410 mg/kg

**IARC:** Group 2B (Possibly carcinogenic to humans) .
**NTP:** b (Reasonably anticipated to be carcinogens).
**OSHA:** Listed, OSHA Known Carcinogen

**Reproductive toxicity:**
No data available

**Target organ(s):**
Causes damage to: Liver Visual System Heart Kidney Central Nervous System
Causes damage to organs through prolonged or repeated exposure: Liver Heart
May cause damage to organs through prolonged or repeated exposure: Blood System Thyroid Gland Kidney

## *12. ECOLOGICAL INFORMATION*

**Ecotoxicity:**

| | |
|---|---|
| **Fish:** | 48h LC50:32 ppm (Oryzias latipes)<br>96h LC50:21 mg/L (Oryzias latipes) |
| **Crustacea:** | 48h EC50:2.5 mg/L (Daphnia magna) |
| **Algae:** | 72h EC50:5.3 mg/L (Selenastrum capricornutum) |

| | |
|---|---|
| **Persistence / degradability:** | 0 % (by BOD) , 5 % (by HPLC) , 0 % (by TOC) |
| **Bioaccumulative potential(BCF):** | 3.0 - 14 (conc. 200 ppb) , 3.1 - 15 (conc. 20 ppb) |
| **Mobility in soil** | |
| **Log Pow:** | 1.59 |
| **Soil adsorption (Koc):** | 3825 - 5681 |
| **Henry's Law (PaM $^3$/mol):** | 5.4 |

## *13. DISPOSAL CONSIDERATIONS*

| | |
|---|---|
| **Disposal of product:** | Recycle to process if possible. It is the generator's responsibility to comply with Federal, State and Local rules and regulations. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. This section is intended to provide assistance but does not replace these laws, nor does compliance in accordance with this section ensure regulatory compliance according to the law. US EPA guidelines for Identification and Listing of Hazardous Waste are listed in 40 CFR Parts 261. The product should not be allowed to enter the environment, drains, water ways, or the soil. |
| **Disposal of container:** | Dispose of as unused product. Do not re-use empty containers. |
| **Other considerations:** | Observe all federal, state and local regulations when disposing of the substance. |

## *14. TRANSPORT INFORMATION*

**DOT (US)**

| UN number: | Proper Shipping Name: | Class or Division: | Packing Group: |
|---|---|---|---|
| UN2651 | 4,4'-Diaminodiphenyl methane | 6.1 Toxic material. | III |

**IATA**

| UN number: | Proper Shipping Name: | Class or Division: | Packing Group: |
|---|---|---|---|
| UN2651 | 4,4'-Diaminodiphenylmethane | 6.1 Toxic material. | III |

**IMDG**

| UN number: | Proper Shipping Name: | Class or Division: | Packing Group: |
|---|---|---|---|
| UN2651 | 4,4'-Diaminodiphenylmethane | 6.1 Toxic material. | III |

**Marine Pollutant:** Marine Pollutant
**EmS number:** F-A, S-A

## *15. REGULATORY INFORMATION*

**Toxic Substance Control Act (TSCA 8b.):**
This product is ON the EPA Toxic Substances Control Act (TSCA) inventory.

**US Federal Regulations**

**CERCLA Hazardous substance and Reportable Quantity:**
**SARA 313:** Listed
**SARA 302:** Not Listed

**State Regulations**

**State Right-to-Know**
**Massachusetts** Listed
**New Jersey** Listed
**Pennsylvania** Listed
**California Proposition 65:** Listed

**Other Information**

**NFPA Rating:**
**Health:** 3
**Flammability:** 1
**Instability:** 0

**HMIS Classification:**
**Health:** 3
**Flammability:** 1
**Physical:** 0

**International Inventories**

**Canada: DSL** On DSL
**EC-No:** 202-974-4

## *16. OTHER INFORMATION*

**Revision date:** 07/06/2018
**Revision number:** 1

TCI chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its affiliates or subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our SDS are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated SDS for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, face mask, fume hood). For proper handling and disposal, always comply with federal, state and local regulations.