

ACCELERATOR 400

Version 1.5 Revision Date: 10/31/2018 SDS Number: 400000002541 Date of last issue: 06/22/2018
Date of first issue: 04/22/2016

SECTION 1. IDENTIFICATION

Product name : ACCELERATOR 400

Manufacturer or supplier's details

Company name of supplier : Huntsman International LLC
Address : P.O. Box 4980
The Woodlands,
TX 77387
United States of America (USA)
Telephone : TechInfo: (281) 719-7780
E-mail address of person responsible for the SDS : SDS@huntsman.com

Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

Recommended use of the chemical and restrictions on use

Recommended use : Polymer
Resin

SECTION 2. HAZARDS IDENTIFICATION**GHS classification in accordance with 29 CFR 1910.1200**

Flammable liquids : Category 4
Serious eye damage : Category 1
Skin sensitisation : Sub-category 1B
Reproductive toxicity : Category 2
Specific target organ toxicity - repeated exposure : Category 1 (Lungs, larynx, Respiratory Tract)
Short-term (acute) aquatic hazard : Category 3
Long-term (chronic) aquatic hazard : Category 3

GHS label elements

Hazard pictograms : 

Signal word : Danger

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Hazard statements : H227 Combustible liquid.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H361 Suspected of damaging fertility or the unborn child.
H372 Causes damage to organs (Lungs, larynx, Respiratory Tract) through prolonged or repeated exposure.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
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.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Storage:
P403 + P235 Store in a well-ventilated place. Keep cool.
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 : Mixture

Chemical nature : Amines

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
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2,2',2''-nitrilotriethanol	102-71-6	70 - 90
2-piperazin-1-ylethylamine	140-31-8	25 - 30
Diethylenetriamine	111-40-0	0.1 - 1
Triethylenetetramine	112-24-3	0.1 - 0.25

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

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 : 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 : Clean mouth with water and drink afterwards plenty of water.
 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.
- Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Carbon dioxide (CO₂)
- Unsuitable extinguishing media : High volume water jet

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- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : Carbon oxides
Nitrogen oxides (NOx)
- Specific extinguishing methods : No data is available on the product itself.
- 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.
For safety reasons in case of fire, cans should be stored separately in closed containments.
Use a water spray to cool fully closed containers.
- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : No action shall be taken involving any personal risk or without suitable training.
Evacuate personnel to safe areas.
Ensure adequate ventilation.
In case of inadequate ventilation wear respiratory protection.
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.
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Do not spray on a naked flame or any incandescent material.
Keep away from open flames, hot surfaces and sources of ignition.
- Advice on safe handling : Avoid formation of aerosol.
Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.

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Smoking, eating and drinking should be prohibited in the application area.
 Provide sufficient air exchange and/or exhaust in work rooms.
 To avoid spills during handling keep bottle on a metal tray.
 Dispose of rinse water in accordance with local and national regulations.
 Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

- Conditions for safe storage : No smoking.
 Keep in a 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 : For incompatible materials please refer to Section 10 of this SDS.
- 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
2,2',2''-nitrilotriethanol	102-71-6	TWA	5 mg/m ³	ACGIH
Diethylenetriamine	111-40-0	TWA	1 ppm	ACGIH

Personal protective equipment

- Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.
 Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Respiratory protection : In the case of vapour formation use a respirator with an approved filter.
- Hand protection
 Remarks : Impervious gloves
 Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.
 The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard

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EN 374 derived from it.
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 : No data is available on the product itself.
- Odour : No data is available on the product itself.
- Odour Threshold : No data is available on the product itself.
- pH : 10.9
Concentration: 5 %
(as aqueous solution)
- Freezing point : 22.3 °F / -5.4 °C
- Boiling point : No data is available on the product itself.
- Flash point : 194 °F / 90 °C
Method: Pensky-Martens 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 : No data is available on the product itself.
- Lower explosion limit / Lower flammability limit : No data is available on the product itself.
- Vapour pressure : No data is available on the product itself.
- Relative vapour density : No data is available on the product itself.
- Relative density : No data is available on the product itself.

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Density : 1.09 g/cm³ (77 °F / 25 °C)

Solubility(ies)
Water solubility : completely miscible

Solubility in other solvents : No data is available on the product itself.

Partition coefficient: n-octanol/water : No data is available on the product itself.

Auto-ignition temperature : No data is available on the product itself.

Thermal decomposition : No data is available on the product itself.

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

Viscosity
Viscosity, kinematic : 301 mm²/s (212 °F / 100 °C)

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

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

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 : Vapours may form explosive mixture with air.

Conditions to avoid : Heat, flames and sparks.

Incompatible materials : None known.

Hazardous decomposition products : carbon monoxide
carbon dioxide
Nitrogen oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : No data is available on the product itself.

Acute toxicity

Acute oral toxicity - Product : (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 425
Assessment: The component/mixture is low toxic after single

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ingestion.

Components:

Diethylenetriamine:
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 - Product : Acute toxicity estimate : 2,946 mg/kg
Method: Calculation method

Acute toxicity (other routes of administration) : No data available

Skin corrosion/irritation**Product:**

Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation**Product:**

Remarks: May cause irreversible eye damage.

Respiratory or skin sensitisation**Product:**

Test Type: Local lymph node assay (LLNA)
Exposure routes: Skin
Species: Mouse
Method: OECD Test Guideline 429
Result: Probability or evidence of low to moderate skin sensitisation rate in humans

Assessment: No data available

Germ cell mutagenicity**Components:**

2,2',2''-nitrilotriethanol:
Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Concentration: 0 - 1500 µg/L
Metabolic activation: with and without metabolic activation

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Method: OECD Test Guideline 476
Result: negative

2-piperazin-1-ylethylamine:
Genotoxicity in vitro

: Concentration: 5000 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Metabolic activation: negative
Method: OECD Test Guideline 482
Result: negative

Triethylenetetramine:
Genotoxicity in vitro

: Concentration: 0 - 200 µg/L
Metabolic activation: negative
Method: OECD Test Guideline 482
Result: negative

Components:

2-piperazin-1-ylethylamine:
Genotoxicity in vivo

: Application Route: Intraperitoneal injection
Dose: 175 - 560 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
Result: negative

Triethylenetetramine:
Genotoxicity in vivo

: Application Route: Intraperitoneal injection
Dose: 0 - 600 mg/kg
Method: OECD Test Guideline 474
Result: negative

Carcinogenicity**Components:**

2,2',2"-nitrilotriethanol:
Species: Rat, male and female
Application Route: Dermal
Exposure time: 103 weeks
Dose: 250 mg/kg
Frequency of Treatment: 5 daily

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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

Triethylenetetramine:
Species: Mouse, male
Application Route: Dermal
Dose: 42 mg/kg
Frequency of Treatment: 3 days/week
Method: OECD Test Guideline 451
Result: negative

Species: Mouse, male
Application Route: Dermal
Exposure time: 104 weeks
Dose: 16.8 mg/kg
Frequency of Treatment: 3 days/week
Method: OECD Test Guideline 451

Carcinogenicity - Assessment : No data available

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.

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:**

2,2',2''-nitrilotriethanol:
Effects on fertility

: Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 416
Result: No effects on fertility and early embryonic development were detected.

Diethylenetriamine:

Species: Rat, male and female
Application Route: Oral

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General Toxicity - Parent: No observed adverse effect level:
30 mg/kg wet weight
Method: OECD Test Guideline 421
Result: positive

Components:

2,2',2"-nitrilotriethanol:
Effects on foetal
development

: Species: Rat, male and female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level:
> 1,000 mg/kg body weight
Method: OECD Test Guideline 421
Result: No teratogenic effects

Species: Rat
Application Route: Dermal
General Toxicity Maternal: No observed adverse effect level:
75 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Species: Rabbit
Application Route: Dermal
General Toxicity Maternal: No observed adverse effect level:
10 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Diethylenetriamine:

Species: Rat
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level:
100 mg/kg body weight
Method: OECD Test Guideline 421
Result: No adverse effects

Triethylenetetramine:

Species: Rat
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level:
> 750 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Species: Rabbit
Application Route: Dermal
General Toxicity Maternal: No observed adverse effect level:
125 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Product:

Reproductive toxicity -
Assessment

: Suspected human reproductive toxicant

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STOT - single exposure**Components:**

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

STOT - repeated exposure**Product:**

Target Organs: Lungs, larynx, Respiratory Tract
Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Repeated dose toxicity**Components:**

2,2',2"-nitrilotriethanol:
Species: Rat, male and female
NOEC: 1000 mg/kg, 500 mg/m³
Application Route: Ingestion
Test atmosphere: dust/mist
Exposure time: 672 h
Method: OECD Test Guideline 412

Species: Rat, male and female
NOEC: 125 - 500 mg/kg, 420 mg/m³
Application Route: Skin contact
Test atmosphere: dust/mist
Exposure time: 2,160 h
Number of exposures: 6 h
Method: Subchronic toxicity

2-piperazin-1-ylethylamine:
Species: Rat, male and female
NOAEL: 152 mg/kg/d
Application Route: Oral
Exposure time: 28 d
Method: OECD Test Guideline 422

Species: Rat, male and female
NOAEL: > 1000 mg/kg/d
Application Route: Skin contact
Exposure time: 29 d
Number of exposures: 6h/application, 5d/week
Method: OECD Test Guideline 410

Species: Rat, male and female
NOEC: 0.2 mg/m³
Application Route: Inhalation
Exposure time: 90 d
Number of exposures: 6h/d, 5d/week
Method: OECD Test Guideline 413
Target Organs: Respiratory Tract

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Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Species: Rat, male and female
NOEC: 53.3 mg/m³
Application Route: Inhalation
Exposure time: 90 d
Number of exposures: 6h/d, 5d/week
Method: OECD Test Guideline 413

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

Triethylenetetramine:
Species: Rat, male and female
NOAEL: 50 mg/kg/d
Application Route: Ingestion
Exposure time: 26 Weeks
Number of exposures: 7 d
Method: Subchronic toxicity

Repeated dose toxicity - Assessment : No data available

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

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Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Ingestion: No data available

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

2,2',2''-nitrilotriethanol:
Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 11,800 mg/l
Exposure time: 96 h
Test Type: flow-through test
Test substance: Fresh water

2-piperazin-1-ylethylamine:
Toxicity to fish : LC50: 2,190 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water

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.

Triethylenetetramine:
Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 330 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: Fish Acute Toxicity Test

Components:

2,2',2''-nitrilotriethanol:
Toxicity to daphnia and other : EC50 (Ceriodaphnia dubia (Water flea)): 609.88 mg/l
aquatic invertebrates : Exposure time: 48 h
Test Type: static test
Test substance: Fresh water

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2-piperazin-1-ylethylamine:
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 58 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
Remarks: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Diethylenetriamine:
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 32 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water

Triethylenetetramine:
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 31.1 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.2.

Components:

2,2',2''-nitrioltriethanol:
Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 512 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: DIN 38412

2-piperazin-1-ylethylamine:
Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): > 1,000 mg/l
Exposure time: 72 h
Test substance: Fresh water
Method: OECD Test Guideline 201

Diethylenetriamine:
Toxicity to algae : 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

Triethylenetetramine:
Toxicity to algae : 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

M-Factor (Acute aquatic toxicity) : No data available

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Components:

Diethylenetriamine:
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

Components:

2,2',2''-nitrilotriethanol:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 16 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water

Diethylenetriamine:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 5.6 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.20

Triethylenetetramine:
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

M-Factor (Chronic aquatic toxicity) : No data available

Components:

2,2',2''-nitrilotriethanol:
Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 209

Triethylenetetramine:
Toxicity to microorganisms : EC50 (activated sludge): 800 mg/l
Exposure time: 0.5 h
Test Type: static test
Test substance: Fresh water

Components:

2-piperazin-1-ylethylamine:
Toxicity to soil dwelling organisms : LC50 (Eisenia fetida (earthworms)): 712 mg/kg
Exposure time: 56 d
Method: OECD Test Guideline 222

NOEC (Eisenia fetida (earthworms)): 500 mg/kg
Exposure time: 56 d

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Method: OECD Test Guideline 222

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

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment

Components:

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

Chronic aquatic toxicity : No data available

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

Persistence and degradability**Components:**

2,2',2''-nitrilotriethanol:
Biodegradability : Inoculum: activated sludge
Concentration: 5.7 mg/l
Result: Readily biodegradable.
Biodegradation: ca. 100 %
Exposure time: 5 d

2-piperazin-1-ylethylamine:
Biodegradability : Inoculum: activated sludge
Result: Not readily biodegradable.
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

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

Triethylenetetramine:
Biodegradability : Inoculum: activated sludge
Result: Not readily biodegradable.
Biodegradation: 0 %
Exposure time: 162 d

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Method: OECD Test Guideline 301D

Inoculum: activated sludge

Result: Not readily biodegradable.

Biodegradation: 20 %

Exposure time: 84 d

Method: Inherent Biodegradability: Modified SCAS Test

Components:

2-piperazin-1-ylethylamine:
Biochemical Oxygen Demand (BOD) : 5 mg/l
Incubation time: 5 d

Components:

2,2',2''-nitrilotriethanol:
Chemical Oxygen Demand (COD) : 1600 mgO₂/g
2-piperazin-1-ylethylamine:
Chemical Oxygen Demand (COD) : 560 mg/l
BOD/COD : No data available
ThOD : No data available
BOD/ThOD : No data available
Dissolved organic carbon (DOC) : No data available
Physico-chemical removability : No data available
Stability in water : No data available

Components:

2-piperazin-1-ylethylamine:
Photodegradation : Test Type: Air
Degradation (direct photolysis): 50 %
Diethylenetriamine:
Photodegradation : Test Type: Air
Rate constant: 500000
Degradation (direct photolysis): 50 %
Impact on Sewage Treatment : No data available

Bioaccumulative potential**Components:**

2,2',2''-nitrilotriethanol:
Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): < 3.9

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Exposure time: 42 d
 Test substance: Fresh water
 Method: flow-through test

2-piperazin-1-ylethylamine:
 Bioaccumulation : Species: Fish
 Remarks: Does not bioaccumulate.

Diethylenetriamine:
 Bioaccumulation : Species: Cyprinus carpio (Carp)
 Bioconcentration factor (BCF): 0.3 - 6.3
 Exposure time: 42 d
 Test substance: Fresh water
 Method: flow-through test
 Remarks: Bioaccumulation is unlikely.

Components:

2,2',2''-nitrilotriethanol:
 Partition coefficient: n-
 octanol/water : log Pow: -2.3 (77 °F / 25 °C)
 pH: 7.1

2-piperazin-1-ylethylamine:
 Partition coefficient: n-
 octanol/water : log Pow: -1.48 (68 °F / 20 °C)

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

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

Mobility in soil

Mobility : No data available

Components:

2,2',2''-nitrilotriethanol:
 Distribution among
 environmental compartments : Koc: 18

2-piperazin-1-ylethylamine:
 Distribution among
 environmental compartments : Koc: ca. 37000

Diethylenetriamine:
 Distribution among
 environmental compartments : Koc: 19111

Triethylenetetramine:
 Distribution among
 environmental compartments : Koc: 1584.9 - 5012
 Method: OECD Test Guideline 106

Stability in soil : No data available

Other adverse effects

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Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

Hazardous to the ozone layer

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

Global warming potential (GWP) : No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of contents/ container to an approved waste disposal plant.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.

SECTION 14. TRANSPORT INFORMATION**International Regulations**

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IATA

Not regulated as dangerous goods

IMDG

Not regulated as dangerous goods

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

Not applicable for product as supplied.

National Regulations**DOT Classification**

UN/ID/NA number	: NA 1993
Proper shipping name	: COMBUSTIBLE LIQUID, N.O.S. (TRIETHANOLAMINE)
Class	: CBL
Packing group	: III
Labels	: None
ERG Code	: 128
Marine pollutant	: no
Remarks	: Above applies only to containers over 119 gallons or 450 liters. Not regulated if shipped in packages less than or equal to 119 gallons (450 liters).

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**EPCRA - Emergency Planning and Community Right-to-Know Act****CERCLA Reportable Quantity**

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
2,2'-iminodiethanol	111-42-2	100	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
 Serious eye damage or eye irritation
 Respiratory or skin sensitisation
 Reproductive toxicity
 Specific target organ toxicity (single or repeated exposure)

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

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Air Act Section 112 (40 CFR 61).

California Prop. 65

WARNING: This product can expose you to chemicals including 2,2'-iminodiethanol, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

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

CH INV	: The formulation contains substances listed on the Swiss Inventory, On the inventory, or in compliance with the inventory
DSL	: All components of this product are on the Canadian DSL
AICS	: On the inventory, or in compliance with the inventory
NZIoC	: Not 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	: On the inventory, or in compliance with the inventory

Inventories

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

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

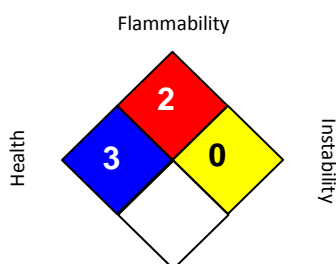
No substances are subject to a Significant New Use Rule.

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		2
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.

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ACGIH : USA. ACGIH Threshold Limit Values (TLV)
 ACGIH / TWA : 8-hour, time-weighted average

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