



SAFETY DATA SHEET



Enriching lives through innovation

ARALDITE® 2015-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	02/21/2022	400000004944	03/11/2019
			Date of first issue: 08/30/2017

Print Date 05/04/2022

SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2015-1 HARDENER

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 the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin corrosion : Category 1A

Serious eye damage : Category 1

Skin sensitisation : Category 1

Short-term (acute) aquatic hazard : Category 3

Chronic aquatic 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.
H402 Harmful to aquatic life.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**

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P261 Avoid breathing mist or vapours.
 P264 Wash skin thoroughly after handling.
 P272 Contaminated work clothing must not be allowed out of the workplace.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
 P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
 P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
 P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
 P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
 P363 Wash contaminated clothing before reuse.
 P391 Collect spillage.

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)
barium sulfate	7727-43-7	30 - 50
2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated	68683-29-4	30 - 50
bis(isopropyl)naphthalene	38640-62-9	5 - 10
Triethylenetetramine, propoxylated	26950-63-0	5 - 10
2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine	25513-64-8	5 - 10



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2,4,6-tris(dimethylaminomethyl)phenol

90-72-2

1 - 5

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 : 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.

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Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

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

SECTION 6. ACCIDENTAL RELEASE MEASURES

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

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Normal measures for preventive fire protection.



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Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Keep eye wide open while rinsing.
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dust fraction)

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 : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material : butyl-rubber
 Material : Ethyl Vinyl Alcohol Laminate (EVAL)
 Break through time : > 8 h

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

Remarks : 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.



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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Colour	: beige
Odour	: amine-like
Odour Threshold	: No data is available on the product itself.
pH	: ca. 11 (68 °F / 20 °C) Concentration: 500 g/l
Melting point/freezing point	: No data available
Boiling point	: > 392 °F / > 200 °C
Flash point	: > 212 °F / > 100 °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.
Density	: 1.42 g/cm ³ (73 °F / 23 °C)
Solubility(ies)	
Water solubility	: insoluble
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	: > 392 °F / > 200 °C
Self-Accelerating decomposition temperature	: No data is available on the product itself.

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Viscosity

Viscosity, dynamic : 50,000 - 100,000 mPa.s (68 °F / 20 °C)

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

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

Molecular weight : No data available

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 : None known.

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

No decomposition if stored and applied as directed.

Hazardous decomposition products : carbon monoxide
 carbon dioxide
 Nitrogen oxides (NO_x)

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: 58.33 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

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

Acute oral toxicity : LD50 (Rat): > 15.4 g/kg

Acute dermal toxicity : LD50 (Rabbit): > 3 g/kg

bis(isopropyl)naphthalene:

Acute oral toxicity : LD50 (Rat, male and female): 4,130 - 4,320 mg/kg
 Method: OECD Test Guideline 401
 Assessment: The component/mixture is low toxic after single ingestion.

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.64 mg/l
 Exposure time: 4 h
 Test atmosphere: dust/mist
 Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rat, male and female): > 4,500 mg/kg
 Method: OECD Test Guideline 402
 Assessment: The substance or mixture has no acute dermal toxicity

Triethylenetetramine, propoxylated:

Acute oral toxicity : LD50 Oral (Rat): 4,500 mg/kg

Acute dermal toxicity : LD50 (Rat): >= 2,150 mg/kg

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Acute oral toxicity : LD50 (Rat): 910 mg/kg
 Method: OECD Test Guideline 401

2,4,6-tris(dimethylaminomethyl)phenol:

Acute oral toxicity : LD50 (Rat, male and female): 2,169 mg/kg
 Method: OECD Test Guideline 401
 Assessment: The component/mixture is low toxic after single ingestion.

Acute dermal toxicity : LD50 (Rat, male): > 1 ml/kg
 Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation**Components:****barium sulfate:**

Species : human skin
 Assessment : No skin irritation
 Result : No skin irritation



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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.

bis(isopropyl)naphthalene:

Species : Rabbit
 Exposure time : 4 h
 Assessment : No skin irritation
 Method : OECD Test Guideline 404
 Result : Normally reversible injuries

Triethylenetetramine, propoxylated:

Species : Rabbit
 Exposure time : 72 h
 Method : OECD Test Guideline 404
 Result : Irritating to skin.

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Species : Rabbit
 Assessment : Causes severe burns.
 Result : Corrosive after 3 minutes or less of exposure

2,4,6-tris(dimethylaminomethyl)phenol:

Species : Rabbit
 Method : OECD Test Guideline 404
 Result : Corrosive after 1 to 4 hours of exposure

Species : synthetic macromolecular bio-barrier
 Method : OECD Test Guideline 435
 Result : Corrosive after 1 to 4 hours of exposure

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

Species : Rabbit
 Result : No eye irritation
 Assessment : No eye irritation
 Method : OECD Test Guideline 405

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

bis(isopropyl)naphthalene:

Species : Rabbit
 Result : No eye irritation



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Assessment : No eye irritation
 Method : OECD Test Guideline 405

Triethylenetetramine, propoxylated:

Species : Rabbit
 Result : Eye irritation
 Assessment : Irritating to eyes.

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Species : Rabbit
 Result : Corrosive
 Method : OECD Test Guideline 405

2,4,6-tris(dimethylaminomethyl)phenol:

Species : Rabbit
 Result : Corrosive
 Assessment : Corrosive
 Method : Other guidelines

Respiratory or skin sensitisation**Components:****barium sulfate:**

Exposure routes : Skin
 Species : Mouse
 Method : OECD Test Guideline 429
 Result : Does not cause skin sensitisation.

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.

bis(isopropyl)naphthalene:

Test Type : Maximisation Test
 Exposure routes : Skin
 Species : Guinea pig
 Method : OECD Test Guideline 406
 Result : Does not cause skin sensitisation.

Assessment : May be harmful if swallowed or if inhaled.
 Does not cause skin sensitisation.

Triethylenetetramine, propoxylated:

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



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2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Exposure routes : Skin
 Species : Guinea pig
 Method : OECD Test Guideline 406
 Result : The product is a skin sensitiser, sub-category 1A.

2,4,6-tris(dimethylaminomethyl)phenol:

Exposure routes : Skin
 Species : Guinea pig
 Method : OECD Test Guideline 406
 Result : Does not cause skin sensitisation.

Germ cell mutagenicity**Components:****barium sulfate:**

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

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

bis(isopropyl)naphthalene:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
 Test system: Chinese hamster ovary cells
 Concentration: 9.5 - 60 µg/L
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 473
 Result: negative

Test Type: Ames test
 Test system: Salmonella typhimurium
 Concentration: 92 mg/plate
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 471
 Result: negative

Test Type: In vitro mammalian cell gene mutation test
 Test system: mouse lymphoma cells
 Concentration: 40 - 60 mg/ml
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 476
 Result: negative

Genotoxicity in vivo : Test Type: Micronucleus test
 Species: Mouse (male and female)
 Application Route: Intraperitoneal injection
 Dose: 1.92 g/kg



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Method: OECD Test Guideline 474
Result: negative

Germ cell mutagenicity - Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Triethylenetetramine, propoxylated:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster ovary cells
Method: OECD Test Guideline 476
Result: negative

Test Type: Ames test
Test system: Salmonella typhimurium
Method: OECD Test Guideline 471
Result: positive

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Method: OECD Test Guideline 473
Result: negative

Germ cell mutagenicity - Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: 5000 ug/plate
Metabolic activation: with and without metabolic activation
Method: Directive 67/548/EEC, Annex, B.13/14
Result: negative

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster ovary cells
Concentration: 2 mg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Genotoxicity in vivo : Species: Chinese hamster (male and female)
Cell type: Bone marrow
Application Route: Oral
Dose: 825 - 1000 mg/kg
Method: OECD Test Guideline 474
Result: negative

Test Type: In vivo micronucleus test
Species: Mouse (male and female)

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Application Route: Oral
 Dose: 850 - 1000 mg/kg
 Method: OECD Test Guideline 474
 Result: negative

2,4,6-tris(dimethylaminomethyl)phenol:

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

Concentration: 2500 ug/plate
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 473
 Result: negative

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

Carcinogenicity**Components:****barium sulfate:**

Species : Rat, male and female
 Application Route : Oral
 Exposure time : 104 weeks
 Dose : 60 - 75 mg/kg
 Method : OPPTS 870.4200
 Result : negative

Species : Mouse, male and female
 Application Route : Oral
 Dose : 160 - 200 mg/kg
 Method : OPPTS 870.4200
 Result : negative

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

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

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

Reproductive toxicity**Components:****bis(isopropyl)naphthalene:**

Effects on foetal development : Species: Rat, female
 Application Route: Oral
 Dose: 100, 250, 625 mg/kg
 Duration of Single Treatment: 20 d



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Frequency of Treatment: 7 days/week
 General Toxicity Maternal: LOAEL: 250 mg/kg body weight
 Teratogenicity: NOAEL: 625 mg/kg body weight
 Embryo-foetal toxicity: NOAEL: 625 mg/kg body weight
 Method: Directive 67/548/EEC, Annex V, B.31.
 Result: No teratogenic effects

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

Triethylenetetramine, propoxylated:

Effects on fertility : Test Type: Fertility
 Species: Rat, male and female
 Strain: wistar
 Application Route: Ingestion
 Dose: 100, 300 and 750 milligram per kilogram
 General Toxicity - Parent: NOEL: Measured 750 mg/kg body weight
 General Toxicity F1: NOEL: Measured 750 mg/kg body weight
 Method: OECD Test Guideline 422

Effects on foetal development : Species: Rat, male and female
 Strain: wistar
 Application Route: Ingestion
 Dose: 100, 300 and 750 milligram per kilogram
 General Toxicity Maternal: NOEL: Measured 300 mg/kg body weight
 Developmental Toxicity: NOAEL: Measured 750 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.

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Effects on fertility : Species: Rat, male and female
 Application Route: Oral
 Dose: 10, 60, 120 mg/kg bw/day
 Method: OECD Test Guideline 416
 Result: No effects on fertility and early embryonic development were detected.

Effects on foetal development : Species: Rabbit, female
 Application Route: Oral
 General Toxicity Maternal: NOAEL: 50,000 ppm
 Result: No teratogenic effects

2,4,6-tris(dimethylaminomethyl)phenol:

Effects on fertility : Species: Rat, male and female
 Application Route: Oral
 Method: OECD Test Guideline 422
 Remarks: No significant adverse effects were reported

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STOT - single exposure

No data available

STOT - repeated exposure**Components:****Triethylenetetramine, propoxylated:**

Exposure routes : Ingestion
 Target Organs : Kidney
 Assessment : No significant health effects observed at a concentration of 300mg/kg bw/day.

Repeated dose toxicity**Components:****barium sulfate:**

Species : Rat
 LOEC : ≥ 104 mg/kg, 40 mg/m³
 Application Route : Ingestion
 Test atmosphere : dust/mist
 Exposure time : 5 h
 Number of exposures : 5 d
 Method : Subchronic toxicity

bis(isopropyl)naphthalene:

Species : Rat, male and female
 NOAEL : 170 mg/kg
 Application Route : oral (feed)
 Exposure time : 4,320 h
 Number of exposures : 7 d
 Dose : 170, 340, and 670 mg/kg
 Method : Subchronic toxicity
 Remarks : No significant adverse effects were reported

Repeated dose toxicity - Assessment : May be harmful if swallowed or if inhaled.
 No adverse effect has been observed in chronic toxicity tests.

Triethylenetetramine, propoxylated:

Species : Rat, male and female
 NOAEL : 300 mg/kg
 Application Route : Ingestion
 Exposure time : 43 - 44 Days
 Method : OECD Test Guideline 422

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Species : Rat, male and female
 NOAEL : 10 mg/kg bw/day
 Application Route : Ingestion
 Exposure time : 13 Weeks
 Number of exposures : Daily
 Dose : 10, 60, 180mg/kg bw
 Target Organs : Liver



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Species : Rat, male and female
 LOAEL : 60 mg/kg bw/day
 Application Route : Ingestion
 Exposure time : 13 Weeks
 Number of exposures : Daily
 Dose : 10, 60, 180mg/kg bw
 Target Organs : Liver

2,4,6-tris(dimethylaminomethyl)phenol:

Species : Rat, male and female
 NOEL : 15 mg/kg
 Application Route : Ingestion
 Exposure time : 1,032 h
 Number of exposures : 7 d
 Method : Subacute toxicity

Aspiration toxicity**Components:****bis(isopropyl)naphthalene:**

May be fatal if swallowed and enters airways.

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:****barium sulfate:**

Toxicity to fish : LC50: 174 mg/l
 Exposure time: 96 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 14.5 mg/l
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 202

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



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Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201

NOEC: > 1.15 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 5.8 mg/l
 Exposure time: 21 d
 Test Type: semi-static test
 Test substance: Fresh water
 Method: OECD Test Guideline 211

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

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

bis(isopropyl)naphthalene:

Toxicity to fish : LC50: > 0.5 mg/l
 Exposure time: 96 h
 Test Type: semi-static test
 Method: Directive 67/548/EEC, Annex V, C.1.
 Remarks: No toxicity at the limit of solubility

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 0.16 mg/l
 Exposure time: 48 h
 Test Type: static test
 Method: OECD Test Guideline 202
 Remarks: No toxicity at the limit of solubility

EL50 (Daphnia magna (Water flea)): 1.7 mg/l
 Exposure time: 48 h
 Test Type: semi-static test
 Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : NOECr (Desmodesmus subspicatus (green algae)): ca. 0.15 mg/l
 Exposure time: 72 h
 Test Type: static test
 Method: DIN 38412
 Remarks: Aquatic toxicity is unlikely due to low solubility.

M-Factor (Acute aquatic toxicity) : 1

Toxicity to daphnia and other : NOEC (Daphnia magna (Water flea)): 0.013 mg/l



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aquatic invertebrates
(Chronic toxicity) Exposure time: 21 d
 Test Type: semi-static test
 Test substance: Fresh water
 Method: OECD Test Guideline 202

M-Factor (Chronic aquatic
toxicity) : 1

Ecotoxicology Assessment

Acute aquatic toxicity : No toxicity at the limit of solubility

Triethylenetetramine, propoxylated:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): Measured > 4.1 mg/l
 Exposure time: 96 h
 Test Type: semi-static test
 Analytical monitoring: yes
 Method: OECD Test Guideline 203

Toxicity to daphnia and other
aquatic invertebrates : EC50 (Daphnia magna (Water flea)): Measured 48 mg/l
 Exposure time: 48 h
 Test Type: static test
 Analytical monitoring: yes
 Method: OECD Test Guideline 202

Toxicity to algae/aquatic
plants : EC50 (Pseudokirchneriella subcapitata (algae)): Measured 4.1 mg/l
 Exposure time: 72 h
 Test Type: static test
 Analytical monitoring: yes
 Method: OECD Test Guideline 201

ErC10 (Pseudokirchneriella subcapitata (algae)): Measured 0.11 mg/l
 Exposure time: 72 h
 Test Type: static test
 Analytical monitoring: yes
 Method: OECD Test Guideline 201

Toxicity to microorganisms : EC10 (activated sludge): 38 mg/l
 Exposure time: 3 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 209

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 174 mg/l
 Exposure time: 48 h
 Method: DIN 38412

Toxicity to daphnia and other
aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 31.5 mg/l
 Exposure time: 24 h
 Method: DIN 38412



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Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (algae)): 43.5 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

EC50 (Pseudokirchneriella subcapitata (algae)): 37.1 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (algae)): 16 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity) : NOEC (Brachydanio rerio (zebrafish)): 10.9 mg/l
Exposure time: 30 d
Method: OECD Test Guideline 210

Lowest Observed Effect Concentration (Brachydanio rerio (zebrafish)): 10.9 mg/l
Exposure time: 30 d
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 1.02 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

Lowest Observed Effect Concentration (Daphnia magna (Water flea)): 1.02 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to microorganisms : IC50 (Pseudomonas putida): 89 mg/l
Exposure time: 17 h

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

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

2,4,6-tris(dimethylaminomethyl)phenol:

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 175 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water

Toxicity to daphnia and other aquatic invertebrates : LC50 (Palaeomonetes vulgaris (Grass shrimp)): 718 mg/l
End point: mortality
Exposure time: 96 h
Test Type: static test
Analytical monitoring: no
Test substance: Marine water

Toxicity to algae/aquatic plants : ErC50 (Desmodesmus subspicatus (green algae)): 84 mg/l
Exposure time: 72 h



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Toxicity to algae/aquatic plants : ErC50 (*Pseudokirchneriella subcapitata* (algae)): 43.5 mg/l
 Exposure time: 72 h
 Method: OECD Test Guideline 201

EC50 (*Pseudokirchneriella subcapitata* (algae)): 37.1 mg/l
 Exposure time: 72 h
 Method: OECD Test Guideline 201

NOEC (*Pseudokirchneriella subcapitata* (algae)): 16 mg/l
 Exposure time: 72 h
 Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity) : NOEC (*Brachydanio rerio* (zebrafish)): 10.9 mg/l
 Exposure time: 30 d
 Method: OECD Test Guideline 210

Lowest Observed Effect Concentration (*Brachydanio rerio* (zebrafish)): 10.9 mg/l
 Exposure time: 30 d
 Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (*Daphnia magna* (Water flea)): 1.02 mg/l
 Exposure time: 21 d
 Method: OECD Test Guideline 211

Lowest Observed Effect Concentration (*Daphnia magna* (Water flea)): 1.02 mg/l
 Exposure time: 21 d
 Method: OECD Test Guideline 211

Toxicity to microorganisms : IC50 (*Pseudomonas putida*): 89 mg/l
 Exposure time: 17 h

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

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

2,4,6-tris(dimethylaminomethyl)phenol:

Toxicity to fish : LC50 (*Cyprinus carpio* (Carp)): 175 mg/l
 Exposure time: 96 h
 Test Type: static test
 Test substance: Fresh water

Toxicity to daphnia and other aquatic invertebrates : LC50 (*Palaeomonetes vulgaris* (Grass shrimp)): 718 mg/l
 End point: mortality
 Exposure time: 96 h
 Test Type: static test
 Analytical monitoring: no
 Test substance: Marine water

Toxicity to algae/aquatic plants : ErC50 (*Desmodesmus subspicatus* (green algae)): 84 mg/l
 Exposure time: 72 h



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Biodegradability : aerobic
 Inoculum: activated sludge, non-adapted
 Concentration: 2 mg/l
 Result: Not biodegradable
 Biodegradation: 4 %
 Exposure time: 28 d
 Method: OECD Test Guideline 301D

Bioaccumulative potential**Components:****bis(isopropyl)naphthalene:**

Bioaccumulation : Species: Cyprinus carpio (Carp)
 Bioconcentration factor (BCF): 770 - 6,400
 Exposure time: 60 d
 Test substance: Fresh water
 Method: flow-through test

Partition coefficient: n-octanol/water : log Pow: 6.081
 Method: QSAR

Triethylenetetramine, propoxylated:

Partition coefficient: n-octanol/water : log Pow: -2.42

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Partition coefficient: n-octanol/water : log Pow: -0.3 (77 °F / 25 °C)
 Method: OECD Test Guideline 117

2,4,6-tris(dimethylaminomethyl)phenol:

Partition coefficient: n-octanol/water : Pow: ≥ 0.219 (70.7 °F / 21.5 °C)
 log Pow: -0.66 (70.7 °F / 21.5 °C)
 Method: OPPTS 830.7550

Mobility in soil**Components:****bis(isopropyl)naphthalene:**

Distribution among environmental compartments : Koc: 36108
 Method: QSAR

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).

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

Components:**Triethylenetetramine, propoxylated:**

Results of PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

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.
(TRIMETHYLHEXAMETHYLENEDIAMINE, 2,4,6-TRIS(DIMETHYL AMINOMETHYL)PHENOL)

Class : 8
Packing group : III
Labels : Corrosive
Packing instruction (cargo aircraft) : 856
Packing instruction (passenger aircraft) : 852

IMDG-Code

UN number : UN 2735
Proper shipping name : POLYAMINES, LIQUID, CORROSIVE, N.O.S.
(TRIMETHYLHEXAMETHYLENEDIAMINE, 2,4,6-TRIS(DIMETHYL AMINOMETHYL)PHENOL)

Class : 8
Packing group : III
Labels : 8
EmS Code : F-A, S-B
Marine pollutant : yes(DIISOPROPYLNAPHTHALENE ISOMERS, TRIETHYLENE TETRAMINE PROPOXYLATED)

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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. (TRIMETHYLHEXAMETHYLENEDIAMINE, 2,4,6- TRIS(DIMETHYL AMINOMETHYL)PHENOL)
Class	:	8
Packing group	:	III
Labels	:	CORROSIVE
ERG Code	:	153
Marine pollutant	:	yes(DIISOPROPYLNAPHTHALENE ISOMERS, TRIETHYLENE TETRAMINE PROPOXYLATED)

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**

Listed substances in the product are at low enough levels to not be expected to exceed the RQ

SARA 311/312 Hazards	:	Respiratory or skin sensitisation Skin corrosion or irritation Serious eye damage or eye irritation
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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.
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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 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	:	All components of this product are on the Canadian DSL
AIIC	:	On the inventory, or in compliance with the inventory
NZIoC	:	On the inventory, or in compliance with the inventory
ENCS	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory

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PICCS : Not in compliance with the inventory
 IECSC : On the inventory, or in compliance with the inventory
 TCSI : On the inventory, or in compliance with the inventory
 TSCA : All substances listed as active on the TSCA inventory

Inventories

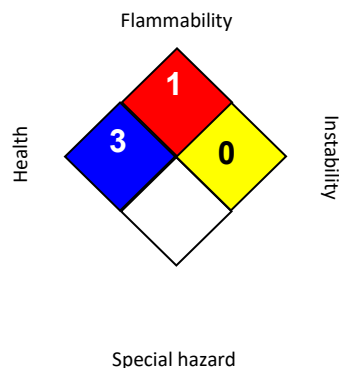
AIIIC (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TECI (Thailand), TSCA (USA)

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

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

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 P0 / TWA : 8-hour time weighted average

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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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