# ARALDITE® 2012 HARDENER

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|---|---|---|---|
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Print Date 09/04/2025

## SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2012 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 : 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 : Adhesives

## SECTION 2. HAZARDS IDENTIFICATION

**GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Eye irritation : Category 2B

Skin sensitisation : Category 1

Short-term (acute) aquatic hazard : Category 2

Long-term (chronic) aquatic hazard : Category 2

**GHS label elements**

Hazard pictograms :



Signal word : Warning

Hazard statements : H317 May cause an allergic skin reaction.
H320 Causes eye irritation.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
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.
**Response:**
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P391 Collect spillage.
**Storage:**
Not available
**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

**Hazardous components**

| Chemical name | CAS-No. | Concentration (% w/w) |
|---|---|---|
| 2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol) | 14970-87-7 | 1 - 5 |
| N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine | 10563-29-8 | 1 - 5 |
| 2,4,6-tris(dimethylaminomethyl)phenol | 90-72-2 | 1 - 5 |
| N,N,4-trimethylpiperazine-1-ethylamine | 104-19-8 | 1 - 5 |
| n-butyl acetate | 123-86-4 | 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.
Show this safety data sheet to the doctor in attendance.
Treat symptomatically.
Get medical attention if symptoms occur.

If inhaled : If inhaled, remove to fresh air.

| | | |
|---|---|---|
| | | Get medical attention if symptoms occur. |
| In case of skin contact | : | If on skin, rinse well with water. |
| In case of eye contact | : | Immediately flush eye(s) with plenty of water.<br>Remove contact lenses.<br>Keep eye wide open while rinsing.<br>If eye irritation persists, consult a specialist. |
| If swallowed | : | Keep respiratory tract clear.<br>Never give anything by mouth to an unconscious person.<br>If symptoms persist, call a physician. |
| 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<br>If potential for exposure exists refer to Section 8 for specific personal protective equipment.<br>Avoid inhalation, ingestion and contact with skin and eyes.<br>No action shall be taken involving any personal risk or without suitable training.<br>It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. |
| Notes to physician | : | Treat symptomatically. |

## SECTION 5. FIREFIGHTING MEASURES

| | | |
|---|---|---|
| Suitable extinguishing media | : | Water spray<br>Alcohol-resistant foam<br>Carbon dioxide (CO2)<br>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<br>Nitrogen oxides (NOx) |
| 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.<br>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.<br>Refer to protective measures listed in sections 7 and 8. |
| Environmental precautions | : | Prevent product from entering drains.<br>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.
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.
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.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
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 |
|---|---|---|---|---|
| n-butyl acetate | 123-86-4 | TWA | 150 ppm<br>710 mg/m3 | OSHA Z-1 |
| | | TWA | 150 ppm<br>710 mg/m3 | NIOSH REL |
| | | ST | 200 ppm<br>950 mg/m3 | NIOSH REL |
| | | TWA | 50 ppm | ACGIH |

| | | | | |
|---|---|---|---|---|
| | | STEL | 150 ppm | ACGIH |
| | | STEL | 200 ppm<br>950 mg/m3 | OSHA P0 |
| | | TWA | 150 ppm<br>710 mg/m3 | OSHA P0 |

**Personal protective equipment**

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
Material : Neoprene gloves
Break through time : 10 - 480 min

Remarks : 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 : light yellow
Odour : unpleasant
Odour Threshold : No data is available on the product itself.

pH : substance/mixture is non-soluble (in water)
Melting point/freezing point : No data is available on the product itself.

Boiling point : > 392 °F / > 200 °C

| | | |
|---|---|---|
| Flash point | : | > 212 °F / > 100 °C<br>Method: Pensky-Martens closed cup, closed cup<br>216 °F / 102 °C<br>Method: Cleveland open 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 | : | < 0.01 hPa (68 °F / 20 °C) |
| Relative vapour density | : | No data is available on the product itself. |
| Relative density | : | No data is available on the product itself. |
| Density | : | 1.165 g/cm3 (77 °F / 25 °C) |
| Solubility(ies) | | |
| Water solubility | : | practically insoluble (68 °F / 20 °C) |
| 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 (SADT) | : | No data is available on the product itself. |
| Viscosity | | |
| Viscosity, dynamic | : | 20,000 - 40,000 mPa.s (77 °F / 25 °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 | : | No hazards to be specially mentioned. |

reactions
Conditions to avoid : None known.
Incompatible materials : None known.
Hazardous decomposition products : carbon monoxide
carbon dioxide
Nitrogen oxides (NOx)

## SECTION 11. TOXICOLOGICAL INFORMATION

**Acute toxicity**

**Product:**

Acute oral toxicity : LD50 (Rat, male and female): 2,631 mg/kg
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rat, male and female): > 4,000 mg/kg
Method: OECD Test Guideline 402

**Components:**

**2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Acute oral toxicity : LD50 (Rat, female): > 50 - 300 mg/kg
Method: OECD Test Guideline 423

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

**N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Acute oral toxicity : LD50 (Rat, male and female): 1,669 mg/kg
Method: OECD Test Guideline 401
GLP: no
Assessment: The component/mixture is moderately toxic after single ingestion.

**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

**N,N,4-trimethylpiperazine-1-ethylamine:**

Acute oral toxicity : LD50 (Rat, female): 200 - 2,000 mg/kg
Method: OECD Test Guideline 423
GLP: yes
Assessment: The component/mixture is toxic after single ingestion.

Acute dermal toxicity : LD50 (Rabbit, male): 0.51 mL/kg bw
Assessment: The component/mixture is moderately toxic after single contact with skin.

**n-butyl acetate:**

Acute oral toxicity : LD50 (Rat): > 8,800 mg/kg

LD50 (Mouse): 7,060 mg/kg

LD50 (Rabbit): 7,437 mg/kg

LD50 (Guinea pig): 4,700 mg/kg

LD50 (Rat, female): 10,760 mg/kg
Method: OECD Test Guideline 423

Acute dermal toxicity : LD50 (Rabbit): > 17,600 mg/kg

LD50 (Rabbit, male and female): 14,112 mg/kg

**Skin corrosion/irritation**

**Product:**

Species : Rabbit
Result : No skin irritation
Remarks : Moderate skin irritation

**Components:**

**2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Species : human skin
Method : OECD Test Guideline 439
Result : No skin irritation

**N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Species : Rabbit
Assessment : Causes severe burns.
Method : OECD Test Guideline 404
Result : Extremely corrosive and destructive to tissue.
GLP : yes

**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

**N,N,4-trimethylpiperazine-1-ethylamine:**

Species : Rabbit
Assessment : Causes severe burns.

Method : OECD Test Guideline 404
Result : Extremely corrosive and destructive to tissue.

**Serious eye damage/eye irritation**

**Product:**

Species : Rabbit
Result : Mild eye irritation
Remarks : Mild eye irritation

**Components:**

**2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Species : Bovine cornea
Result : No eye irritation
Method : OECD Test Guideline 437

**N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

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

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

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

**N,N,4-trimethylpiperazine-1-ethylamine:**

Result : Corrosive

**Respiratory or skin sensitisation**

**Components:**

**2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

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

**N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Test Type : Maximisation Test
Exposure routes : Skin
Species : Guinea pig
Assessment : Probability or evidence of low to moderate skin sensitisation rate in humans
Method : OECD Test Guideline 406
Result : Probability or evidence of low to moderate skin sensitisation rate in humans
GLP : yes

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

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

**N,N,4-trimethylpiperazine-1-ethylamine:**

| | | |
|---|---|---|
| Result | : | Did not cause sensitisation on laboratory animals. |

**n-butyl acetate:**

| | | |
|---|---|---|
| Exposure routes | : | Skin |
| Species | : | Guinea pig |
| Result | : | Does not cause skin sensitisation. |

**Germ cell mutagenicity**

**Product:**

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

**Components:**

**2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Genotoxicity in vitro : Test Type: Ames test
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: gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 490
Result: negative

Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
Result: negative

**N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

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 487
Result: negative
GLP: yes

Test Type: reverse mutation assay
Test system: Salmonella typhimurium

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

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

**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

**N,N,4-trimethylpiperazine-1-ethylamine:**

Genotoxicity in vitro : 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
GLP: yes

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

Metabolic activation: with and without metabolic activation

Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse (male and female)
Cell type: Bone marrow
Application Route: Intraperitoneal injection
Dose: 175/350/560 mg/kg bw /day
Result: negative
Remarks: Information given is based on data obtained from similar substances.

**Carcinogenicity**

**Components:**

**N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

| | | |
|---|---|---|
| Species | : | Mouse, male |
| Application Route | : | Dermal |
| Exposure time | : | 20 month(s) |
| Dose | : | 1.25/56.3 mg/animal |
| Frequency of Treatment | : | 3 daily |
| NOAEL | : | >= 56.3 mg/kg body weight |
| Result | : | negative |
| Remarks | : | Information given is based on data obtained from similar substances. |

**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:**

**2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Effects on fertility : Species: Rat, male and female
Dose: 50, 100, 150 mg/kg
General Toxicity - Parent: NOAEL: 50 mg/kg body weight
General Toxicity F1: NOAEL: 50 mg/kg body weight
Method: OECD Test Guideline 421

**N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Effects on fertility : Test Type: Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test
Species: Rat, male and female
Application Route: Oral
Dose: 5, 15 and 50 mg/kg bw/d
General Toxicity - Parent: NOAEL: 15 mg/kg body weight
General Toxicity F1: NOAEL: 15 mg/kg body weight
Method: OECD Test Guideline 422
Result: Animal testing did not show any effects on fertility.

GLP: yes

Effects on foetal development : Test Type: reproductive and developmental toxicity study
Species: Rat, male and female
Application Route: Oral
Dose: 5, 15 and 50 mg/kg bw/d
General Toxicity Maternal: NOAEL: 15 mg/kg body weight
Developmental Toxicity: NOAEL: 15 mg/kg body weight
Method: OECD Test Guideline 422
Result: Not classified
GLP: yes
Remarks: Information given is based on data obtained from similar substances.

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

**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

**N,N,4-trimethylpiperazine-1-ethylamine:**

Effects on fertility : Test Type: Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test
Species: Rat, male and female
Dose: 0, 10, 25, 50 mg/kg
Frequency of Treatment: 7 days/week
General Toxicity - Parent: NOAEL: 50 mg/kg body weight
General Toxicity F1: NOAEL: 50 mg/kg body weight
Fertility: NOAEL: 50 mg/kg body weight
Method: OECD Test Guideline 422
Result: negative

**n-butyl acetate:**

Effects on fertility : Species: Rat, male and female
Fertility: NOAEC Mating/Fertility: 2,000 ppm
Method: OECD Test Guideline 416

Effects on foetal development : Species: Rat, male and female
Strain: Sprague-Dawley
Application Route: Inhalation
Developmental Toxicity: NOAEC Parent: 1,500 ppm
Method: OECD Test Guideline 414
Result: No effects on fertility and early embryonic development were detected.

**STOT - single exposure**

**Components:**

**n-butyl acetate:**

Exposure routes : Inhalation

| | | |
|---|---|---|
| Target Organs | : | Narcotic effects |
| Assessment | : | May cause drowsiness or dizziness. |

**STOT - repeated exposure**

No data available

**Repeated dose toxicity**

**Components:**

**2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

| | | |
|---|---|---|
| Species | : | Rat, male and female |
| NOAEL | : | 60 mg/kg |
| Application Route | : | Oral |
| Dose | : | 20, 60, 180 mg/kg |
| Method | : | OECD Test Guideline 407 |

**N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

| | | |
|---|---|---|
| Species | : | Rat, male and female |
| | : | 500 mg/m3 |
| Application Route | : | Inhalation |
| Test atmosphere | : | vapour |
| Exposure time | : | 21 d 6 h |
| Number of exposures | : | 5 days/week |
| Dose | : | 550 mg/m3 |
| Method | : | Subchronic toxicity |
| Remarks | : | Based on data from similar materials |

| | | |
|---|---|---|
| Species | : | Mouse, male |
| NOAEL | : | >= 56.3 mg/kg/d |
| Application Route | : | Skin contact |
| Number of exposures | : | 3 d |
| Method | : | Chronic toxicity |
| Remarks | : | Based on data from similar materials |

| | | |
|---|---|---|
| Species | : | Rat, male and female |
| NOAEL | : | 41 mg/kg |
| NOAEL | : | 1,000 mg/l, ppm |
| Application Route | : | oral (feed) |
| Exposure time | : | 20 months |
| Number of exposures | : | 3 times/week |
| Dose | : | 1000/7500/15000 ppm |
| Method | : | OECD Test Guideline 408 |

**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 |

**N,N,4-trimethylpiperazine-1-ethylamine:**

| | | |
|---|---|---|
| Species | : | Rat, male and female |

| | | |
|---|---|---|
| NOAEL | : | 50 mg/kg |
| Application Route | : | Oral |
| Exposure time | : | 6 - 10 weeks |
| Number of exposures | : | 7 days/week |
| Dose | : | 0, 10, 25, 50mg/kg bw/day |
| Method | : | OECD Test Guideline 422 |
| GLP | : | yes |

**n-butyl acetate:**

| | | |
|---|---|---|
| Species | : | Rat, male and female |
| NOAEL | : | 2.4 mg/l |
| Application Route | : | Inhalation |
| Test atmosphere | : | vapour |

**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:**

**2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Danio rerio (zebra fish)): 5.7 mg/l<br>Exposure time: 96 h<br>Test Type: semi-static test<br>Method: OECD Test Guideline 203 |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): 0.76 mg/l<br>Exposure time: 48 h<br>Test Type: static test<br>Method: OECD Test Guideline 202 |
| Toxicity to algae/aquatic plants | : | EC50 (Pseudokirchneriella subcapitata (green algae)): 3.11 mg/l<br>Exposure time: 96 h<br>Test Type: static test<br>Method: OECD Test Guideline 201<br>GLP: yes |
| M-Factor (Acute aquatic toxicity) | : | 1 |

M-Factor (Chronic aquatic toxicity) : 1

**N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l
End point: mortality
Exposure time: 96 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 9.2 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae/aquatic plants : ErC50 (Selenastrum capricornutum (green algae)): 21 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

NOEC (Selenastrum capricornutum (green algae)): 5.7 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 microorganisms : EC50 (Pseudomonas putida): 181 mg/l
Exposure time: 16 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: DIN 38 412 Part 8
GLP: no

**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
Test Type: static test
Analytical monitoring: yes
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
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201

**N,N,4-trimethylpiperazine-1-ethylamine:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 29 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 66 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (algae)): 29 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (algae)): 3.2 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

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
GLP: yes

**Ecotoxicology Assessment**

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

**n-butyl acetate:**

Toxicity to fish : EC50 (Menidia beryllina (Silverside)): 185 mg/l
Exposure time: 96 h

LC50 (Pimephales promelas (fathead minnow)): 18 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other : EC50: 205 mg/l

| | | |
|---|---|---|
| aquatic invertebrates | | Exposure time: 24 h<br><br>EC50: 44 mg/l<br>Exposure time: 48 h<br>Method: OECD Test Guideline 202 |
| Toxicity to algae/aquatic plants | : | EC50 (Desmodesmus subspicatus (green algae)): 674.7 mg/l<br>Exposure time: 72 h |
| Toxicity to microorganisms | : | IC0: 1,200 mg/l<br>Exposure time: 24 h |

**Persistence and degradability**

**Components:**

**2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

| | | |
|---|---|---|
| Biodegradability | : | aerobic<br>Inoculum: activated sludge<br>Concentration: 38.2 mg/l<br>Result: Not biodegradable<br>Biodegradation: < 10 %<br>Exposure time: 28 d<br>Method: OECD Test Guideline 301A |

**N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

| | | |
|---|---|---|
| Biodegradability | : | aerobic<br>Dissolved organic carbon (DOC)<br>Result: Readily biodegradable.<br>Biodegradation: 100 %<br>Exposure time: 28 d<br>Method: OECD Test Guideline 301A<br>Test substance: Fresh water<br>GLP: yes |

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

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

**N,N,4-trimethylpiperazine-1-ethylamine:**

| | | |
|---|---|---|
| Biodegradability | : | aerobic<br>Inoculum: activated sludge<br>Result: Not readily biodegradable.<br>Biodegradation: 0 %<br>Exposure time: 28 d<br>Method: OECD Test Guideline 301B |

**n-butyl acetate:**

Biodegradability : Result: Readily biodegradable.
Biodegradation: 98 %
Exposure time: 28 d

**Bioaccumulative potential**

**Components:**

**N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Partition coefficient: n-octanol/water : log Pow: -0.56 (77 °F / 25 °C)
pH: 11.6
Method: OECD Test Guideline 107

**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

**N,N,4-trimethylpiperazine-1-ethylamine:**

Partition coefficient: n-octanol/water : log Pow: -0.591 (70 °F / 21 °C)
pH: 9.6

**n-butyl acetate:**

Bioaccumulation : Bioconcentration factor (BCF): 4 - 14

**Mobility in soil**

No data available

**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).

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

## 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 3082 |
| Proper shipping name | : | Environmentally hazardous substance, liquid, n.o.s. (TRIETHYLENEGLYCOL-DIMERCAPTANE) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | Miscellaneous |
| Packing instruction (cargo aircraft) | : | 964 |
| Packing instruction (passenger aircraft) | : | 964 |
| Environmentally hazardous | : | yes |

**IMDG-Code**

| | | |
|---|---|---|
| UN number | : | UN 3082 |
| Proper shipping name | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (TRIETHYLENEGLYCOL-DIMERCAPTANE) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | 9 |
| EmS Code | : | F-A, S-F |
| 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

**49 CFR**

| | | |
|---|---|---|
| UN/ID/NA number | : | UN 3082 |
| Proper shipping name | : | Environmentally hazardous substance, liquid, n.o.s. (TRIETHYLENEGLYCOL-DIMERCAPTANE) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | CLASS 9 |
| ERG Code | : | 171 |
| Marine pollutant | : | yes |
| Remarks | : | Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO. |

**Special precautions for user**

| | | |
|---|---|---|
| Remarks | : | Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO. 49CFR: no dangerous good in non-bulk packaging |

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
Serious eye damage or eye irritation

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

This product does not contain any hazardous air pollutants (HAP) >=0.1%, as defined by the U.S. Clean Air Act Section 112 (40 CFR 61

**California Prop. 65**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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

DSL : This product contains one or several components that are not on the Canadian DSL nor NDSL.

AIIC : All components are listed on the inventory, regulatory obligations/restrictions apply. Please contact your sales representative for more information before import into Australia

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

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

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 : On or in compliance with the active portion of the TSCA inventory

**Inventories**

AIIC (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.

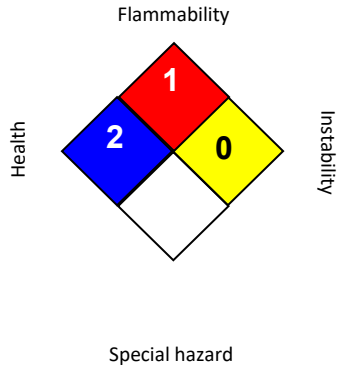
**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**

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

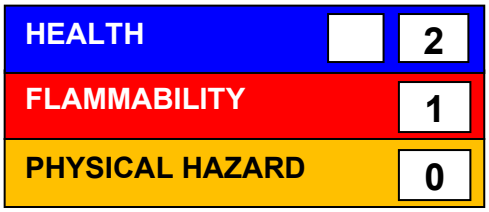
## SECTION 16. OTHER INFORMATION

### Further information

**NFPA 704:**




**HMIS® IV:**




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 | : | 06/12/2023 |
| 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 |
| ACGIH / STEL | : | Short-term exposure limit |
| NIOSH REL / TWA | : | Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek |
| NIOSH REL / ST | : | STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday |
| OSHA P0 / TWA | : | 8-hour time weighted average |
| OSHA P0 / STEL | : | Short-term exposure limit |
| 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.

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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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# ARALDITE® 2012 RESIN

| Version | Revision Date: | SDS Number: | Date of last issue: 10/02/2017 |
|---|---|---|---|
| 1.1 | 12/23/2021 | 400001008017 | Date of first issue: 10/02/2017 |

Print Date 09/16/2024

## SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2012 RESIN

**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 : Adhesives

## SECTION 2. HAZARDS IDENTIFICATION

**GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Skin irritation : Category 2

Eye irritation : Category 2A

Skin sensitisation : Category 1

Short-term (acute) aquatic hazard : Category 2

Chronic aquatic toxicity : Category 2

**GHS label elements**

Hazard pictograms :



Signal word : Warning

Hazard statements : H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**

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/ eye protection/ face protection.
**Response:**
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P391 Collect spillage.
**Storage:**
Not available
**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) |
|---|---|---|
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane | 1675-54-3 | 70 - 90 |
| 1,4-bis(2,3-epoxypropoxy)butane | 2425-79-8 | 5 - 10 |

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

Both 25068-38-6 and 1675-54-3 can be used to describe the epoxy resin which is produced through the reaction of bisphenol A and epichlorohydrin

## SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
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.<br>Get medical attention if symptoms occur. |
| In case of skin contact | : | If skin irritation persists, call a physician.<br>If on skin, rinse well with water.<br>If on clothes, remove clothes. |
| In case of eye contact | : | Immediately flush eye(s) with plenty of water.<br>Remove contact lenses.<br>Keep eye wide open while rinsing.<br>If eye irritation persists, consult a specialist. |
| If swallowed | : | Keep respiratory tract clear.<br>Never give anything by mouth to an unconscious person.<br>If symptoms persist, call a physician. |
| 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<br>If potential for exposure exists refer to Section 8 for specific personal protective equipment.<br>Avoid inhalation, ingestion and contact with skin and eyes.<br>No action shall be taken involving any personal risk or without suitable training.<br>It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. |
| Notes to physician | : | Treat symptomatically. |

## SECTION 5. FIREFIGHTING MEASURES

| | | |
|---|---|---|
| Suitable extinguishing media | : | Water spray<br>Alcohol-resistant foam<br>Carbon dioxide (CO2)<br>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<br>Halogenated compounds |
| 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.<br>Refer to protective measures listed in sections 7 and 8. |
| Environmental precautions | : | Prevent product from entering drains.<br>Prevent further leakage or spillage if safe to do so.<br>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).<br>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.<br>Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.<br>Do not breathe vapours/dust.<br>Avoid exposure - obtain special instructions before use.<br>Avoid contact with skin and eyes.<br>For personal protection see section 8.<br>Smoking, eating and drinking should be prohibited in the application area.<br>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.<br>Containers which are opened must be carefully resealed and kept upright to prevent leakage.<br>Keep in properly labelled containers. |
| Materials to avoid | : | For incompatible materials please refer to Section 10 of this SDS. |
| Recommended storage temperature | : | 36 - 104 °F / 2 - 40 °C |

| | | |
|---|---|---|
| Further information on storage stability | : | Stable under normal conditions. |

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Components with workplace control parameters**

Contains no substances with occupational exposure limit values.

**Personal protective equipment**

| | | |
|---|---|---|
| Respiratory protection | : | 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 |
| Break through time | : | > 8 h |
| Material | : | Solvent-resistant gloves (butyl-rubber) |
| Material | : | Nitrile rubber |
| Break through time | : | 10 - 480 min |
| Material | : | Neoprene gloves |
| Remarks | : | 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.<br>The suitability for a specific workplace should be discussed with the producers of the protective gloves. |
| Eye protection | : | Eye wash bottle with pure water<br>Tightly fitting safety goggles<br>Wear face-shield and protective suit for abnormal processing problems. |
| Skin and body protection | : | Impervious clothing<br>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.<br>When using do not smoke.<br>Wash hands before breaks and at the end of workday. |

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|---|---|---|
| Appearance | : | liquid |
| Colour | : | light yellow |
| Odour | : | slight |
| Odour Threshold | : | No data is available on the product itself. |
| pH | : | 6 (68 °F / 20 °C)<br>Concentration: 500 g/l |
| Melting point/freezing point | : | No data is available on the product itself. |
| Boiling point | : | > 392 °F / > 200 °C |
| Flash point | : | 399 °F / 204 °C<br>Method: Cleveland open 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 | : | < 0.002 hPa (68 °F / 20 °C) |
| Relative vapour density | : | No data is available on the product itself. |
| Relative density | : | No data is available on the product itself. |
| Density | : | 1.17 g/cm3 (77 °F / 25 °C) |
| Solubility(ies) | | |
| Water solubility | : | practically insoluble (68 °F / 20 °C) |
| 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 (SADT) | : | No data is available on the product itself. |
| Viscosity | | |
| Viscosity, dynamic | : | 25,000 - 45,000 mPa.s (77 °F / 25 °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<br>Strong oxidizing agents |
| Hazardous decomposition products | : | carbon dioxide<br>carbon monoxide<br>Halogenated compounds |

## SECTION 11. TOXICOLOGICAL INFORMATION

**Acute toxicity**

**Product:**

| | | |
|---|---|---|
| Acute oral toxicity | : | Acute toxicity estimate: > 5,000 mg/kg<br>Method: Calculation method |
| Acute inhalation toxicity | : | Acute toxicity estimate: 24.56 mg/l<br>Exposure time: 4 h<br>Test atmosphere: dust/mist<br>Method: Calculation method |
| Acute dermal toxicity | : | Acute toxicity estimate: > 5,000 mg/kg<br>Method: Calculation method |

**Components:**

**2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat, female): > 2,000 mg/kg<br>Method: OECD Test Guideline 420<br>Assessment: The substance or mixture has no acute oral toxicity<br>Remarks: No mortality observed at this dose. |
| Acute dermal toxicity | : | LD50 (Rat, male and female): > 2,000 mg/kg<br>Method: OECD Test Guideline 402<br>Assessment: The substance or mixture has no acute dermal toxicity |

**1,4-bis(2,3-epoxypropoxy)butane:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat, male and female): 1,163 mg/kg<br>Method: OECD Test Guideline 401<br>GLP: yes<br>Assessment: The component/mixture is moderately toxic after single ingestion. |
| Acute inhalation toxicity | : | LC50 (Rat): > 2.068 mg/l<br>Exposure time: 4 h<br>Test atmosphere: dust/mist<br><br>Test atmosphere: dust/mist<br>Method: Expert judgement<br>Assessment: The component/mixture is moderately toxic after short term inhalation. |
| Acute dermal toxicity | : | Acute toxicity estimate: 1,100 mg/kg<br>Method: Converted acute toxicity point estimate<br><br>Assessment: The component/mixture is moderately toxic after single contact with skin. |

**Skin corrosion/irritation**

**Components:**

**2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

| | | |
|---|---|---|
| Species | : | Rabbit |
| Exposure time | : | 4 h |
| Assessment | : | Irritating to skin. |
| Method | : | OECD Test Guideline 404 |
| Result | : | Irritating to skin. |

**1,4-bis(2,3-epoxypropoxy)butane:**

| | | |
|---|---|---|
| Species | : | Rabbit |
| Method | : | OECD Test Guideline 404 |
| Result | : | Skin irritation |
| GLP | : | yes |

**Serious eye damage/eye irritation**

**Product:**

| | | |
|---|---|---|
| Assessment | : | Irritating to eyes. |

**Components:**

**2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

| | | |
|---|---|---|
| Species | : | Rabbit |
| Result | : | Irritating to eyes. |
| Assessment | : | Irritating to eyes. |
| Method | : | OECD Test Guideline 405 |

**1,4-bis(2,3-epoxypropoxy)butane:**

| | | |
|---|---|---|
| Species | : | Rabbit |
| Assessment | : | Risk of serious damage to eyes. |
| Method | : | OECD Test Guideline 405 |
| GLP | : | yes |

**Respiratory or skin sensitisation**

**Components:**

**2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

| | | |
|---|---|---|
| Test Type | : | Local lymph node assay (LLNA) |
| Exposure routes | : | Skin |
| Species | : | Mouse |
| Method | : | OECD Test Guideline 429 |
| Result | : | The product is a skin sensitiser, sub-category 1B. |

**1,4-bis(2,3-epoxypropoxy)butane:**

| | | |
|---|---|---|
| Exposure routes | : | Skin |
| Species | : | Guinea pig |
| Method | : | OECD Test Guideline 406 |
| Result | : | May cause sensitisation by skin contact. |
| GLP | : | yes |

| | | |
|---|---|---|
| Assessment | : | Harmful if inhaled. |

**Germ cell mutagenicity**

**Components:**

**2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

| | | |
|---|---|---|
| Genotoxicity in vitro | : | Test Type: In vitro mammalian cell gene mutation test<br>Test system: mouse lymphoma cells<br>Metabolic activation: without metabolic activation<br>Result: positive<br><br>Test Type: reverse mutation assay<br>Test system: Salmonella typhimurium<br>Metabolic activation: with and without metabolic activation<br>Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)<br>Result: negative |
| Genotoxicity in vivo | : | Test Type: in vivo assay<br>Species: Mouse (male)<br>Cell type: Germ<br>Application Route: Oral<br>Dose: 3333, 10000 mg/kg<br>Result: negative<br><br>Test Type: gene mutation test<br>Species: Rat (male)<br>Cell type: Somatic<br>Application Route: Oral<br>Dose: 50,250,500,1000 mg/kg bw/day<br>Method: OECD Test Guideline 488<br>Result: negative |

**1,4-bis(2,3-epoxypropoxy)butane:**

Genotoxicity in vitro : Test Type: reverse mutation assay
Concentration: 10 - 5000 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: positive
GLP: yes
Remarks: Not classified due to data which are conclusive although insufficient for classification.

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster lung cells
Concentration: 1 - 100 µg/L
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: positive
GLP: yes
Remarks: Not classified due to data which are conclusive although insufficient for classification.

Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster lung cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: positive
GLP: no
Remarks: Not classified due to data which are conclusive although insufficient for classification.

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse (male)
Cell type: Somatic
Application Route: Oral
Exposure time: 4 d
Dose: 187.5 - 750 mg/kg
Method: OECD Test Guideline 474
Result: negative
GLP: yes

Test Type: unscheduled DNA synthesis assay
Species: Rat
Cell type: Liver cells
Application Route: Oral
Method: OECD Test Guideline 486
Result: negative

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ cell mutagen., Animal testing did not show any mutagenic effects.

**Carcinogenicity**

**Components:**

**2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

| | | |
|---|---|---|
| Species | : | Rat, male |
| Application Route | : | Oral |
| Exposure time | : | 24 month(s) |
| Dose | : | 0, 2, 15, or 100 mg/kg bw/day |
| Frequency of Treatment | : | 7 days/week |
| NOAEL | : | 15 mg/kg bw/day |
| Method | : | OECD Test Guideline 453 |
| Result | : | negative |
| Target Organs | : | Digestive organs |

| | | |
|---|---|---|
| Species | : | Mouse, male |
| Application Route | : | Dermal |
| Exposure time | : | 24 month(s) |
| Dose | : | 0, 0.1, 10, 100 mg/kg bw/day |
| Frequency of Treatment | : | 3 days/week |
| NOEL | : | 0.1 mg/kg body weight |
| Method | : | OECD Test Guideline 453 |
| Result | : | negative |
| Target Organs | : | Digestive organs |

| | | |
|---|---|---|
| Species | : | Rat, female |
| Application Route | : | Dermal |
| Exposure time | : | 24 month(s) |
| Dose | : | 0.1, 100, 1000 mg/kg bw/day |
| Frequency of Treatment | : | 5 days/week |
| NOEL | : | 100 mg/kg body weight |
| Method | : | OECD Test Guideline 453 |
| Result | : | negative |

| | | |
|---|---|---|
| Species | : | Rat, female |
| Application Route | : | Oral |
| Exposure time | : | 24 month(s) |
| Dose | : | 0, 2, 15, or 100 mg/kg bw/day |
| Frequency of Treatment | : | 7 days/week |
| NOAEL | : | 100 mg/kg bw/day |
| Method | : | OECD Test Guideline 453 |
| Result | : | negative |
| Target Organs | : | Digestive organs |

| | | |
|---|---|---|
| Species | : | Rat, females |
| Application Route | : | Oral |
| Exposure time | : | 24 month(s) |
| Dose | : | 0, 2, 15, or 100 mg/kg bw/day |
| Frequency of Treatment | : | 7 days/week |
| NOEL | : | 2 mg/kg bw/day |
| Method | : | OECD Test Guideline 453 |
| Result | : | negative |
| Target Organs | : | Digestive organs |

**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:**

**2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

Effects on fertility : Test Type: Two-generation study
Species: Rat, male and female
Application Route: Oral
Dose: 0, 50, 180, 540 or 750 milligram per kilogram
Duration of Single Treatment: 238 d
Frequency of Treatment: 1 daily
General Toxicity - Parent: NOEL: 540 mg/kg body weight
General Toxicity F1: NOEL: 750 mg/kg body weight
Symptoms: No adverse effects
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: Dermal
Dose: 0, 30, 100 or 300 milligram per kilogram
Duration of Single Treatment: 28 d
Frequency of Treatment: 1 daily
General Toxicity Maternal: NOAEL: 30 mg/kg body weight
Developmental Toxicity: NOAEL: 300 mg/kg body weight
Method: Other guidelines
Result: No teratogenic effects

Test Type: Pre-natal
Species: Rabbit, female
Application Route: Oral
Dose: 0, 20, 60 or 180 milligram per kilogram
Duration of Single Treatment: 13 d
Frequency of Treatment: 1 daily
General Toxicity Maternal: NOAEL: 60 mg/kg body weight
Developmental Toxicity: NOAEL: 180 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Test Type: Pre-natal
Species: Rat, female
Application Route: Oral
Dose: 0, 60, 180 and 540 milligram per kilogram
Duration of Single Treatment: 10 d
Frequency of Treatment: 1 daily
General Toxicity Maternal: NOAEL: 180 mg/kg body weight
Developmental Toxicity: NOAEL: > 540 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

**1,4-bis(2,3-epoxypropoxy)butane:**

| | | |
|---|---|---|
| Effects on foetal development | : | Test Type: Pre-natal<br>Species: Rat, female<br>Application Route: Oral<br>Dose: 0/30/100/300 mg/kg bw/day<br>Duration of Single Treatment: 17 d<br>General Toxicity Maternal: NOAEL: 300 mg/kg body weight<br>Developmental Toxicity: NOAEL: 300 mg/kg body weight<br>Method: OECD Test Guideline 414<br>GLP: yes<br>Remarks: Information given is based on data obtained from similar substances. |

**STOT - single exposure**

No data available

**STOT - repeated exposure**

No data available

**Repeated dose toxicity**

**Components:**

**2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

| | | |
|---|---|---|
| Species | : | Rat, male and female |
| NOAEL | : | 50 mg/kg |
| Application Route | : | oral (gavage) |
| Exposure time | : | 14 Weeks |
| Number of exposures | : | 7 d |
| Dose | : | 0, 50, 250, 1000 mg/kg/day |
| Method | : | OECD Test Guideline 408 |

| | | |
|---|---|---|
| Species | : | Rat, male and female |
| NOAEL | : | >= 10 mg/kg |
| Application Route | : | Skin contact |
| Exposure time | : | 13 Weeks |
| Number of exposures | : | 5 d |
| Dose | : | 0, 10, 100, 1000 mg/kg/day |
| Method | : | OECD Test Guideline 411 |

| | | |
|---|---|---|
| Species | : | Mouse, male |
| NOAEL | : | 100 mg/kg |
| Application Route | : | Skin contact |
| Exposure time | : | 13 Weeks |
| Number of exposures | : | 3 d |
| Dose | : | 0, 1, 10, 100 mg/kg/day |
| Method | : | OECD Test Guideline 411 |

**1,4-bis(2,3-epoxypropoxy)butane:**

| | | |
|---|---|---|
| Species | : | Rat, male and female |
| NOAEL | : | 200 mg/kg |
| Application Route | : | Oral |
| Exposure time | : | 28 d |
| Number of exposures | : | daily |
| Dose | : | 25, 100, 200, 400 mg/kg |
| Method | : | Subacute toxicity |

| | | |
|---|---|---|
| Species | : | Rat, male and female |
| NOAEL | : | 263 mg/kg |
| Application Route | : | Oral |
| Exposure time | : | 90 h |
| Number of exposures | : | daily |
| Dose | : | 0,30,100,300 mg/kg bw/day |
| Method | : | OECD Test Guideline 408 |
| GLP | : | yes |
| Remarks | : | Information given is based on data obtained from similar substances. |

Repeated dose toxicity - Assessment : Harmful if inhaled.

**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:**

**2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Oncorhynchus mykiss (rainbow trout)): 2 mg/l<br>Exposure time: 96 h<br>Method: OECD Test Guideline 203 |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): 1.8 mg/l<br>Exposure time: 48 h<br>Test Type: static test<br>Test substance: Fresh water<br>Method: OECD Test Guideline 202 |
| Toxicity to algae/aquatic plants | : | EC50: 11 mg/l<br>Exposure time: 72 h<br>Test Type: static test<br>Test substance: Fresh water<br>Method: EPA-660/3-75-009<br><br>NOEC: 4.2 mg/l<br>Exposure time: 72 h<br>Test Type: static test<br>Test substance: Fresh water |

Method: EPA-660/3-75-009

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.3 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water

**Ecotoxicology Assessment**

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

**1,4-bis(2,3-epoxypropoxy)butane:**

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): 24 mg/l
End point: mortality
Exposure time: 96 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: OECD Test Guideline 203
GLP: no

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 75 mg/l
End point: Immobilization
Exposure time: 24 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: OECD Test Guideline 202
GLP: no

Toxicity to algae/aquatic plants : EL50 (Pseudokirchneriella subcapitata (green algae)): > 160 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

NOELR (Pseudokirchneriella subcapitata (green algae)): 40 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 microorganisms : IC50 (activated sludge): > 100 mg/l
Exposure time: 3 h

Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: OECD Test Guideline 209
GLP: no

**Persistence and degradability**

**Components:**

**2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

Biodegradability : aerobic
Inoculum: activated sludge, non-adapted
Concentration: 20 mg/l
Result: Not readily biodegradable.
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Stability in water : Degradation half life (DT50): 4.83 d (25 °C) pH: 4
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life (DT50): 7.1 d (25 °C) pH: 9
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life (DT50): 3.58 d (25 °C) pH: 7
Method: OECD Test Guideline 111
Remarks: Fresh water

**1,4-bis(2,3-epoxypropoxy)butane:**

Biodegradability : aerobic
Inoculum: activated sludge
Concentration: 20 mg/l
Result: Not readily biodegradable.
Biodegradation: 43 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
GLP: yes

aerobic
Inoculum: Sewage (STP effluent)
Concentration: 20 mg/l
Dissolved organic carbon (DOC)
Result: Not readily biodegradable.
Biodegradation: 38 %
Exposure time: 28 d
Method: OECD Test Guideline 301E
GLP: no

**Bioaccumulative potential**

**Components:**

**2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

Bioaccumulation : Bioconcentration factor (BCF): 31
Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 3.242 (77 °F / 25 °C)
pH: 7.1
Method: OECD Test Guideline 117

**1,4-bis(2,3-epoxypropoxy)butane:**

Partition coefficient: n-octanol/water : log Pow: -0.269 (77 °F / 25 °C)
pH: 6.7
Method: OECD Test Guideline 117
GLP: yes

**Mobility in soil**

**Components:**

**2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

Distribution among environmental compartments : Koc: 445

**1,4-bis(2,3-epoxypropoxy)butane:**

Distribution among environmental compartments : Koc: 12.59
Method: OECD Test Guideline 121

**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).

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

## 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.<br>Dispose of as unused product.<br>Do not re-use empty containers. |

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

**IATA-DGR**

| | | |
|---|---|---|
| UN/ID No. | : | UN 3082 |
| Proper shipping name | : | Environmentally hazardous substance, liquid, n.o.s.<br>(BISPHENOL A EPOXY RESIN) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | Miscellaneous |
| Packing instruction (cargo aircraft) | : | 964 |
| Packing instruction (passenger aircraft) | : | 964 |
| Environmentally hazardous | : | yes |

**IMDG-Code**

| | | |
|---|---|---|
| UN number | : | UN 3082 |
| Proper shipping name | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.<br>(BISPHENOL A EPOXY RESIN) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | 9 |
| EmS Code | : | F-A, S-F |
| 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

**49 CFR**

| | | |
|---|---|---|
| UN/ID/NA number | : | UN 3082 |
| Proper shipping name | : | Environmentally hazardous substance, liquid, n.o.s.<br>(BISPHENOL A EPOXY RESIN) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | CLASS 9 |
| ERG Code | : | 171 |
| Marine pollutant | : | yes |
| Remarks | : | Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO. |

**Special precautions for user**

| | | |
|---|---|---|
| Remarks | : | 49CFR: no dangerous good in non-bulk packaging |

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**

| Components | CAS-No. | Component RQ (lbs) | Calculated product RQ (lbs) |
|---|---|---|---|
| methanol | 67-56-1 | 5000 | |

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

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

**California Prop. 65**

WARNING: This product can expose you to chemicals including methanol, 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

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

AIIC : 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

NZIoC : 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 : All substances listed as active on the TSCA inventory

**Inventories**

AIIC (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)

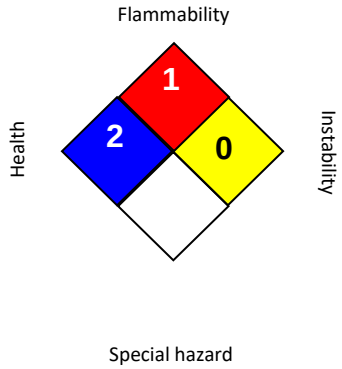
**TSCA - 5(a) Significant New Use Rule List of Chemicals**
No substances are subject to a Significant New Use Rule.

**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.

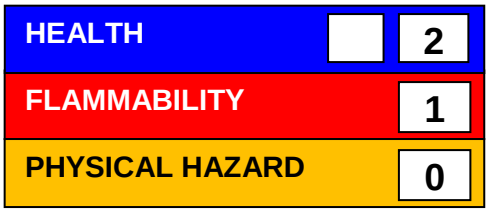
## SECTION 16. OTHER INFORMATION

**Further information**

**NFPA 704:**




**HMIS® IV:**




HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard

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

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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