

GUJARAT NARMADA VALLEY FERTILIZERS & CHEMICALS LIMITED

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Ortho - Toluenediamine
Product Use Description : Chemical intermediate.
Company : Gujarat Narmada Valley Fertilizers & Chemicals Ltd
P.O. Narmadanagar-392015. Dist.: Bharuch
Gujarat. India.
Telephone : 91-2642-247160/1/2
Emergency telephone number : 91-2642-232860

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Concentration (Weight)
Diaminotoluene, 3,4-	496-72-0	60 %
Diaminotoluene, 2,3-	2687-25-4	40 %

CHEMICAL FAMILY : Aromatic Amine

3. HAZARDS IDENTIFICATION

Hazard Risk Classification

Acute Toxicity(Oral) : Category 3
Acute Toxicity(Dermal) : Category 4
Acute Toxicity(Inhalation) : Category 4
Skin Sensitization : Category1
Hazardous to the Aquatic Environment(Chronic) : Category2
Hazard class : 6.1 (Toxic)

Label elements including precautionary statements

Symbol



Signal Word Danger

Hazard Risk Statement

- H301 : Toxic if swallowed.
- H312 : Harmful in contact with skin.
- H317 : May cause an allergic skin reaction.
- H332 : Harmful if inhaled.
- H411 : Toxic to aquatic life with long lasting effects.

Precautionary Statement

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| Prevention | P261 : Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 : Wash ... thoroughly after handling.
P270 : Do not eat, drink or smoke when using this product.
P271 : Use only outdoors or in a well-ventilated area.
P272 : Contaminated work clothing should not be allowed out of the workplace.
P273 : Avoid release to the environment.
P280 : Wear protective gloves/clothing. |
| Response | P301+P310 : IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P302+P352 : IF ON SKIN: Wash with plenty of soap and water. Seek medical aid.
P304+P340 : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Seek medical aid.
P312 : Call a POISON CENTER or doctor/physician if you feel unwell.
P330 : Rinse mouth.
P333+P313 : If skin irritation or rash occurs: Get medical advice/attention.
P363 : Wash contaminated clothing before reuse.
P391 : Collect spillage. |
| Storage | P405 Store locked up |
| Disposal | P501 Dispose of contents/container to related laws |

Emergency Overview

This product contains ortho-toluenediamine (OTD).

OTD is similar in structure to meta-toluenediamine. Meta-toluenediamine, a toxic material, is rapidly absorbed through the skin and has been shown to cause cancer in laboratory animals.

OTD may have similar properties. It is recommended that users treat it like m-Toluenediamine and restrict its availability to those persons trained, qualified, and equipped to handle it properly.

Keep away from heat and sources of ignition.

Reproductive toxin.

Mild skin irritant.

Irritating to eyes.

Harmful if swallowed.

Potential Health Effects

Inhalation In general, toxic concentrations are most readily attained through inhalation of dust (which includes indirect ingestion) or directly through oral exposure.

Eye contact Contact with eyes may cause irritation.

Skin contact Mild skin irritation. Contact with hot product will cause thermal burns.

Ingestion Harmful if swallowed.

Chronic Health Hazard This product contains no listed carcinogens according to IARC, ACGIH, NTP and/or OSHA in concentrations of 0.1 percent or greater. Reproductive toxin. Repeated and/or prolonged exposures may result in: Liver disorders (such as jaundice or liver enlargement). Blood chemistry changes (such as methemoglobinemia leading to cyanosis or loss of consciousness). Reproductive disorders (such as birth defects or sterility). Liver disorders

Exposure Guidelines

Target Organs Eyes.
Liver.
Blood.
Reproductive hazard.

Aggravated Medical Condition

Blood chemistry changes (such as methemoglobinemia leading to cyanosis or loss of consciousness). Liver disorders (such as jaundice or liver enlargement). Reproductive disorders (such as birth defects or sterility). Adverse eye effects (such as conjunctivitis or corneal damage). Eye disease

4. FIRST AID MEASURES

General advice Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.

Eye contact Rinse immediately with plenty of water also under the eyelids for at least 20 minutes. Remove contact lenses.

Skin contact Avoid washing with hot water to minimize absorption. General contamination of the body or limbs requires a full body shower with special attention to hair and fingernails. Discard contaminated shoes and clothing. Cool skin rapidly with cold water after contact with molten material. Wash off immediately with plenty of water for at least 20 minutes. Wash off with soap and water. Immediately remove contaminated clothing, and any extraneous chemical, if possible to do so without delay. Sick Medical help.

Ingestion If ingestion of chemicals, or drinking to get medical advice and treatment.

<p>Inhalation Note to Physician Antidote</p>	<p>2-4 cups of water or milk to be ingested. Prevent aspiration of vomit. Turn victim's head to the side. Prevent airway obstruction. If you have any rituals for the removal of water to induce vomiting. Move to fresh air. Sick Medical help.</p> <p>Methylene blue intravenous If breathing is difficult, give oxygen. Chemical ingestion lavage and consider follow. If no breathing perform resuscitation. If no breathing, pocket mask ventilation and resuscitation equipment carried by leveraging.</p>
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5. FIRE-FIGHTING MEASURES

<p>Suitable extinguishing media</p>	<p>Alcohol-resistant foam. Carbon dioxide (CO₂). Dry chemical. Dry sand. Limestone powder. In case of large fire use water spray/Alcohol foam.</p>
<p>Fire Hazard Specific hazards</p>	<p>Dust and air mixtures may ignite or explode. May generate ammonia gas. May generate toxic nitrogen oxide gases. Use of water may result in the formation of very toxic aqueous solutions. Do not allow run-off from fire fighting to enter drains or water courses. Incomplete combustion may form carbon monoxide. Ammonia gas may be liberated at high temperatures. In case of incomplete combustion an increased formation of oxides of nitrogen (NO_x) is to be expected. Downwind personnel must be evacuated. Burning produces obnoxious and toxic fumes. Do not inhale combustion products.</p>
<p>Special protective equipment for fire-fighters</p>	<p>Use personal protective equipment. Wear self contained breathing apparatus / Protective suits for firefighting. To avoid low lying against the wind.</p>

6. ACCIDENTAL RELEASE MEASURES

<p>Personal precautions</p>	<p>Use self-contained breathing apparatus and chemically protective clothing. Wear suitable protective clothing, gloves and eye/face protection. Evacuate personnel to safe areas.</p>
<p>Environmental precautions and proactive procedures</p>	
<p>Water</p>	<p>Pool leak materials, sand bag barriers, and isolation to move into place. Adsorption with activated carbon materials and take care of the leak.</p>

Methods for cleaning up	Pool leak materials stored in an isolated place. Flush area with hot water spray. Approach suspected leak areas with caution. Consult Emergency Response Center / Local regulations / regulatory authorities for advice. Place in appropriate chemical waste container.
For small leak	Absorbent material to absorb the leak to the appropriate collection containers. Leaks in storage containers to a safe place to move. Absorb with non-flammable materials.
For Massive Leak	Disclose materials for later disposal in suitable containers to collect and take care of moving Surface area and isolation measures to control access to unauthorized people. Disclosure of material for processing and managing the construction of embankments.
Additional advice	At more than reference equivalent emissions in government departments or local government information, notice of discharge. If possible, stop flow of product. Leaking materials should be carbon materials and take care of the leak. Pool leak materials. Stored in an isolated area.

7. HANDLING AND STORAGE

Handling

Prevent generation of dust and scattering. Ventilate by using local exhaust ventilation or full ventilation. Avoid use of glass wool insulation due to rapid oxidation of product resulting in possible spontaneous ignition. Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations. Do not breathe vapors/dust. Avoid contact with eyes. Use personal protective equipment. When using, do not eat, drink or smoke.

Storage

Do not store near acids. Keep containers tightly closed in a dry, cool and well-ventilated place.
Avoid to contact with Aluminum, magnesium, tin and tin compounds etc.
Storage and the equipment must be used of corrosion resistance Material.
Melting TDA has to be moved from leak-free system.
Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances like Organic acids (i.e. acetic acid, citric acid etc.), strong acids, strong oxidizing agents
Mineral acids (i.e. Sulphuric, Phosphoric etc...) Oxidizing agents (i.e. Perchlorates, Nitrates etc..) , Sodium or Calcium hypo chlorite.

Technical measures/Precautions

Do not store in reactive metal containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures

Provide readily accessible eye wash stations and safety showers.
Provide natural or explosion-proof ventilation adequate to ensure concentrations are kept below exposure limits.

Personal protective equipment

Respiratory protection Keep properly ventilated areas, certified respiratory protection required during heating / fire.

Hand protection	Neoprene gloves. PVC disposable gloves Nitrile rubber. heat insulating gloves The breakthrough time of the selected glove(s) must be greater than the intended use period.
Eye protection	Full face shield with goggles underneath when molten material is being handled. Chemical resistant goggles must be worn.
Skin and body protection	Chemical resistance clothes with Long sleeve shirts and trousers without cuffs.
Special instructions for protection and hygiene	Provide readily accessible eye wash stations and safety showers. Wash at the end of each work shift and before eating, smoking or using the toilet. Change work clothing daily before leaving the work place. Discard contaminated clothing.

Exposure limit(s)

Diaminotoluene, 3,4-	Time Weighted Average (TWA): WEEL	0.005 ppm	0.025 mg/m3
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9. PHYSICAL AND CHEMICAL PROPERTIES

Form	: Solid (for shipping and transfer, the product is often in a heated molten state)
Color	: Light grey.
Odor	: Ammonical.
Relative density	: 1.05 (water = 1)
Vapor pressure	: 0.01 mmHg at 70 °F (21 °C)
Density	: 65.549 lb/ft ³ (1.05 g/cm ³) at 70 °F (21 °C)
Boiling point/range	: > 473 °F (> 245 °C)
Melting point/range	: 145 °F (62.78 °C)
Flash point	: 157.22 °C
Auto ignition temperature	: 1,004 °F (540 °C)
Water solubility	: Completely in hot water.

10. STABILITY AND REACTIVITY

Stability	: Stable under normal conditions.
Materials to avoid	: Organic acids (i.e. acetic acid, citric acid etc.), strong acids, strong oxidizing agents Mineral acids (i.e. Sulphuric, Phosphoric etc...)

Oxidizing agents (i.e. Perchlorates, Nitrates etc..) , Sodium or Calcium hypo chlorite
This product is weakly basic and reacts with mineral acids to form water soluble amine salts. These salts are more stable to oxidation than the basic amine.

Glass wool insulation.

Conditions to avoid

Heat flames, sparks and other ignition sources and to avoid contact.

Hazardous decomposition products

: In case of fire hazardous decomposition products may be produced such as:

Carbon monoxide.

Carbon dioxide (CO₂).

Nitrogen oxides (NO_x).

Nitrogen oxide can react with water vapors to form corrosive nitric acid.

Ammonia. (Ammonia is liberated when heated)

11. TOXICOLOGICAL INFORMATION

Information about the likely route exposure

Absorbed through skin. Eye contact, Inhalation. Ingestion.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Acute Health Hazard

Ingestion : LD50 : 660 mg/kg
Species : Rat.

Inhalation : No data is available on the product itself.

Skin. : LD50 : > 5,750 mg/kg
Species : Rabbit.

Eye irritation/corrosion : Eye irritation.

Acute dermal irritation/corrosion : Mild skin irritation.

Sensitization : Dermal sensitization to this product or component has been seen in some humans.

Chronic Health Hazard

AMES TEST: Positive (activated and nonactivated). Reproductive effects, methemoglobinemia, hepatotoxicity, thyroid, and bone marrow hyperplasia have been reported in exposed laboratory animals.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic toxicity

The LC₅₀ of TDA to various fish species ranges from 0.161 to 1420 mg/L and is isomer and species dependent. Based on microtox screening the ranking from most to least toxic is as follows: 2,5>2,4>commercial m-TDA>3,4>2,3>2,6.

Toxicity to other organisms : No data available.

Persistence and degradability

Mobility : No data available.

Bioaccumulation : No data is available on the product itself.

13. DISPOSAL CONSIDERATIONS

Disposal method : Where should you be in the waste generation and to reduce possible Incineration of waste is the most desirable way to handle and is designed for incineration or incineration of hazardous substances in incinerators approved subject to appropriate adjustment shall be incinerated while.

Waste from residues / unused products : Contact supplier if guidance is required,

Contaminated packaging : Dispose of container and unused contents in accordance with federal, state, and local requirements.

14. TRANSPORT INFORMATION

CFR

Proper shipping name : Environmenatally hazardous substances, solid, n.o.s. (Toluenediamine isomers)

Class : 6.1 /9

UN/ID No. : UN2810 / UN3077

Packing group : III

IATA

Proper shipping name : Environmenatally hazardous substances, solid, n.o.s. (Toluenediamine isomers)

Class : 6.1 /9

UN/ID No. : UN2810 / UN3077

Packing group : III

IMDG

Proper shipping name : Environmenatally hazardous substances, solid, n.o.s. (Toluenediamine isomers)

Class : 6.1 /9

UN/ID No. : UN2810 / UN3077

Packing group : III

CTC

Proper shipping name : Environmenatally hazardous substances, solid, n.o.s. (Toluenediamine isomers)

Class : 6.1 /9

UN/ID No. : UN2810 / UN3077

Packing group : III

Note: OTD has composition of isomers 3,4-Diaminotoluene(60%) & 2,3-Diaminotoluene (40%). Isomer 3,4-Diaminotoluene is having UN No-2810. However at someplace OTD has been given UN No.-3077 also being a hazardous chemical with environmentally hazardous substances. m-Toluenediamine (MTD) 2,4- Toluenediamine has UN No-1709.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard (29 CFR 1910.1200) Hazard Class(es)

Reproductive toxin.

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.
Canada	DSL	Included on Inventory.
Australia	AICS	Included on Inventory.
Japan	ENCS	Included on Inventory.
South Korea	ECL	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Not on Inventory.
India	Environment Protection Act & Factory Act	Included on Inventory.

EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification:

Chronic Health Hazard

EPA SARA Title III Section 313 (40 CFR 372) Component(s) above 'de minimus' level:

Diaminotoluene, 3,4-
US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)
WARNING! This product contains a chemical known in the State of California to cause cancer.
Ortho-toluidine
WEIMIS Hazard Classification
Very Toxic Material Causing Other Toxic Effects

16. OTHER INFORMATION

HMIS Rating

Health	: 2
Flammability	: 1
Physical hazard	: 0

NFPA RATINGS (SCALE 0-4)

Health	: 3
Fire	: 1
Reactivity	: 0

Prepared by Gujarat Narmada Valley Fertilizers & Chemicals Ltd

Disclaimer: The above information is believed to be correct but does not purpose 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. It does not represent any guarantee of the properties of the product. GNFC shall not be held liable for any damage resulting from handling or from contact with the above product.