

TRIETHYLENETETRAMINE

Version 2.0 Revision Date: 04/14/2022 SDS Number: 400001001164 Date of last issue: 08/12/2019
Date of first issue: 04/12/2016

Print Date 05/12/2025

SECTION 1. IDENTIFICATION

Product name : TRIETHYLENETETRAMINE

Distributed ByCompany name of supplier : Silver Fern Chemical, Inc.
Address : 121 W De La Guerra St STE B
Santa Barbara, CA 93101

Telephone : 1-866-282-3384

E-mail address of person responsible for the SDS : Info@silverfernchemical.com

Emergency telephone number : 24 Hour Emergency Contact
Infotrac 1-800-535-5053 (USA & Canada)
Outside USA & Canada 1-352-323-3500**Recommended use of the chemical and restrictions on use**Recommended use : Intermediate
Hardener
Component used for the manufacture of electrical insulation parts**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Acute toxicity (Oral) : Category 4

Acute toxicity (Dermal) : Category 4

Skin corrosion : Category 1

Serious eye damage : Category 1

Skin sensitisation : Category 1

Short-term (acute) aquatic hazard : Category 3

Chronic aquatic toxicity : Category 3

GHS label elements

Hazard pictograms :



Signal word : Danger

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Hazard statements : H302 + H312 Harmful if swallowed or in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P261 Avoid breathing mist or vapours.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.

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/ shower.

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

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P363 Wash contaminated clothing before reuse.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Triethylenetetramine	112-24-3	90 - 100
Diethylenetriamine	111-40-0	0.1 - 1

The specific chemical identity and/or exact percentage (concentration) of composition may be withheld as a trade secret.

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Trientine is a multi-constituent substance that contains four TETA ethyleneamines including linear, branched, and two cyclic molecules (shown below). The linear CAS number (112-24-3) is commonly used to represent the entire mixture, but some jurisdictions may use the multi-constituent CAS number (90640-67-8).

N,N'bis (2-aminoethyl)-1,2-ethanediamine (TETA) - CAS 112-24-3
N-[(2-aminoethyl)2-aminoethyl]piperazine (PEEDA) - CAS 24028-46-4
N,N'-bis-(2-aminoethyl)piperazine (Bis AEP) - CAS 6531-38-0
Tris-(2-aminoethyl)amine (Branched TETA) - CAS 4097-89-6

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Treat symptomatically.
Get medical attention if symptoms occur.
- If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.
- In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
If on skin, rinse well with water.
If on clothes, remove clothes.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
Do NOT induce vomiting.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : None known.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Avoid inhalation, ingestion and contact with skin and eyes.

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No action shall be taken involving any personal risk or without suitable training.

It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical
- Unsuitable extinguishing media : Exercise caution when using a high volume water jet as it may scatter and spread fire
- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : Ammonia
Carbon oxides
Nitrogen oxides (NO_x)
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Neutralise with acid.
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

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SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- Advice on safe handling : Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.
 Do not breathe vapours/dust.
 Avoid exposure - obtain special instructions before use.
 Avoid contact with skin and eyes.
 For personal protection see section 8.
 Smoking, eating and drinking should be prohibited in the application area.
 To avoid spills during handling keep bottle on a metal tray.
 Dispose of rinse water in accordance with local and national regulations.
- Conditions for safe storage : 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.
 Observe label precautions.
 Keep in properly labelled containers.
- Materials to avoid : Do not store near acids.
- Recommended storage temperature : 36 - 104 °F / 2 - 40 °C
- Further information on storage stability : Stable under normal conditions.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Diethylenetriamine	111-40-0	TWA	1 ppm	ACGIH
		TWA	1 ppm 4 mg/m ³	NIOSH REL
		TWA	1 ppm 4 mg/m ³	OSHA P0

Personal protective equipment

- Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn.

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Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material : butyl-rubber
Break through time : > 8 h

Material : Nitrile rubber
Break through time : 10 - 480 min

Remarks

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection

: Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection

: Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures

: When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : off-white

Odour : slight, amine-like

Odour Threshold : No data is available on the product itself.

pH : ca. 13 (68 °F / 20 °C)
Concentration: 1,000 g/l

Melting point/freezing point : < -4 °F / < -20 °C
Method: OECD Test Guideline 102

Boiling point : 526.3 °F / 274.6 °C
(1,013.25 hPa)

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Flash point : 244 °F / 118 °C
Method: closed cup

Evaporation rate : No data is available on the product itself.

Flammability (solid, gas) : No data is available on the product itself.

Flammability (liquids) : No data is available on the product itself.

Upper explosion limit / Upper flammability limit : 3.6 %(V)

Lower explosion limit / Lower flammability limit : 1 %(V)

Vapour pressure : 0.00346 hPa (68 °F / 20 °C)
Method: OECD Test Guideline 104

Relative vapour density : 5.04

Relative density : 0.971 (77 °F / 25 °C)

Density : 0.971 g/cm³ (77 °F / 25 °C)

Solubility(ies)
Water solubility : > 1,000 g/l soluble in cold water (68 °F / 20 °C)
Method: OECD Test Guideline 105

Solubility in other solvents : Solvent: Methanol
Description: partly soluble

Solvent: Acetone
Description: partly soluble

Partition coefficient: n-octanol/water : log Pow: -2.65 (68 °F / 20 °C)
Method: OECD Test Guideline 117

Auto-ignition temperature : 617 °F / 325 °C
Method: Auto-Ignition Temperature (Liquids and Gases)

Decomposition temperature : > 464 °F / > 240 °C

Self-Accelerating decomposition temperature (SADT) : No data is available on the product itself.

Viscosity
Viscosity, dynamic : 13.9 mPa.s

Viscosity, kinematic : 10.3 mm²/s (104 °F / 40 °C)

Explosive properties : No data is available on the product itself.

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Oxidizing properties : No data is available on the product itself.
Molecular weight : 146.24 g/mol
Metal corrosion rate : Not corrosive to metals
Particle size : No data is available on the product itself.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No dangerous reaction known under conditions of normal use.
Chemical stability : Stable under normal conditions.
Possibility of hazardous reactions : No hazards to be specially mentioned.
Conditions to avoid : None known.
Incompatible materials : Acids
Chlorinated hydrocarbons
Cobalt
Copper
Copper alloys
Nickel
Oxidizing agents
Hazardous decomposition products : ammonia, anhydrous
Aldehydes
Nitrogen oxides (NOx)
carbon monoxide
carbon dioxide
Ketones

SECTION 11. TOXICOLOGICAL INFORMATION**Acute toxicity****Product:**

Acute oral toxicity : Acute toxicity estimate: 1,717 mg/kg
Method: Calculation method
Acute inhalation toxicity : Acute toxicity estimate: 37 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method
Acute dermal toxicity : Acute toxicity estimate: 1,466 mg/kg
Method: Calculation method

Components:**Triethylenetetramine:**

Acute oral toxicity : LD50 (Rat, male and female): 1,716.2 mg/kg

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Method: OECD Test Guideline 401

Assessment: The component/mixture is moderately toxic after single ingestion.

Acute dermal toxicity : LD50 (Rabbit, male and female): 1,465.4 mg/kg
 Method: OECD Test Guideline 402
 Assessment: The component/mixture is moderately toxic after single contact with skin.

Diethylenetriamine:

Acute oral toxicity : LD50 (Rat, male): 1,620 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): 0.185 mg/l
 Exposure time: 4 h
 Test atmosphere: dust/mist
 Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rabbit): 1,045 mg/kg

Skin corrosion/irritation**Components:****Triethylenetetramine:**

Species : reconstructed human epidermis (RhE)
 Assessment : Causes burns.
 Method : OECD Test Guideline 435
 Result : Corrosive after 3 minutes to 1 hour of exposure

Species : Rabbit
 Assessment : Causes burns.
 Method : OECD Test Guideline 404
 Result : Corrosive after 3 minutes to 1 hour of exposure

Diethylenetriamine:

Species : Rabbit
 Assessment : Causes burns.
 Result : Causes burns.

Serious eye damage/eye irritation**Components:****Triethylenetetramine:**

Species : Rabbit
 Result : Irreversible effects on the eye
 Assessment : Risk of serious damage to eyes.
 Method : OECD Test Guideline 405

Diethylenetriamine:

Species : Rabbit
 Result : Corrosive
 Assessment : Corrosive

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Respiratory or skin sensitisation**Components:****Triethylenetetramine:**

Exposure routes : Skin
 Species : Guinea pig
 Assessment : Probability or evidence of skin sensitisation in humans
 Method : OECD Test Guideline 406
 Result : Probability or evidence of skin sensitisation in humans

Diethylenetriamine:

Exposure routes : Skin
 Species : Mouse
 Method : OECD Test Guideline 429
 Result : May cause sensitisation by skin contact.
 Remarks : Causes sensitisation.

Exposure routes : Respiratory Tract
 Species : Mouse
 Result : Does not cause respiratory sensitisation.

Germ cell mutagenicity**Components:****Triethylenetetramine:**

Genotoxicity in vitro : Test Type: reverse mutation assay
 Test system: Salmonella tryphimurium and E. coli
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 471
 Result: positive
 GLP: yes

Test Type: Micronucleus test
 Test system: Human lymphocytes
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 487
 Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test
 Species: Mouse (male and female)
 Cell type: Bone marrow
 Application Route: Intraperitoneal injection
 Dose: 0 - 600 mg/kg
 Method: OECD Test Guideline 474
 Result: negative

Diethylenetriamine:

Genotoxicity in vivo : Cell type: Somatic
 Application Route: Oral
 Dose: 85 - 850 mg/kg
 Method: OECD Test Guideline 474
 Result: negative

Application Route: Oral

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Result: negative

Carcinogenicity**Components:****Triethylenetetramine:**

Species : Mouse, male
Application Route : Dermal
NOAEL : \geq 50 mg/kg bw/day
Method : OECD Test Guideline 451
Result : negative

Species : Mouse, male
Application Route : Dermal
Exposure time : 104 weeks
NOAEL : \geq 20 mg/kg bw/day
Method : OECD Test Guideline 451
Result : negative

Diethylenetriamine:

Species : Mouse, male
Application Route : Dermal
Dose : 56.3 mg/kg
Frequency of Treatment : 3 daily
Result : negative

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.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity**Components:****Triethylenetetramine:**

Effects on foetal development : Test Type: Pre-natal
Species: Rat
Application Route: Oral
Dose: 75/325/750 mg/kg bw/day
Duration of Single Treatment: 10 d
General Toxicity Maternal: NOAEL: \geq 750 mg/kg body weight
Developmental Toxicity: NOAEL: \geq 750 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Test Type: Pre-natal
Species: Rabbit
Application Route: Dermal
Dose: 5/50/125 mg/kg bw/day
Duration of Single Treatment: 13 d

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General Toxicity Maternal: NOAEL: 50 mg/kg body weight
 Developmental Toxicity: NOAEL: >= 125 mg/kg body weight
 Method: OECD Test Guideline 414
 Result: No teratogenic effects

Diethylenetriamine:

Effects on fertility : Species: Rat, male and female
 Application Route: Oral
 General Toxicity - Parent: NOAEL: 30 mg/kg wet weight
 Method: OECD Test Guideline 421

Effects on foetal development : Species: Rat
 Application Route: Oral
 General Toxicity Maternal: NOAEL: 100 mg/kg body weight
 Method: OECD Test Guideline 421
 Result: No adverse effects

STOT - single exposure**Components:****Diethylenetriamine:**

Target Organs : Respiratory Tract
 Assessment : May cause respiratory irritation.

STOT - repeated exposure

No data available

Repeated dose toxicity**Components:****Triethylenetetramine:**

Species : Rat, male and female
 NOAEL : 350 mg/kg
 Application Route : Oral
 Exposure time : 28 d
 Number of exposures : 7 d
 Dose : 100/350/1000 mg/kg bw/day
 Method : OECD Test Guideline 407
 Target Organs : Lungs
 Remarks : Information given is based on data obtained from similar substances.

Species : Dog, male and female
 NOAEL : 125 mg/kg
 Application Route : Oral
 Target Organs : Lungs
 Remarks : Information given is based on data obtained from similar substances.

Species : Dog, male and female
 NOAEL : 50 mg/kg
 Application Route : Oral
 Method : Subchronic toxicity
 Remarks : Information given is based on data obtained from similar

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substances.

Species : Rat, male and female
NOAEL : 50 mg/kg
Application Route : Oral
Exposure time : 26 weeks
Dose : 50/175/600 mg/kg bw/day
Method : OECD Test Guideline 408
Target Organs : Lungs
Remarks : Information given is based on data obtained from similar substances.

Species : Mouse, male and female
NOAEL : 92 mg/kg, 600 ppm
Application Route : Oral
Exposure time : 120/600/3000 ppm
Method : OECD Test Guideline 408
Remarks : Information given is based on data obtained from similar substances.

Diethylenetriamine:

Species : Rat, male and female
NOEC : 70 - 80 mg/m3
Application Route : Ingestion
Test atmosphere : vapour
Exposure time : 360 h
Number of exposures : 7 d
Method : Subchronic toxicity

Species : Rat, male and female
NOAEL : 114 mg/kg/d
Application Route : Skin contact
Exposure time : 9,600 h
Number of exposures : 6 d
Method : Chronic toxicity

Aspiration toxicity

No data available

Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

No data available

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SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:****Triethylenetetramine:**

- Toxicity to fish : LC50 (Poecilia reticulata (guppy)): 570 mg/l
 Exposure time: 96 h
 Test Type: semi-static test
 Test substance: Fresh water
 Method: Directive 67/548/EEC, Annex V, C.1.
- LC50 (Leuciscus idus (Golden orfe)): 200 - 500 mg/l
 Exposure time: 96 h
- LC50 (Pimephales promelas (fathead minnow)): 330 mg/l
 End point: mortality
 Exposure time: 96 h
 Test Type: static test
 Test substance: Fresh water
 Method: Fish Acute Toxicity Test
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 31.1 mg/l
 End point: Immobilization
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water
 Method: Directive 67/548/EEC, Annex V, C.2.
- Toxicity to algae/aquatic plants : ErC50 (Selenastrum capricornutum (green algae)): 20 mg/l
 Exposure time: 72 h
 Test Type: semi-static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201
- EC10 (Selenastrum capricornutum (green algae)): 1.34 mg/l
 Exposure time: 72 h
 Test Type: semi-static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10 (Daphnia magna (Water flea)): 1.9 mg/l
 Exposure time: 21 d
 Test Type: semi-static test
 Test substance: Fresh water
 Method: OECD Test Guideline 202
- Toxicity to microorganisms : NOEC (Bacteria): \geq 100 mg/l
 Exposure time: 28 d
 Method: OECD Test Guideline 216
- EC50 (Bacteria): $>$ 100 mg/l
 Exposure time: 28 h
 Method: OECD Test Guideline 216

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EC50 (Bacteria): 15.7 mg/l
 Exposure time: 2 h
 Test Type: static test
 Test substance: Fresh water

NOEC (Bacteria): 1.3 mg/l
 Exposure time: 2 h
 Test Type: static test
 Test substance: Fresh water

Toxicity to soil dwelling organisms : NOEC (Eisenia fetida (earthworms)): ca. 62.5 mg/kg
 Exposure time: 56 d
 Method: OECD Test Guideline 222

EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg
 Exposure time: 56 d
 Method: OECD Test Guideline 222

Ecotoxicology Assessment

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

Diethylenetriamine:

Toxicity to fish : LC50: 430 mg/l
 Exposure time: 96 h
 Test Type: semi-static test
 Test substance: Fresh water
 Method: Directive 67/548/EEC, Annex V, C.1.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 64.6 mg/l
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water
 Method: Regulation (EC) No. 440/2008, Annex, C.2

EC50 (Daphnia magna (Water flea)): 16 mg/l
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water
 Method: DIN 38412

Toxicity to algae/aquatic plants : EbC50 (Selenastrum capricornutum (green algae)): 1,164 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity) : NOEC: 10 mg/l
 Exposure time: 28 d
 Test Type: semi-static test
 Test substance: Fresh water
 Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates : NOEC (Daphnia magna (Water flea)): 5.6 mg/l
 Exposure time: 21 d

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(Chronic toxicity) Test Type: semi-static test
 Test substance: Fresh water
 Method: Directive 67/548/EEC, Annex V, C.20

Toxicity to soil dwelling organisms : EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg
 Exposure time: 56 d
 Method: OECD Test Guideline 222

Ecotoxicology Assessment

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Persistence and degradability**Components:****Triethylenetetramine:**

Biodegradability : Inoculum: activated sludge
 Result: Not readily biodegradable.
 Biodegradation: 0 %
 Exposure time: 162 d
 Method: OECD Test Guideline 301D
 Test substance: Fresh water

aerobic
 Inoculum: activated sludge
 Dissolved organic carbon (DOC)
 Result: Not inherently biodegradable.
 Biodegradation: 20 %
 Exposure time: 84 d
 Method: OECD Test Guideline 302A
 Test substance: Fresh water

Diethylenetriamine:

Biodegradability : Inoculum: activated sludge
 Result: Readily biodegradable.
 Biodegradation: 87 %
 Exposure time: 21 d
 Method: OECD Test Guideline 301D

Photodegradation : Test Type: Air
 Rate constant: 500000
 Degradation (direct photolysis): 50 %

Bioaccumulative potential**Components:****Triethylenetetramine:**

Partition coefficient: n-octanol/water : log Pow: -2.08 - 2.90 (68 °F / 20 °C)
 Method: QSAR

Diethylenetriamine:

Bioaccumulation : Species: Cyprinus carpio (Carp)
 Bioconcentration factor (BCF): 0.3 - 6.3

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Exposure time: 42 d
Test substance: Fresh water
Method: flow-through test
Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: -1.58 (68 °F / 20 °C)
pH: 7

Mobility in soil**Components:****Triethylenetetramine:**

Distribution among environmental compartments : Koc: 3162.28, log Koc: 3.5
Method: OECD Test Guideline 106

Diethylenetriamine:

Distribution among environmental compartments : Koc: 19111

Other adverse effects**Product:**

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82
Protection of Stratospheric Ozone - CAA Section 602 Class I
Substances
Remarks: This product neither contains, nor was
manufactured with a Class I or Class II ODS as defined by the
U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A +
B).

Additional ecological information : An environmental hazard cannot be excluded in the event of
unprofessional handling or disposal.
Harmful to aquatic life with long lasting effects.

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : Dispose of contents and container in accordance with all local,
regional, national and international regulations.
Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with
chemical or used container.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION**International Regulations****IATA-DGR**

TRIETHYLENETETRAMINE

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UN/ID No. : UN 2259
 Proper shipping name : Triethylenetetramine
 Class : 8
 Packing group : II
 Labels : Corrosive
 Packing instruction (cargo aircraft) : 855
 Packing instruction (passenger aircraft) : 851

IMDG-Code

UN number : UN 2259
 Proper shipping name : TRIETHYLENETETRAMINE
 Class : 8
 Packing group : II
 Labels : 8
 EmS Code : F-A, S-B
 Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations**49 CFR**

UN/ID/NA number : UN 2259
 Proper shipping name : Triethylenetetramine
 Class : 8
 Packing group : II
 Labels : CORROSIVE
 ERG Code : 153
 Marine pollutant : no

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION**CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

SARA 311/312 Hazards : Acute toxicity (any route of exposure)
 Respiratory or skin sensitisation
 Skin corrosion or irritation
 Serious eye damage or eye irritation

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

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California Prop. 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

DSL	: All components of this product are on the Canadian DSL
AIIC	: On the inventory, or in compliance with the inventory
NZIoC	: On the inventory, or in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or in compliance with the inventory
TSCA	: All substances listed as active on the TSCA inventory

Inventories

AIIC (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TECI (Thailand), TSCA (USA)

TSCA - 5(a) Significant New Use Rule List of Chemicals

No substances are subject to a Significant New Use Rule.

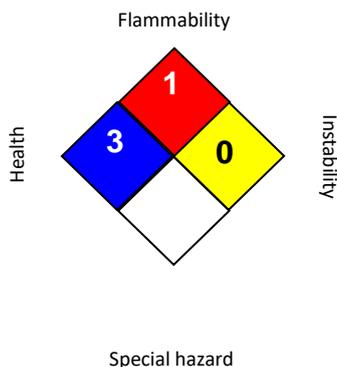
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

No substances are subject to TSCA 12(b) export notification requirements.

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SECTION 16. OTHER INFORMATION**Further information****NFPA 704:****HMIS® IV:**

HEALTH		3
FLAMMABILITY		1
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard

Revision Date : 04/14/2022

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
 NIOSH REL : USA. NIOSH Recommended Exposure Limits
 OSHA P0 : USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)

ACGIH / TWA : 8-hour, time-weighted average
 NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek

OSHA P0 / TWA : 8-hour time weighted average

The information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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SAFETY DATA SHEET

The logo for Huntsman, featuring the word "HUNTSMAN" in a bold, blue, sans-serif font. The letters are outlined in white, and the entire logo is set against a dark blue rectangular background.

Enriching lives through innovation

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Approved BR 02-13-2026