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SAFETY DATA SHEET

Diethylenetriaminepentaacetic Acid (10 mg/mL) in Sodium Hydroxide Solution (0.1 N)

1. Product Identification

1.1. Product Identifiers

- 1.1.1. Name:
Diethylenetriaminepentaacetic Acid (10 mg/mL) in Sodium Hydroxide Solution (0.1 N)
- 1.1.2. Part Number:
2200
- 1.1.3. CAS Number:
67-43-6, 1310-73-2

1.2. Relevant Identified Uses and Uses Advised Against

- 1.2.1. Identified Uses:
Laboratory chemical

1.3. Details of Supplier of Safety Data Sheet

- 1.3.1. Company:
ARTMS Inc
8575 Commerce Court
Burnaby, BC, V5A 4N5
Canada
- 1.3.2. Phone Number:
+1 (604) 228 4016


1.4. Emergency Contact Phone Number

- 1.4.1. Emergency Phone Number:
1-888-CANUTEC (226-8832) (North American use) and/or 1-613-996-6666 (International use)

2. Hazard Identification

2.1. Classification of Substance/Mixture

- 2.1.1. Diethylenetriaminepentaacetic Acid:
 - Acute toxicity, Inhalation (Category 4), H332
 - Eye irritation (Category 2A), H319
 - Reproductive toxicity (Category 2), H361
 - Specific target organ toxicity - repeated exposure, Inhalation (Category 2), Respiratory Tract, H373
- 2.1.2. Sodium Hydroxide:
 - Corrosive to metals (Category 1), H290

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Skin corrosion (Category 1A), H314

Eye irritation (Category 2A), H319

Short-term (acute) aquatic hazard (Category 3), H402

2.2. GHS Label Elements, Including Primary Statements

2.2.1. Pictogram:



2.2.2. Signal Word:

Danger

2.2.3. Hazard statement(s):


2.2.4. Diethylenetriaminepentaacetic Acid:

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H361 Suspected of damaging fertility or the unborn child.

H373 May cause damage to organs (Respiratory Tract) through prolonged or repeated exposure if inhaled.

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2.2.4.1. Sodium Hydroxide:

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

H402 Harmful to aquatic life.

2.2.5. Precautionary statement(s):

2.2.6. Diethylenetriaminepentaacetic Acid:

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.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P405 Store locked up.

P501 Dispose of contents/ container to an approved waste disposal plant.

2.2.6.1. Sodium Hydroxide:

P234 Keep only in original packaging.

P260 Do not breathe dust or mist.

P264 Wash skin thoroughly after handling.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.


P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P363 Wash contaminated clothing before reuse.

P390 Absorb spillage to prevent material damage.

P405 Store locked up.

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P501 Dispose of contents/ container to an approved waste disposal plant.

2.3. Hazards Not Otherwise Classified (HNOC) or covered by GHS

None

3. Composition/Information on Ingredients

3.1. Substances/Mixtures

3.1.1. Diethylenetriaminepentaacetic Acid:

3.1.1.1. Formula: $C_{14}H_{23}N_3O_{10}$

Synonyms: N,N-bis[2-[bis(carboxymethyl)amino]ethyl]glycine, DTPA, Pentaacetic Acid

3.1.1.2. 393.35 g/mol

3.1.2. Sodium Hydroxide:

3.1.2.1. Formula: NaOH

Synonyms: Caustic Soda, Soda Lye

3.1.2.2. Molecular Weight 40.00 g/mol

3.1.2.3.

| Substance | Composition (%) | CAS Number | EC Number | Classification |
|-------------------------------------|-----------------|------------|-----------|--|
| Water | 98.6 % | 7732-18-5 | 231-791-2 | N/A |
| Diethylenetriamine-pentaacetic acid | 1.0 % | 67-43-6 | 200-652-8 | Acute Tox. 4; Eye Irrit. 2A; Repr. 2; STOT RE 2; H332, H319, H361, H373 |
| Sodium Hydroxide | 0.4 % | 1310-73-2 | 215-185-5 | Met. Corr. 1 Skin Corr. 1A; Eye Irrit. 2A Aquatic Acute 3; H290, H314, H319, H402 Concentration limits: 0.5 - < 2 % Skin Irrit. 2, H315; 0.5 - < 2 %: Eye Irrit. 2, H319; >= 5 %: Skin Corr. 1A, H314; 2 - < |

4. First Aid Measured


4.1. Description of First Aid Measured

4.1.1. General advice:

Consult a physician. Show this safety data sheet to the doctor in attendance.

4.1.2. If inhaled:

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

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4.1.3. In case of skin contact:

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

4.1.4. In case of eye contact:

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

4.1.5. If swallowed:

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2. 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

4.3. Indication of and Immediate Medical Attention and Special Treatment Needed

No data available.

5. Fire Fighting Measures

5.1. Extinguishing Media

5.1.1. Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

5.2. Special Hazards Arising from the Substance/Mixture

5.2.1. Diethylenetriaminepentaacetic Acid:

Carbon oxides

Nitrogen oxides (NOx)

Combustible.

Vapors 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.

5.2.2. Sodium Hydroxide:


Sodium oxides

5.3. 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.

5.4. Further Information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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6. Accidental Release Measures

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2. Environmental Precautions

Do not let product enter drains. Discharge into the environment must be avoided.

6.3. Methods and Materials for Containment and Cleaning

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4. Reference to Data Sheet Sections

For disposal see section 13.

7. Handling and Storage

7.1. Precautions for Safe Handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed and avoid inhalation. For precautions see section 2.2.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Storage class (TRGS 510): 8B: Non-combustible, corrosive hazardous materials.

7.3. Specific End Use(s)

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

8. Exposure Controls/Personal Protection

8.1. Control Parameters

| Component | CAS Number | Value | Control Parameters | Basis |
|------------------|--|-------|---------------------|---|
| Sodium hydroxide | 1310-73-2 | C | 2 mg/m ³ | Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants |
| Remarks | A substance which may not be recirculated in accordance with section 108 | | | |
| | | (c) | 2 mg/m ³ | Canada. Alberta, Occupational Health and Safety Code (table 2: OEL) |
| | Occupational exposure limit is based on irritation effects and its adjustment to compensate for unusual work schedules is not required | | | |
| | | C | 2 mg/m ³ | Canada. British Columbia OEL |
| | | C | 2 mg/m ³ | USA. ACGIH Threshold Limit Values (TLV) |

8.2. Exposure Controls

8.2.1. Appropriate engineering controls:

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.2.2. Personal Protective Equipment:

8.2.2.1. Eye/face protection:

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

8.2.2.2. Skin protection:

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact:

- Material: Nitrile rubber
- Minimum layer thickness: 0.11 mm
- Break through time: > 480 min
- Material tested: KCL 741 Dermatril® L

Splash contact:

- Material: Nitrile rubber
- Minimum layer thickness: 0.11 mm
- Break through time: > 480 min
- Material tested: KCL 741 Dermatril® L

8.2.2.3. Body protection:

Complete suit protecting against chemicals, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

8.2.2.4. Respiratory protection:

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

8.2.2.5. Control of environmental exposure:

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. Physical and Chemical Properties

9.1. Information on Basic Physical and Chemical Properties

| Property | Data/Value |
|------------|-------------------|
| Appearance | Liquid; Colorless |
| Odor | Odorless |

| | |
|---|-------------------|
| Odor Threshold | No data available |
| pH | No data available |
| Melting/Freezing Point | No data available |
| Initial Boiling Point and Range | No data available |
| Flash Point | Not applicable |
| Evaporation Rate | No data available |
| Flammability | Not flammable |
| Upper/Lower Flammability/Explosive Limits | No data available |
| Vapor Pressure | No data available |
| Vapor Density | No data available |
| Relative Density | No data available |
| Water Solubility | No data available |
| Partition Coefficient: n-octanol/water | No data available |
| Auto-Ignition Temperature | No data available |
| Decomposition Temperature | No data available |
| Viscosity | No data available |
| Explosive Properties | No data available |
| Oxidizing Properties | No data available |

9.2. Other Safety Information

No other data available.

10. Stability and Reactivity

10.1. Reactivity

Forms explosive mixtures with air on intense heating.


See section 10.3

10.2. Chemical Stability

Stable under recommended storage and standard ambient conditions.

10.3. Possibility of Hazardous Reactions

Strong oxidizing agents, Strong acids, Strong bases, Organic materials, Metals.

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10.4. Conditions to Avoid

Strong heating.

10.5. Incompatible Materials

Strong oxidizing agents, Strong acids, Strong bases, Organic materials, Metals.

10.6. Hazardous Decomposition Properties

Hazardous decomposition products formed under fire conditions. - Sodium oxides,

Other decomposition products - Carbon oxides, Nitrogen oxides (NOx)

In the event of fire: see section 5

11. Toxicology

11.1. Information on Toxicological Effects: Diethylenetriaminepentaacetic Acid

11.1.1. Acute toxicity:

LD50 Oral - Rat - male and female - > 5,000 mg/kg (OECD Test Guideline 401)

Remarks: (in analogy to similar compounds) The value is given in analogy to the following substances: N,N-Bis[2-[bis(carboxymethyl)amino]ethyl]-glycine potassium salt (1:5)

11.1.1.1. Inhalation:

LC50 Inhalation - Rat - male - 4 h - 1.5 mg/l

Remarks: (in analogy to similar products) (ECHA)The value is given in analogy to the following substances: Ethylenedinitrilotetraacetic acid disodium salt

11.1.1.2. Dermal:

LD50 Dermal - Rat - male and female - > 2,000 mg/kg

(OECD Test Guideline 402)

Remarks: (in analogy to similar products)

The value is given in analogy to the following substances: N,N-Bis[2-[bis(carboxymethyl)amino]ethyl]-glycine potassium salt (1:5)

11.1.2. Skin corrosion/irritation:

Skin - Rabbit

Result: No skin irritation - 4 h

(OECD Test Guideline 404)

Remarks: (in analogy to similar products)

The value is given in analogy to the following substances:


Pentasodium(carboxylatomethyl)iminobis(ethylenenitrilo)tetraacetate

11.1.3. Serious eye damage/eye irritation:

Causes serious eye irritation. (ECHA)

11.1.4. Respiratory or skin sensitization:

Buehler Test - Guinea pig

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Result: negative

(OECD Test Guideline 406)

11.1.5. Germ cell mutagenicity:

Test Type: Ames test

Test system: *S. typhimurium*

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Remarks: (in analogy to similar products)

Test Type: Chromosome aberration test in vitro

Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

Result: negative

Remarks: (in analogy to similar products)

11.1.6. Carcinogenicity:

No data available

11.1.7. Reproductive toxicity:

Suspected of damaging the unborn child.

Suspected of damaging fertility.

11.1.8. Specific target organ toxicity – single exposure:

No data available

11.1.9. Specific target organ toxicity – repeated exposure:

Inhalation - May cause damage to organs through prolonged or repeated exposure. - Respiratory Tract

11.1.10. Aspiration hazard:

No data available

11.1.11. Additional information:

Repeated dose toxicity - Rat - male and female - Oral - 4 Weeks - NOAEL (No observed adverse effect level) - 75 mg/kg Remarks: in analogy to similar products)

RTECS: MB8205000


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

11.2. Information on Toxicological Effects: Sodium Hydroxide

11.2.1. Acute toxicity:

No data available.

11.2.1.1. Inhalation:

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Corrosive to respiratory system.

11.2.1.2. Dermal:


No data available

11.2.2. Skin corrosion/irritation:

Skin - Rabbit

Result: Severe skin irritation - 24 h

Remarks: (RTECS)

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11.2.3. Serious eye damage/eye irritation:

Eyes - Rabbit

Result: Causes serious eye irritation.

(OECD Test Guideline 405)

Causes serious eye damage.

11.2.4. Respiratory or skin sensitization:

Patch test: - Human

Result: negative

Remarks: (ECHA)

11.2.5. Germ cell mutagenicity:

No data available

11.2.6. Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

11.2.7. Reproductive toxicity:

No data available

11.2.8. Specific target organ toxicity – single exposure:

No data available

Acute oral toxicity - If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.


Acute inhalation toxicity - burns of mucous membranes, Cough, Shortness of breath, Possible damages: damage of respiratory tract

11.2.9. Specific target organ toxicity – repeated exposure:

No data available

11.2.10. Aspiration hazard:

No data available

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11.2.11. Additional information:

RTECS: WB4900000

burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. Ecological Information

12.1. Toxicity

12.1.1. Diethylenetriaminepentaacetic Acid:

Toxicity to fish flow-through test LC50 - *Leuciscus idus* (Golden orfe) - > 100 mg/l - 96 h

Remarks: (External MSDS)

Toxicity to daphnia and other aquatic invertebrates static test LC50 - *Daphnia magna* (Water flea) - 245 mg/l - 48 h

(OECD Test Guideline 202)

Toxicity to algae static test NOEC - *Scenedesmus quadricauda* (Green algae) – 400 mg/l - 23 d


Remarks: (in analogy to similar products)

(ECHA)

The value is given in analogy to the following substances: Ethylenedinitrilotetraacetic acid disodium salt

Toxicity to bacteria static test EC50 - activated sludge - > 1,000 mg/l - 3 h

(OECD Test Guideline 209)

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12.1.2. Sodium Hydroxide:

Toxicity to fish LC50 - *Gambusia affinis* (Mosquito fish) - 125 mg/l - 96 h

Remarks: (ECOTOX Database)

Toxicity to daphnia and other aquatic invertebrates

EC50 - *Ceriodaphnia* (water flea) - 40.4 mg/l - 48 h

Remarks: (ECHA)

Toxicity to bacteria EC50 - *Photobacterium phosphoreum* - 22 mg/l - 15 min

Remarks: (External MSDS)

12.2. Persistence and Degradability

12.2.1. Diethylenetriaminepentaacetic Acid:

Biodegradability aerobic - Exposure time 28 d

Result: 9.3 % - Not readily biodegradable.

(OECD Test Guideline 301F)

Ratio BOD/ThBOD 1 %

Remarks: Lit

12.2.2. Sodium Hydroxide:

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3. Bio-accumulative Potential


No data available

12.4. Mobility in Soil

No data available

12.5. Results of PBT and vPvB Assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

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12.6. Other Adverse Effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
 Harmful to aquatic life.
 Harmful effect due to pH shift.
 Will form corrosive mixtures with water even if diluted.
 Neutralization possible in wastewater treatment plants.
 Discharge into the environment must be avoided.

13. Disposal Considerations

13.1. Waste Treatment Methods

- 13.1.1. Product:
 - Waste material must be disposed of in accordance with the national and local regulations. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Do not mix with other waste.
- 13.1.2. Contaminated Packaging:
 - Dispose of as unused product.

14. Transport Information

14.1. DOT (US)

UN number: 1824; Class: 8; Packing group: III
 Proper shipping name: SODIUM HYDROXIDE SOLUTION CONTAINING DTPA
 Labels: 8
 ERG Code: 154
 Marine pollutant: no

14.2. IMDG


UN number: 1824; Class: 8; Packing group: III EMS-No: F-A, S-B
 Proper shipping name: SODIUM HYDROXIDE SOLUTION CONTAINING DTPA

14.3. IATA

UN number: 1824; Class: 8; Packing group: III
 Proper shipping name: Sodium hydroxide solution containing DTPA

15. Regulatory Information

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

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16. Other Information

16.1. Further Information

No further data available.

Disclaimer:

The above information 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 regarding appropriate safety precautions. It does not represent any guarantee of the properties of the product. ARTMS Inc. shall not be held liable for any damage resulting from handling or from contact with the above product.

END OF SDS