



SAFETY DATA SHEET

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2031-1 HARDENER

Manufacturer or supplier's details

Company name of supplier : Huntsman Advanced Materials Americas LLC

Address : P.O. Box 4980
The Woodlands,
TX 77387

Telephone : Non-Emergency: (800) 257-5547
United States of America (USA)

E-mail address of person responsible for the SDS : MSDS@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

Short-term (acute) aquatic hazard : Category 3

Long-term (chronic) aquatic hazard : Category 2

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:**



ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
 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

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
1,3-Cyclohexanedimethanamine	2579-20-6	10 - 20
bis(isopropyl)naphthalene	38640-62-9	5 - 10
2,4,6-tris(dimethylaminomethyl)phenol	90-72-2	1 - 2.5

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

SECTION 4. FIRST AID MEASURES

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

- 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.
- 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 media : High volume water jet
- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : No hazardous combustion products are known
- Specific extinguishing methods : No data is available on the product itself.

ARALDITE® 2031-1 HARDENER

Version 1.0	Revision Date: 09/25/2018	SDS Number: 40000005303	Date of last issue: - Date of first issue: 09/25/2018
----------------	------------------------------	----------------------------	--

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 : 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 : Do not breathe vapours or spray mist.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Keep in properly labelled containers.

Materials to avoid : For incompatible materials please refer to Section 10 of this

ARALDITE® 2031-1 HARDENER

Version 1.0 Revision Date: 09/25/2018 SDS Number: 40000005303 Date of last issue: -
Date of first issue: 09/25/2018

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
barium sulfate	7727-43-7	TWA (total dust)	15 mg/m ³	OSHA Z-1
		TWA (respirable fraction)	5 mg/m ³	OSHA Z-1
		TWA (Inhalable fraction)	5 mg/m ³	ACGIH

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 : No personal respiratory protective equipment normally required.

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

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

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 : paste

Colour : black

Odour : very faint, 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 : > 392 °F / > 200 °C
Method: estimated

Flash point : > 212 °F / > 100 °C
Method: estimated, 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 : ca. 1.4 g/cm³ (73 °F / 23 °C)

Solubility(ies)

ARALDITE® 2031-1 HARDENER

Version 1.0	Revision Date: 09/25/2018	SDS Number: 400000005303	Date of last issue: - Date of first issue: 09/25/2018
----------------	------------------------------	-----------------------------	--

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 Method: estimated
Self-Accelerating decomposition temperature (SADT)	: No data is available on the product itself.
Viscosity	
Viscosity, dynamic	: 125 - 225 Pas (68 °F / 20 °C)
Explosive properties	: No data is available on the product itself.
Oxidizing properties	: No data is available on the product itself.
Particle size	: No data is available on the product itself.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No dangerous reaction known under conditions of normal use.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: No hazards to be specially mentioned.
Conditions to avoid	: None known.
Incompatible materials	: Strong acids and strong bases Strong oxidizing agents
Hazardous decomposition products	: No hazardous decomposition products are known.

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 : 2,681 mg/kg Method: Calculation method
Acute inhalation toxicity - Product	: Acute toxicity estimate: 55.8 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method

ARALDITE® 2031-1 HARDENER

Version 1.0	Revision Date: 09/25/2018	SDS Number: 400000005303	Date of last issue: - Date of first issue: 09/25/2018
----------------	------------------------------	-----------------------------	--

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**Product:**

Assessment: Causes burns.

Remarks: Information given is based on data obtained from similar substances.

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

Assessment: No eye irritation

Method: OECD Test Guideline 405

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

Species: Rabbit

Result: Corrosive

Assessment: Corrosive

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.

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

1,3-Cyclohexanedimethanamine:
 Exposure routes: Skin
 Species: Guinea pig
 Method: OECD Test Guideline 406
 Result: Does not cause skin sensitisation.

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

2,4,6-tris(dimethylaminomethyl)phenol:
 Exposure routes: Skin
 Species: Guinea pig
 Method: OECD Test Guideline 406
 Result: Does not cause skin sensitisation.

Components:

bis(isopropyl)naphthalene:
 Assessment: May be harmful if swallowed or if inhaled.
 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

1,3-Cyclohexanedimethanamine:
 Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 473
 Result: positive

Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 471
 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

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

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

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

Components:**1,3-Cyclohexanedimethanamine:**

Genotoxicity in vivo : Application Route: Oral
Method: OECD Test Guideline 474
Result: negative

bis(isopropyl)naphthalene:

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse (male and female)
Application Route: Intraperitoneal injection
Dose: 1.92 g/kg
Method: OECD Test Guideline 474
Result: negative

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

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

Germ cell mutagenicity-Assessment : No data available

ARALDITE® 2031-1 HARDENER

Version 1.0 Revision Date: 09/25/2018 SDS Number: 400000005303 Date of last issue: -
Date of first issue: 09/25/2018

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

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:

1,3-Cyclohexanedimethanamine:
Effects on fertility : Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 422

2,4,6-tris(dimethylaminomethyl)phenol:
Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 422
Remarks: No significant adverse effects were reported

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

ARALDITE® 2031-1 HARDENER

Version 1.0	Revision Date: 09/25/2018	SDS Number: 400000005303	Date of last issue: - Date of first issue: 09/25/2018
----------------	------------------------------	-----------------------------	--

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

Components:

bis(isopropyl)naphthalene:
Reproductive toxicity -
Assessment

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

STOT - single exposure

No data available

STOT - repeated exposure

No data available

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

1,3-Cyclohexanedimethanamine:

Species: Rat, male
NOAEL: 60 mg/kg/d
Application Route: Ingestion
Exposure time: 1,008 h
Number of exposures: 7 d
Method: Subacute 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

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

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

Components:

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

Aspiration toxicity**Components:**

bis(isopropyl)naphthalene:
May be fatal if swallowed and enters airways.

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

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

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

1,3-Cyclohexanedimethanamine:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 130 mg/l
 Exposure time: 96 h
 Test Type: semi-static test
 Test substance: Fresh water
 Method: OECD Test Guideline 203

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

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

Components:

barium sulfate:

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

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

1,3-Cyclohexanedimethanamine:

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 33.1 mg/l
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 202

bis(isopropyl)naphthalene:

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): > 0.16 mg/l

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

aquatic invertebrates

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

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

Toxicity to daphnia and other aquatic invertebrates : LC50: 718 mg/l
 Exposure time: 96 h
 Test Type: static test
 Test substance: Marine water

Components:**barium sulfate:**

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

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

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

1,3-Cyclohexanedimethanamine:

Toxicity to algae : EbC50 (Selenastrum capricornutum (green algae)): 29.7 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201

bis(isopropyl)naphthalene:

Toxicity to algae : NOECr (Desmodesmus subspicatus (green algae)): ca. 0.15 mg/l
 Exposure time: 72 h
 Test Type: static test
 Method: DIN 38412
 GLP: no
 Remarks: Aquatic toxicity is unlikely due to low solubility.

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

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

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

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

NOEC (Desmodesmus subspicatus (green algae)): 6.25 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201

Components:

bis(isopropyl)naphthalene:
 M-Factor (Acute aquatic toxicity) : 1
 Toxicity to fish (Chronic toxicity) : No data available

Components:

barium sulfate:
 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

bis(isopropyl)naphthalene:
 Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.013 mg/l
 Exposure time: 21 d
 Test Type: semi-static test
 Test substance: Fresh water
 Method: OECD Test Guideline 202

Components:

bis(isopropyl)naphthalene:
 M-Factor (Chronic aquatic toxicity) : 1

Components:

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

Toxicity to soil dwelling organisms : No data available

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

Ecotoxicology Assessment

Components:

1,3-Cyclohexanedimethanamine:

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

bis(isopropyl)naphthalene:

Acute aquatic toxicity : No toxicity at the limit of solubility

Components:

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

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

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

Persistence and degradability**Components:**

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.

1,3-Cyclohexanedimethanamine:

Biodegradability : Inoculum: activated sludge
Concentration: 10 mg/l
Result: Not readily biodegradable.
Biodegradation: 29 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

bis(isopropyl)naphthalene:

Biodegradability : Inoculum: activated sludge
Concentration: 0.2 mg/l
Result: Not readily biodegradable.
Biodegradation: 30 - 35 %
Exposure time: 56 d
Method: OECD Test Guideline 310

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

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

Biochemical Oxygen Demand (BOD) : No data available

Chemical Oxygen Demand : No data available

ARALDITE® 2031-1 HARDENER

Version 1.0	Revision Date: 09/25/2018	SDS Number: 400000005303	Date of last issue: - Date of first issue: 09/25/2018
----------------	------------------------------	-----------------------------	--

(COD)

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

Components:

1,3-Cyclohexanedimethanamine:

Stability in water : Degradation half life(DT50): > 1 yr (77 °F / 25 °C) pH: 6.5
Method: OECD Test Guideline 111
Remarks: Fresh water

Photodegradation : No data available

Impact on Sewage Treatment : No data available

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**Components:**

1,3-Cyclohexanedimethanamine:

Partition coefficient: n-octanol/water : log Pow: 0.783 (70.7 °F / 21.5 °C)
Method: OECD Test Guideline 107

bis(isopropyl)naphthalene:

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

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

Partition coefficient: n-octanol/water : log Pow: 0.219 (70.7 °F / 21.5 °C)
Method: OPPTS 830.7550**Mobility in soil**

Mobility : No data available

Components:

bis(isopropyl)naphthalene:

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

Distribution among environmental compartments : Koc: 36108
Method: QSAR

Stability in soil : No data available

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

Global warming potential (GWP) : No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

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

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

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

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

UN/ID No.	: UN 2735
Proper shipping name	: Polyamines, liquid, corrosive, n.o.s. (1,3-CYCLOHEXANEDIMETHANAMINE, DIISOPROPYLNAPHTHALENE ISOMERS)
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	: POLYAMINES, LIQUID, CORROSIVE, N.O.S. (1,3-CYCLOHEXANEDIMETHANAMINE, DIISOPROPYLNAPHTHALENE ISOMERS)
Class	: 8
Packing group	: II
Labels	: 8
EmS Code	: F-A, S-B
Marine pollutant	: yes

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	: POLYAMINES, LIQUID, CORROSIVE, N.O.S. (1,3-CYCLOHEXANEDIMETHANAMINE, DIISOPROPYLNAPHTHALENE ISOMERS)
Class	: 8
Packing group	: II
Labels	: CORROSIVE
ERG Code	: 153
Marine pollutant	: yes(DIISOPROPYLNAPHTHALENE ISOMERS)

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.

ARALDITE® 2031-1 HARDENER

Version 1.0 Revision Date: 09/25/2018 SDS Number: 400000005303 Date of last issue: -
 Date of first issue: 09/25/2018

SECTION 15. REGULATORY INFORMATION**EPCRA - Emergency Planning and Community Right-to-Know Act****CERCLA Reportable Quantity**

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
arsenic	7440-38-2	1	*
lead	7439-92-1	10	*
Cadmium	7440-43-9	10	*
beryllium	7440-41-7	10	*
chromium	7440-47-3	5000	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 311/312 Hazards : Skin corrosion or irritation
 Serious eye damage or eye irritation
 Respiratory or skin sensitisation

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

WARNING: This product can expose you to chemicals including lead, arsenic, Cadmium, beryllium, which is/are known to the State of California to cause cancer, and lead, Cadmium, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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

CH INV : The formulation contains substances listed on the Swiss Inventory, On the inventory, or in compliance with the inventory

DSL : All components of this product are on the Canadian DSL

AICS : On the inventory, or in compliance with the inventory

NZIoC : Not in compliance with the inventory

ENCS : On the inventory, or in compliance with the inventory

KECI : On the inventory, or in compliance with the inventory

PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

TCSI : On the inventory, or in compliance with the inventory

TSCA : On the inventory, or in compliance with the inventory

Inventories

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

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

No substances are subject to a Significant New Use Rule.

ARALDITE® 2031-1 HARDENER

Version 1.0 Revision Date: 09/25/2018 SDS Number: 400000005303 Date of last issue: -
 Date of first issue: 09/25/2018

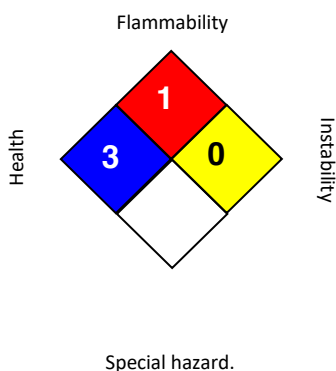
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

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 : 09/25/2018
- ACGIH : USA. ACGIH Threshold Limit Values (TLV)
- OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1
Limits for Air Contaminants
- ACGIH / TWA : 8-hour, time-weighted average
- OSHA Z-1 / TWA : 8-hour time weighted average

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

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

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

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

SAFETY DATA SHEET

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2031-1 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	09/25/2018	400000005303	Date of first issue: 09/25/2018

The trademarks above are the property of Huntsman Corporation or an affiliate thereof.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.



1-800-375-0605
Option 8 for 24/7 Service



6550 Oley Speaks Way
Canal Winchester, OH 43110



www.RudolphBros.Com
RBCsupport@RudBro.Com