

ARALDITE® 2019 B

Version 1.0 Revision Date: 05/13/2020 SDS Number: 400000005372 Date of last issue: -
Date of first issue: 05/13/2020

Print Date 08/13/2020

SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2019 B

**Manufacturer or supplier's details**

Company name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980
The Woodlands,
TX 77387
United States of America (USA)

Telephone : Non-Emergency: (800) 257-5547

E-mail address of person responsible for the SDS : Global_Product_EHS_AdMat@huntsman.com

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

Recommended use of the chemical and restrictions on use

Recommended use : Hardener

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

Skin corrosion : Category 1B
Serious eye damage : Category 1
Skin sensitisation : Category 1
Reproductive toxicity : Category 2
Specific target organ toxicity - repeated exposure (Inhalation) : Category 1 (Respiratory Tract)

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H361 Suspected of damaging fertility or the unborn child.
H372 Causes damage to organs (Respiratory Tract) through prolonged or repeated exposure if inhaled.

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Precautionary statements : **Prevention:**
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/ vapours/ spray.
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.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
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.
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.
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 : Mixture

Chemical nature : Amines

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
4,7,10-trioxatridecane-1,13-diamine	4246-51-9	30 - 50
2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperaziny)ethyl]amino]butyl-terminated	68683-29-4	20 - 30
4-methylcyclohexane-1,3-diamine	13897-55-7	10 - 20
2-methylcyclohexane-1,3-diamine	13897-56-8	3 - 5
2-piperazin-1-ylethylamine	140-31-8	1 - 2.5

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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 : Consult a physician after significant exposure.
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.
- Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing : High volume water jet

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media

- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : Carbon dioxide (CO₂)
Carbon monoxide
Nitrogen oxides (NO_x)
- 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.
- 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.
Ensure adequate ventilation.
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 : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

- Technical measures : Ensure that eyewash stations and safety showers are close to the workstation location.
- Local/Total ventilation : Ensure adequate ventilation.
- 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.

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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.
Observe label precautions.
Keep in properly labelled containers.
- Materials to avoid : For incompatible materials please refer to Section 10 of this SDS.
- 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**

Contains no substances with occupational exposure limit values.

Personal protective equipment

- Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines
Recommended Filter type:
Combined particulates and organic vapour type
- Filter type : Filter type A-P
- Respiratory protection : In the case of vapour formation use a respirator with an approved filter.
- Hand protection
- Material : butyl-rubber
- Material : Ethyl Vinyl Alcohol Laminate (EVAL)
- Break through time : > 8 h
- Material : Nitrile rubber
- Break through time : 10 - 480 min
- Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).
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

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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	: yellow
Odour	: amine-like
Odour Threshold	: No data is available on the product itself.
pH	: No data is available on the product itself.
Freezing point	: No data is available on the product itself.
Melting point	: No data is available on the product itself.
Boiling point	: > 212 °F / > 100 °C
Flash point	: > 212 °F / > 100 °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	: 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	: 1 (73 °F / 23 °C)
Density	: No data is available on the product itself.
Solubility(ies) Water solubility	: No data is available on the product itself.

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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, dynamic : 10 Pas (68 °F / 20 °C)
thixotropic

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 : No hazards to be specially mentioned.

Conditions to avoid : None known.

Incompatible materials : Strong acids and strong bases
Strong oxidizing agents

Hazardous decomposition products : Carbon oxides
Nitrogen oxides (NOx)
Burning produces noxious and toxic fumes.

SECTION 11. TOXICOLOGICAL INFORMATION

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

Acute toxicity

Acute oral toxicity - Product : Acute toxicity estimate : 3,392 mg/kg
Method: Calculation method

Acute inhalation toxicity : No data available

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Acute dermal toxicity - Product : Acute toxicity estimate : > 5,000 mg/kg
Method: Calculation method

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

Skin corrosion/irritation**Components:**

4,7,10-trioxatridecane-1,13-diamine:

Species: Rabbit

Method: Other guidelines

Result: Corrosive after 3 minutes to 1 hour of exposure

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated:

Species: Rabbit

Assessment: Moderate skin irritant

Result: Irritating to skin.

4-methylcyclohexane-1,3-diamine:

Species: human skin

Method: OECD Test Guideline 435

Result: Causes burns.

2-methylcyclohexane-1,3-diamine:

Species: human skin

Method: OECD Test Guideline 435

Result: Causes burns.

2-piperazin-1-ylethylamine:

Species: Rabbit

Result: Causes burns.

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

4,7,10-trioxatridecane-1,13-diamine:

Species: Rabbit

Result: Risk of serious damage to eyes.

Assessment: Risk of serious damage to eyes.

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated:

Species: Rabbit

Result: slight irritation

Assessment: Mild eye irritant

4-methylcyclohexane-1,3-diamine:

Result: Corrosive

2-piperazin-1-ylethylamine:

Species: Rabbit

Result: Risk of serious damage to eyes.

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Respiratory or skin sensitisation**Components:**

4,7,10-trioxatridecane-1,13-diamine:

Exposure routes: Skin

Species: Other

Result: May cause sensitisation by skin contact.

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: May cause sensitisation by skin contact.

4-methylcyclohexane-1,3-diamine:

Exposure routes: Skin

Result: Substance is not considered to be potential skin sensitiser.

2-methylcyclohexane-1,3-diamine:

Exposure routes: Skin

Result: Substance is not considered to be potential skin sensitiser.

2-piperazin-1-ylethylamine:

Exposure routes: Skin

Species: Guinea pig

Assessment: The product is a skin sensitiser, sub-category 1B.

Method: OECD Test Guideline 406

Result: May cause sensitisation by skin contact.

Components:

4,7,10-trioxatridecane-1,13-diamine:

Assessment: May be harmful if swallowed or in contact with skin., Causes severe skin burns and eye damage.
May cause an allergic skin reaction.

Germ cell mutagenicity**Components:**

4,7,10-trioxatridecane-1,13-diamine:

Genotoxicity in vitro

: Test Type: Ames test

Test system: Salmonella typhimurium

Concentration: 5000 ug/plate

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Test Type: Micronucleus test

Test system: Chinese hamster fibroblasts

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 487

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary cells

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Metabolic activation: with and without metabolic activation
 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

Components:

2-piperazin-1-ylethylamine:
 Genotoxicity in vivo

: Application Route: Intraperitoneal injection
 Dose: 175 - 560 mg/kg
 Method: OECD Test Guideline 474
 Result: negative

Components:

4,7,10-trioxatridecane-1,13-diamine:
 Germ cell mutagenicity-
 Assessment

: In vitro tests did not show mutagenic effects

Carcinogenicity

No data available

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:**

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4,7,10-trioxatridecane-1,13-diamine:

Effects on fertility : Species: Rat, male and female
Application Route: Oral
Dose: 100,300,1000 (600 day7) mg/kg
Frequency of Treatment: 7 days/week
General Toxicity - Parent: No observed adverse effect level:
600 mg/kg body weight
Fertility: No observed adverse effect level: 600 mg/kg body
weight
Early Embryonic Development: No observed adverse effect
level: 600 mg/kg body weight
Method: OECD Test Guideline 422

4-methylcyclohexane-1,3-diamine:

Application Route: Oral
Method: OECD Test Guideline 422

2-methylcyclohexane-1,3-diamine:

Application Route: Oral
Method: OECD Test Guideline 422

Components:**4-methylcyclohexane-1,3-diamine:**

Effects on foetal development : Application Route: Oral
Method: OECD Test Guideline 422
Result: No teratogenic effects

2-methylcyclohexane-1,3-diamine:

Application Route: Oral
Method: OECD Test Guideline 422
Result: No teratogenic effects

Components:**4,7,10-trioxatridecane-1,13-diamine:**

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility,
or on development, based on animal experiments.

2-piperazin-1-ylethylamine:

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and
fertility, and/or on development, based on animal experiments.

STOT - single exposure

No data available

STOT - repeated exposure**Components:****2-piperazin-1-ylethylamine:**

Exposure routes: Inhalation
Target Organs: Respiratory Tract
Assessment: Causes damage to organs through prolonged or repeated exposure.

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Repeated dose toxicity**Components:**

4,7,10-trioxatridecane-1,13-diamine:

Species: Rat, male and female

NOAEL: < 100 mg/kg

Application Route: oral (gavage)

Number of exposures: daily

Dose: 100, 300, 1000(600,day7)mg/kg

Control Group: yes

Method: OECD Test Guideline 422

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

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

Components:

4,7,10-trioxatridecane-1,13-diamine:

Repeated dose toxicity - Assessment : May be harmful if swallowed or in contact with skin., Causes severe skin burns and eye damage.

No adverse effect has been observed in chronic toxicity tests.

Aspiration toxicity

No data available

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Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

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:**

4,7,10-trioxatridecane-1,13-diamine:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): > 1,000 mg/l
Exposure time: 96 h
Test Type: static test
Method: DIN 38412

4-methylcyclohexane-1,3-diamine:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 120 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

2-methylcyclohexane-1,3-diamine:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 120 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

2-piperazin-1-ylethylamine:

Toxicity to fish : LC50: 2,190 mg/l
Exposure time: 96 h

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Test Type: static test
Test substance: Fresh water

Components:

4,7,10-trioxatridecane-1,13-diamine:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 218.16 mg/l
Exposure time: 48 h
Test Type: static test
Method: Directive 67/548/EEC, Annex V, C.2.

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1,000 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

4-methylcyclohexane-1,3-diamine:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 34.1 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

2-methylcyclohexane-1,3-diamine:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 34.1 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

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.

Components:

4,7,10-trioxatridecane-1,13-diamine:

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l
Exposure time: 72 h
Test Type: static test
Method: DIN 38412

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated:

Toxicity to algae/aquatic plants : EC50 (No information available.): > 1,000 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

4-methylcyclohexane-1,3-diamine:

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): > 220 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

2-methylcyclohexane-1,3-diamine:

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): > 220 mg/l
Exposure time: 72 h

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Method: OECD Test Guideline 201

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

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

Toxicity to fish (Chronic toxicity) : No data available

Components:

4-methylcyclohexane-1,3-diamine:
 Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 3.2 mg/l
 Exposure time: 21 d
 Method: OECD Test Guideline 211

2-methylcyclohexane-1,3-diamine:
 Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 3.2 mg/l
 Exposure time: 21 d
 Method: OECD Test Guideline 211

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

Components:

4,7,10-trioxatridecane-1,13-diamine:
 Toxicity to microorganisms : (Pseudomonas putida): 221.9 mg/l
 End point: Growth rate
 Exposure time: 17 h
 Test Type: static test
 Method: DIN 38412

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
 Method: OECD Test Guideline 222

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

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Ecotoxicology Assessment

Components:

4-methylcyclohexane-1,3-diamine:
Acute aquatic toxicity : Harmful to aquatic life.

Components:

4-methylcyclohexane-1,3-diamine:
Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

Persistence and degradability**Components:**

4,7,10-trioxatridecane-1,13-diamine:
Biodegradability : Inoculum: activated sludge
Concentration: 30 mg/l
Result: Not readily biodegradable.
Biodegradation: < 10 %
Exposure time: 60 d
Method: OECD Test Guideline 301B

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated:
Biodegradability : Result: Not readily biodegradable.

4-methylcyclohexane-1,3-diamine:
Biodegradability : Result: Not readily biodegradable.
Biodegradation: < 3 %
Exposure time: 28 d
Method: OECD Test Guideline 301C

2-methylcyclohexane-1,3-diamine:
Biodegradability : Result: Not biodegradable
Biodegradation: < 3 %
Exposure time: 28 d
Method: OECD Test Guideline 301C

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

Components:

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

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Components:

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 %
 Impact on Sewage Treatment : No data available

Bioaccumulative potential**Components:**

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

Components:

4,7,10-trioxatridecane-1,13-diamine:
 Partition coefficient: n-octanol/water : log Pow: -1.25 (77 °F / 25 °C)
 pH: 11.1
 Method: OECD Test Guideline 107
 2-piperazin-1-ylethylamine:
 Partition coefficient: n-octanol/water : log Pow: -1.48 (68 °F / 20 °C)

Mobility in soil

Mobility : No data available

Components:

2-piperazin-1-ylethylamine:
 Distribution among environmental compartments : Koc: ca. 37000
 Stability in soil : No data available

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Other adverse effects

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 : No data available

Global warming potential (GWP) : No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : Do not dispose of waste into sewer.
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.

SECTION 14. TRANSPORT INFORMATION**International Regulations**

IATA
UN/ID No. : UN 2735

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Proper shipping name : Amines, liquid, corrosive, n.o.s.
(TRIOXATRIDEKANEDIAMINE, 4-METHYLCYCLOHEXANE-1, 3-DIAMINE)

Class : 8

Packing group : II

Labels : Corrosive

Packing instruction (cargo aircraft) : 855

Packing instruction (passenger aircraft) : 851

IMDG

UN number : UN 2735

Proper shipping name : AMINES, LIQUID, CORROSIVE, N.O.S.
(TRIOXATRIDEKANEDIAMINE, 4-METHYLCYCLOHEXANE-1, 3-DIAMINE)

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**DOT Classification**

UN/ID/NA number : UN 2735

Proper shipping name : AMINES, LIQUID, CORROSIVE, N.O.S.
(TRIOXATRIDEKANEDIAMINE, 4-METHYLCYCLOHEXANE-1, 3-DIAMINE)

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

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

SARA 311/312 Hazards : Respiratory or skin sensitisation
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)

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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).

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 : This product contains one or several components listed in the Canadian NDSL.

AICS : Not in compliance with the inventory

NZIoC : Not in compliance with the inventory

ENCS : Notified. Allowed to be imported / manufactured only by the notifiers. Please contact your Huntsman sales representative for more information.

KECI : Not in compliance with the inventory

PICCS : Not in compliance with the inventory

IECSC : Notified. Allowed to be imported / manufactured only by the notifiers. Please contact your Huntsman sales representative for more information.

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.

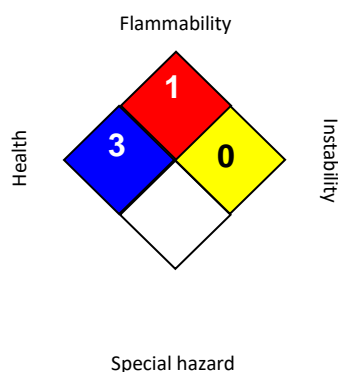
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

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		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

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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.

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