

ARALDITE® EP 200 B US

Version 2.0 Revision Date: 03/15/2023 SDS Number: 400001017685 Date of last issue: 09/21/2018
 Date of first issue: 08/31/2016

Print Date 10/24/2023

SECTION 1. IDENTIFICATION

Product name : ARALDITE® EP 200 B US

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 : 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 the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Skin corrosion : Category 1B

Serious eye damage : Category 1

Skin sensitisation : Category 1

Reproductive toxicity : Category 2

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.

Precautionary statements : **Prevention:**
 P201 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 P261 Avoid breathing mist or vapours.
 P264 Wash skin thoroughly after handling.

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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 waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Polyamines

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
kaolin	1332-58-7	30 - 50
3,3'-oxybis(ethyleneoxy)bis(propylamine)	4246-51-9	10 - 20
Reaction product of a substituted cycloaliphatic diamine with N-[substituted aliphatic oxiranes]	–	1 - 5
cyclohex-1,2-ylenediamine	694-83-7	1 - 5
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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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.
- 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.
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

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- 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 : Carbon dioxide (CO₂)
Carbon monoxide
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.
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

- 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.
Avoid formation of aerosol.

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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.
 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.

- 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**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
kaolin	1332-58-7	TWA (Respirable particulate matter)	2 mg/m ³	ACGIH
		TWA (total dust)	15 mg/m ³	OSHA Z-1
		TWA (respirable fraction)	5 mg/m ³	OSHA Z-1
		TWA (Respirable)	5 mg/m ³	NIOSH REL
		TWA (total)	10 mg/m ³	NIOSH REL
		TWA (Total dust)	10 mg/m ³	OSHA P0
		TWA (respirable dust fraction)	5 mg/m ³	OSHA P0
		PEL (respirable)	0.05 mg/m ³	OSHA CARC
Diethylenetriamine	111-40-0	TWA	1 ppm	ACGIH
		TWA	1 ppm	NIOSH REL

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			4 mg/m3	
		TWA	1 ppm	OSHA P0
			4 mg/m3	

Personal protective equipment

Respiratory protection : **W A R N I N G !** This product contains quartz, which has been classified by IARC as carcinogenic for humans (Group 1), and which can cause silicosis and lung cancer following exposure to respirable dust. It is therefore important to take particular care to avoid inhalation exposure when mechanically processing cured material (e.g. grinding, sanding, sawing).

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).
 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 : amber

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Odour	:	No data is available on the product itself.
Odour Threshold	:	No data is available on the product itself.
pH	:	No data is available on the product itself.
Melting point/freezing point	:	No data is available on the product itself.
Boiling point	:	No data is available on the product itself.
Flash point	:	> 212 °F / > 100 °C
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.
Density	:	1.23 - 1.31 g/cm ³
Solubility(ies)		
Water solubility	:	No data is available on the product itself.
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.
Decomposition temperature	:	No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	:	No data is available on the product itself.
Viscosity	:	No data is available on the product itself.
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.

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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 : None known.
- Hazardous decomposition products : No decomposition if stored and applied as directed.
- Hazardous decomposition products : carbon dioxide
carbon monoxide
Nitrogen oxides (NOx)

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

- Acute oral toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method
- Acute inhalation toxicity : Acute toxicity estimate: 8.75 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method
- Acute dermal toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Components:**3,3'-oxybis(ethyleneoxy)bis(propylamine):**

- Acute oral toxicity : LD50 (Rat, male and female): 2,850 - 3,160 mg/kg
Method: OECD Test Guideline 401
Assessment: The component/mixture is low toxic after single ingestion.
- Acute dermal toxicity : LD50 (Rat, male and female): > 2,150 mg/kg
Method: OECD Test Guideline 402
Assessment: The component/mixture is low toxic after single contact with skin.

cyclohex-1,2-ylenediamine:

- Acute oral toxicity : LD50 (Rat, male and female): 1,170 mg/kg
Method: OECD Test Guideline 401
GLP: no
Assessment: The component/mixture is moderately toxic after

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single ingestion.

Acute dermal toxicity : LD50 (Rat, male and female): 1,870 mg/kg
Method: OECD Test Guideline 402
GLP: no
Assessment: The component/mixture is moderately toxic after single contact with skin.

Diethylenetriamine:

Acute oral toxicity : LD50 (Rat, male): 1,553 mg/kg
Assessment: The component/mixture is moderately toxic after single ingestion.

Acute inhalation toxicity : LC50 (Rat, male and female): 0.07 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
GLP: yes
Assessment: The component/mixture is highly toxic after short term inhalation.

Acute dermal toxicity : LD50 (Rabbit): 1,045 mg/kg
GLP: no

Skin corrosion/irritation**Components:****3,3'-oxybis(ethyleneoxy)bis(propylamine):**

Species : Rabbit
Method : Other guidelines
Result : Corrosive after 3 minutes to 1 hour of exposure

Reaction product of a substituted cycloaliphatic diamine with N-[substituted aliphatic oxiranes]:

Result : Skin irritation

cyclohex-1,2-ylenediamine:

Species : Rabbit
Assessment : Causes severe burns.
Method : OECD Test Guideline 404
Result : Corrosive after 3 minutes or less of exposure
GLP : no

Diethylenetriamine:

Species : Rabbit
Assessment : Causes burns.
Result : Causes burns.
GLP : no

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Serious eye damage/eye irritation**Components:****3,3'-oxybis(ethyleneoxy)bis(propylamine):**

Species : Rabbit
Result : Risk of serious damage to eyes.
Assessment : Risk of serious damage to eyes.

Reaction product of a substituted cycloaliphatic diamine with N-[substituted aliphatic oxiranes]:

Result : Eye irritation

cyclohex-1,2-ylenediamine:

Species : Rabbit
Result : Risk of serious damage to eyes.
Assessment : Risk of serious damage to eyes.
GLP : no

Diethylenetriamine:

Species : Rabbit
Result : Corrosive
Assessment : Corrosive
GLP : no

Respiratory or skin sensitisation**Components:****3,3'-oxybis(ethyleneoxy)bis(propylamine):**

Exposure routes : Skin
Species : Other
Result : May cause sensitisation by skin contact.

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

Reaction product of a substituted cycloaliphatic diamine with N-[substituted aliphatic oxiranes]:

Exposure routes : Skin contact
Result : Probability or evidence of low to moderate skin sensitisation rate in humans

Diethylenetriamine:

Exposure routes : Skin
Species : Mouse
Assessment : Probability or evidence of low to moderate skin sensitisation rate in humans
Method : OECD Test Guideline 429
Result : Probability or evidence of low to moderate skin sensitisation rate in humans
GLP : yes

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Remarks : Causes sensitisation.

Exposure routes : Respiratory Tract

Species : Mouse

Result : Does not cause respiratory sensitisation.

Germ cell mutagenicity**Components:****3,3'-oxybis(ethyleneoxy)bis(propylamine):**

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

Germ cell mutagenicity - Assessment : In vitro tests did not show mutagenic effects

cyclohex-1,2-ylenediamine:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
 Test system: Human lymphocytes
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 473
 Result: negative
 GLP: yes

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

Test Type: gene mutation test
 Test system: mouse lymphoma cells
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 490
 Result: negative
 GLP: yes

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Diethylenetriamine:

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: negative
GLP: yes

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Metabolic activation: without metabolic activation
Result: negative
GLP: yes

Test Type: gene mutation test
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Result: negative

Test Type: gene mutation test
Test system: rat hepatocytes
Metabolic activation: with and without metabolic activation
Result: negative

Genotoxicity in vivo : Test Type: Transgenic rodent somatic cell gene mutation assay
Species: Mouse (male)
Cell type: Bone marrow
Application Route: Oral
Exposure time: 5 and 28 days
Dose: 10 mL/kg
Method: OECD Test Guideline 488
Result: negative
GLP: yes

Test Type: gene mutation test
Species: Drosophila melanogaster (vinegar fly) (male)
Exposure time: 22 and 24 hours
Result: negative
GLP: yes

Test Type: Micronucleus test
Species: Mouse (male and female)
Cell type: Bone marrow
Application Route: Oral
Dose: 85, 283 and 850 mg/kg bw
Method: OECD Test Guideline 474
Result: negative
GLP: yes

Carcinogenicity**Components:****Diethylenetriamine:**

Species : Mouse, male

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Application Route : Dermal
 Dose : 56.3 mg/kg
 Frequency of Treatment : 3 days/week
 NOEL : 56.3 mg/kg bw/day
 Result : negative
 GLP : yes

IARC Group 1: Carcinogenic to humans
 kaolin 1332-58-7
 (Silica dust, crystalline)

OSHA OSHA specifically regulated carcinogen
 kaolin 1332-58-7
 (crystalline silica)

NTP Known to be human carcinogen
 kaolin 1332-58-7
 (Silica, Crystalline (Respirable Size))

Reproductive toxicity**Components:****3,3'-oxybis(ethyleneoxy)bis(propylamine):**

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: NOAEL: 600 mg/kg body weight
 Fertility: NOAEL: 600 mg/kg body weight
 Early Embryonic Development: NOAEL: 600 mg/kg body weight
 Method: OECD Test Guideline 422

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

cyclohex-1,2-ylenediamine:

Effects on foetal development : Test Type: Pre-natal
 Species: Rat, females
 Application Route: Oral
 Dose: 0/50/150/500 mg/kg bw/d
 Duration of Single Treatment: 15 d
 Frequency of Treatment: 7 days/week
 General Toxicity Maternal: NOAEL: 150 mg/kg body weight
 Developmental Toxicity: NOAEL: 150 mg/kg body weight
 Method: OECD Test Guideline 414
 Result: No teratogenic effects
 GLP: yes
 Remarks: Information given is based on data obtained from similar substances.

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

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child.

Diethylenetriamine:

Effects on fertility : Test Type: Reproduction / Developmental Toxicity Screening Test
 Species: Rat, male and female
 Application Route: Oral
 Dose: 30/100/300 mg/kg bw/day
 Frequency of Treatment: 7 days/week
 General Toxicity - Parent: NOAEL: 100 mg/kg wet weight
 General Toxicity F1: NOAEL: 30 mg/kg body weight
 Method: OECD Test Guideline 421
 GLP: yes

Effects on foetal development : Test Type: reproductive and developmental toxicity study
 Species: Rat, male and female
 Application Route: Oral
 General Toxicity Maternal: NOAEL: 100 mg/kg body weight
 Developmental Toxicity: NOAEL: 30 mg/kg body weight
 Method: OECD Test Guideline 421
 Result: No adverse effects
 GLP: yes

Test Type: Pre-natal
 Species: Rat, females
 Application Route: Oral
 Dose: 0/25/100/250 milligram per kilogram
 Duration of Single Treatment: 14 d
 General Toxicity Maternal: NOAEL: 100 mg/kg body weight
 Developmental Toxicity: NOEL: 100 mg/kg body weight
 Method: OECD Test Guideline 414
 GLP: yes

STOT - single exposure**Components:****cyclohex-1,2-ylenediamine:**

Exposure routes : Inhalation
 Target Organs : Upper respiratory tract
 Assessment : May cause respiratory irritation.

Diethylenetriamine:

Exposure routes : Inhalation
 Target Organs : Respiratory Tract
 Assessment : May cause respiratory irritation.

STOT - repeated exposure

No data available

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Repeated dose toxicity**Components:****3,3'-oxybis(ethyleneoxy)bis(propylamine):**

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

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.

cyclohex-1,2-ylenediamine:

Species : Rat, male and female
 NOAEL : 150 mg/kg
 Application Route : Oral
 Exposure time : 90 d
 Number of exposures : 7 days/week
 Dose : 0/50/150/500 mg/kg bw/d
 Method : OECD Test Guideline 408
 GLP : yes

Species : Rat, male
 NOAEL : 50 mg/kg
 Application Route : Oral
 Exposure time : 90 d
 Number of exposures : 7 days/week
 Dose : 0/50/150/500 mg/kg bw/d
 Method : OECD Test Guideline 408
 GLP : yes

Diethylenetriamine:

Species : Rat, male and female
 NOAEL : 70 - 80 mg/kg
 LOAEL : 530 - 620 mg/kg
 Application Route : oral (feed)
 Exposure time : 90 days
 Number of exposures : 7 days/week
 Dose : 1000, 7500, or 15000 ppm
 Method : OECD Test Guideline 451
 GLP : yes

Species : Rat, male and female
 NOEC : 0.55 mg/l
 Application Route : inhalation (vapour)
 Exposure time : 15 days 6 h
 Number of exposures : 7 days/week
 Dose : 0/130 ppm

Species : Rat, male and female

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NOAEL : 114 mg/kg
Application Route : Dermal
Number of exposures : 6 days/week
Dose : 0.4 mls of a 100 mg/cc solutio

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

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:****3,3'-oxybis(ethyleneoxy)bis(propylamine):**

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

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

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

Toxicity to microorganisms : (Pseudomonas putida): 221.9 mg/l
End point: Growth rate
Exposure time: 17 h
Test Type: static test
Method: DIN 38412

Reaction product of a substituted cycloaliphatic diamine with N-[substituted aliphatic oxiranes]:

Toxicity to fish : LC50 : ca. > 100 mg/l
Exposure time: 96 h
Method: QSAR

Toxicity to daphnia and other : EC50: ca. > 100 mg/l
aquatic invertebrates : Exposure time: 48 h

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Method: QSAR

Toxicity to algae/aquatic plants : EC50: ca. > 100 mg/l
Exposure time: 72 h
Method: QSAR

cyclohex-1,2-ylenediamine:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 1,825 mg/l
End point: mortality
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203
GLP: no
Remarks: Information given is based on data obtained from similar substances.

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 76 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

EC10 (Pseudokirchneriella subcapitata (green algae)): 35 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10 (Daphnia magna (Water flea)): 13 mg/l
Exposure time: 21 d
Test Type: semi-static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 211
GLP: yes

Toxicity to microorganisms : EC50 (Pseudomonas putida): 291 mg/l
Exposure time: 20 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
GLP: no
Remarks: Information given is based on data obtained from similar substances.

Diethylenetriamine:

Toxicity to fish : LC50 (Poecilia reticulata (guppy)): 430 mg/l
End point: mortality
Exposure time: 96 h
Test Type: semi-static test

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- Analytical monitoring: no
 Test substance: Fresh water
 Method: Directive 67/548/EEC, Annex V, C.1.
 GLP: yes
- 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
 Analytical monitoring: no
 Test substance: Fresh water
 Method: OECD Test Guideline 201
 GLP: yes
- Toxicity to fish (Chronic toxicity) : NOEC (Gasterosteus aculeatus (threespine stickleback)): 10 mg/l
 Exposure time: 28 d
 Test Type: semi-static test
 Analytical monitoring: no
 Test substance: Fresh water
 Method: OECD Test Guideline 210
 GLP: yes
- 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
 Analytical monitoring: no
 Test substance: Fresh water
 Method: Directive 67/548/EEC, Annex V, C.20
 GLP: yes
- Toxicity to microorganisms : EC50 (Bacteria): 32.7 mg/l
 Exposure time: 3 h
 Test Type: static test
 Test substance: Fresh water
 GLP: yes
- NOEC (Bacteria): 6 mg/l
 Exposure time: 3 h
 Test Type: static test
 Test substance: Fresh water
 GLP: yes
- Toxicity to soil dwelling : EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg

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organisms Exposure time: 56 d
Method: OECD Test Guideline 222
GLP: yes

Ecotoxicology Assessment

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

Persistence and degradability**Components:****3,3'-oxybis(ethyleneoxy)bis(propylamine):**

Biodegradability : Inoculum: activated sludge
Concentration: 30 mg/l
Result: Not readily biodegradable.
Biodegradation: < 10 %
Exposure time: 60 d
Method: OECD Test Guideline 301B

Reaction product of a substituted cycloaliphatic diamine with N-[substituted aliphatic oxiranes]:

Biodegradability : Result: Not biodegradable

cyclohex-1,2-ylenediamine:

Biodegradability : aerobic
Inoculum: Sewage (STP effluent)
Concentration: 1.13 mg/l
Result: Readily biodegradable.
Biodegradation: 100 %
Exposure time: 28 d
Method: OECD Test Guideline 301D
Test substance: Fresh water
GLP: yes

Stability in water : Method: No information available.
GLP: No information available.
Remarks: see user defined free text

Photodegradation : Rate constant: < .001
GLP: no

Diethylenetriamine:

Biodegradability : aerobic
Inoculum: activated sludge, non-adapted
Result: Readily biodegradable.
Biodegradation: 87 %
Exposure time: 21 d
Method: OECD Test Guideline 301D
Test substance: Fresh water

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

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Bioaccumulative potential**Components:****3,3'-oxybis(ethyleneoxy)bis(propylamine):**

Partition coefficient: n-octanol/water : log Pow: -1.25 (77 °F / 25 °C)
pH: 11.1
Method: OECD Test Guideline 107

Reaction product of a substituted cycloaliphatic diamine with N-[substituted aliphatic oxiranes]:

Bioaccumulation : Bioconcentration factor (BCF): 3.16

Partition coefficient: n-octanol/water : log Pow: ca. 0.176

cyclohex-1,2-ylenediamine:

Partition coefficient: n-octanol/water : log Pow: < -0.9 (68 °F / 20 °C)
pH: 7
Method: OECD Test Guideline 107
GLP: yes

log Pow: < -0.02 (68 °F / 20 °C)
pH: 12
Method: OECD Test Guideline 107
GLP: yes

Diethylenetriamine:

Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 0.3 - 6.3
Exposure time: 42 d
Concentration: 0.2 - 2 mg/l
Test substance: Fresh water
Method: OECD Test Guideline 305C
Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: -1.58 (68 °F / 20 °C)
pH: > 12
Method: Calculation method
GLP: no

log Pow: -5.58 (68 °F / 20 °C)
pH: 7
Method: Calculation method
GLP: no

Mobility in soil**Components:****Diethylenetriamine:**

Distribution among environmental compartments : Medium: Soil
Koc: 19111

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Method: Sediment and Soil Adsorption Isotherm

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).

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**

UN/ID No. : UN 2735
Proper shipping name : Polyamines, liquid, corrosive, n.o.s.
(TRIOXATRIDEKANEDIAMINE, 1,2-DIAMINO
CYCLOHEXANE)
Class : 8
Packing group : II
Labels : Corrosive
Packing instruction (cargo
aircraft) : 855
Packing instruction
(passenger aircraft) : 851

IMDG-Code

UN number : UN 2735
Proper shipping name : POLYAMINES, LIQUID, CORROSIVE, N.O.S.
(TRIOXATRIDEKANEDIAMINE, 1,2-DIAMINO
CYCLOHEXANE)
Class : 8
Packing group : II
Labels : 8
EmS Code : F-A, S-B
Marine pollutant : no

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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 2735
Proper shipping name : Polyamines, liquid, corrosive, n.o.s.
(TRIOXATRIDECANEDIAMINE, 1,2-DIAMINO
CYCLOHEXANE)
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 : Skin corrosion or irritation
Serious eye damage or eye irritation
Respiratory or skin sensitisation
Reproductive toxicity

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) $\geq 0.1\%$, as defined by the U.S. Clean Air Act Section 112 (40 CFR 61

California Prop. 65

This product contains a chemical that is at or below California Propositions 65's "safe harbor level" as determined via a risk assessment. Therefore, the chemical is not required to be listed as a Prop 65 chemical on the SDS or label.

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

DSL : This product contains one or several components listed in the Canadian NDSL.
AIIIC : Not in compliance with the inventory
ENCS : Not in compliance with the inventory
KECI : Not in compliance with the inventory
PICCS : Not in compliance with the inventory

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- IECSC : Not in compliance with the inventory
- TCSI : Not in compliance with the inventory
- TSCA : All substances listed as active on the TSCA inventory

Inventories

AllC (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.

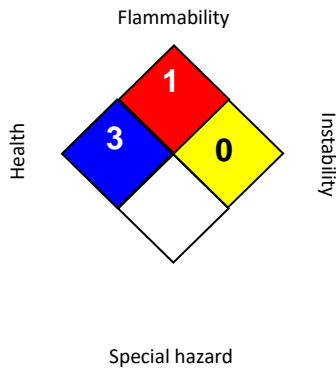
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

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

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 : 03/15/2023
- ACGIH : USA. ACGIH Threshold Limit Values (TLV)
- NIOSH REL : USA. NIOSH Recommended Exposure Limits
- OSHA CARC : OSHA Specifically Regulated Chemicals/Carcinogens
- OSHA P0 : USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
- OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
- 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 CARC / PEL : Permissible exposure limit (PEL)

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OSHA P0 / TWA : 8-hour time weighted average
OSHA Z-1 / TWA : 8-hour time weighted average

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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.

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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