ARALDITE® 2014 A US

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SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2014 A US

Manufacturer or supplier's details

Company name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980
The Woodlands,
TX 77387
United States of America (USA)
Telephone : Non-Emergency: (800) 257-5547

E-mail address : Global_Product_EHS_AdMat@huntsman.com

Emergency telephone : 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

Serious eye damage : Category 1

Skin sensitisation : Category 1

Germ cell mutagenicity : Category 2

Reproductive toxicity : Category 1B

Specific target organ toxicity - repeated exposure (Oral) : Category 2 (lymphatic system)

Short-term (acute) aquatic hazard : Category 2

Long-term (chronic) aquatic hazard : Category 2

Other hazards

None known.

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H341 Suspected of causing genetic defects.
H360F May damage fertility.
H373 May cause damage to organs (lymphatic system) through prolonged or repeated exposure if swallowed.
H411 Toxic to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe mist or vapours.
P264 Wash skin thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash 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.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	1675-54-3	30 - 50
barium sulfate	7727-43-7	30 - 50
1,4-bis(2,3-epoxypropoxy)butane	2425-79-8	1 - 5
1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione	2451-62-9	1 - 5

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. Consult a physician. Show this material safety data sheet to the doctor in attendance. Treat symptomatically. Get medical attention if symptoms occur.
If inhaled	:	Call a physician or poison control centre immediately. If inhaled, remove to fresh air. Get medical attention if symptoms occur.
In case of skin contact	:	If skin irritation persists, call a physician. 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	:	Induce vomiting immediately and call a physician. Keep respiratory tract clear. 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	:	Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. Suspected of causing genetic defects. May damage fertility. May cause damage to organs through prolonged or repeated exposure if swallowed.
Protection of first-aiders	:	First Aid responders should pay attention to self-protection

and use the recommended protective clothing
If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Avoid inhalation, ingestion and contact with skin and eyes.
No action shall be taken involving any personal risk or without suitable training.
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO2)
Dry chemical

Unsuitable extinguishing media : Exercise caution when using a high volume water jet as it may scatter and spread fire

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : Carbon oxides
Phenolics
Sulfur oxides

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 fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Refer to protective measures listed in sections 7 and 8.

Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for : Soak up with inert absorbent material (e.g. sand, silica gel,

containment and cleaning up	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 sensitization of susceptible persons. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product. Do not breathe vapors/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. To avoid spills during handling keep bottle on a metal tray. Dispose of rinse water in accordance with local and national regulations.
Conditions for safe storage	:	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Keep in properly labeled 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

Ingredients 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/m3	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
		TWA (Inhalable particulate	5 mg/m3	ACGIH

		matter)		
		TWA (Respirable)	5 mg/m3	NIOSH REL
		TWA (total)	10 mg/m3	NIOSH REL
		TWA (Total dust)	10 mg/m3	OSHA P0
		TWA (respirable dust fraction)	5 mg/m3	OSHA P0
1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione	2451-62-9	TWA	0.05 mg/m3	ACGIH

Personal protective equipment

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

Hand protection

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	:	paste
Color	:	beige
Odor	:	slight
Odor Threshold	:	No data is available on the product itself.
pH	:	substance/mixture is non-soluble (in water)
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available

Flash point	:	> 201 °F / > 94 °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.
Vapor pressure	:	No data is available on the product itself.
Relative vapor density	:	No data is available on the product itself.
Relative density	:	1.55
Density	:	No data is available on the product itself.
Solubility(ies)		
Water solubility	:	negligible
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.
Autoignition temperature	:	No data is available on the product itself.
Decomposition temperature	:	No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	:	No data is available on the product itself.
Viscosity		
Viscosity, dynamic	:	ca. 100,000 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.
Molecular weight	:	No data available
Particle size	:	No data is available on the product itself.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.

Possibility of hazardous reactions	:	No hazards to be specially mentioned.
Conditions to avoid	:	None known.
Incompatible materials	:	None known.
Hazardous decomposition products	:	No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified due to lack of data.

Product:

Acute oral toxicity	:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Acute toxicity estimate: 29.3 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method
Acute dermal toxicity	:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method

Components:

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

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

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

Acute oral toxicity	:	LD50 (Rat, male and female): 1,163 mg/kg Method: OECD Test Guideline 401 GLP: yes Assessment: The component/mixture is moderately toxic after single ingestion.
Acute inhalation toxicity	:	LC50 (Rat): > 2.068 mg/l Exposure time: 4 h Test atmosphere: dust/mist Test atmosphere: dust/mist Method: Expert judgment Assessment: The component/mixture is moderately toxic after short term inhalation., The substance/mixture is not toxic on

inhalation as defined by dangerous goods regulations.

Acute dermal toxicity : Acute toxicity estimate: 1,100 mg/kg
Method: Converted acute toxicity point estimate

Assessment: The component/mixture is moderately toxic after single contact with skin.

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Acute oral toxicity : LD50 (Rat, male and female): 400 - 800 mg/kg
Method: OECD Test Guideline 423
GLP: yes
Assessment: The component/mixture is moderately toxic after single ingestion.

Acute inhalation toxicity : LC50 (Rat, male and female): 1.14 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The component/mixture is toxic after short term inhalation.

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

Skin corrosion/irritation

Causes skin 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.

barium sulfate:

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

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

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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Species	:	Rabbit
Exposure time	:	4 h
Assessment	:	No skin irritation
Method	:	OECD Test Guideline 404
Result	:	No skin irritation
GLP	:	yes

Serious eye damage/eye irritation

Causes serious eye damage.

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

barium sulfate:

Species	:	Rabbit
Result	:	No eye irritation
Assessment	:	No eye irritation
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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

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

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified due to lack of data.

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.

barium sulfate:

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

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.

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

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

Germ cell mutagenicity

Suspected of causing genetic defects.

Components:

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

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: without metabolic activation
Result: positive

Test Type: reverse mutation assay
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
Result: negative

Genotoxicity in vivo : Test Type: in vivo assay
Species: Mouse (male)
Cell type: Germ
Application Route: Oral
Dose: 3333, 10000 mg/kg
Result: negative

Test Type: gene mutation test
Species: Rat (male)
Cell type: Somatic
Application Route: Oral
Dose: 50,250,500,1000 mg/kg bw/day

Method: OECD Test Guideline 488
Result: negative

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

1,4-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

Test Type: gene mutation test
Species: Rat (male)
Cell type: Somatic
Application Route: Oral
Dose: 0, 62.5, 125 and 250 mg/kg
Method: OECD Test Guideline 488
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.

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Genotoxicity in vitro : Test Type: reverse mutation assay
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: positive
GLP: yes

Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Result: positive
GLP: yes

Test Type: Chromosome aberration test in vitro
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Result: positive
GLP: yes

Genotoxicity in vivo : Test Type: in vivo assay
Species: Mouse (male)
Cell type: Germ
Application Route: Oral
Dose: 0/28.75/57.5/115 mg/kg
Method: OECD Test Guideline 483
Result: positive
GLP: yes

Test Type: In vivo micronucleus test
Species: Chinese hamster (male and female)
Cell type: Bone marrow
Application Route: Oral

Dose: 0/140/280/560 mg/kg
Result: positive
GLP: yes

Test Type: in vivo assay
Species: Mouse (male)
Cell type: Germ
Application Route: Oral
Exposure time: 5 d
Dose: 0/28.75/57.5/115 mg/kg
Method: OECD Test Guideline 483
Result: positive
GLP: yes

Germ cell mutagenicity - Assessment	:	Positive result(s) from in vivo somatic cell mutagenicity tests supported by positive results from in vitro mutagenicity assays or chemical structure activity relationship to known germ cell mutagens

Carcinogenicity

Not classified due to lack of data.

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

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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Species	:	Rat, male
Application Route	:	Oral
Exposure time	:	99 weeks
Dose	:	0/10/30/100/300 ppm
Frequency of Treatment	:	24 hour
NOAEL	:	4.36 mg/kg bw/day
Method	:	OECD Test Guideline 451
Result	:	negative
GLP	:	yes

IARC No ingredient 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 ingredient 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

May damage fertility.

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 fetal 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 fertility : Test Type: reproductive and developmental toxicity study

Species: Rat, male and female
Application Route: Oral
Dose: 0/50/200/500 mg/kg bw/day
Duration of Single Treatment: 43 d
General Toxicity Parent: LOEL: 500 mg/kg body weight
General Toxicity F1: LOAEL: 500 mg/kg body weight
Target Organs: Gastrointestinal tract
Method: OECD Test Guideline 421
GLP: yes

Test Type: Extended one-generation reproduction toxicity study
Species: Rat, male and female
Application Route: Oral
Dose: 0/10/55/300 mg/kg bw/day
General Toxicity Parent: NOAEL: 55 mg/kg body weight
General Toxicity F1: NOAEL: 300 mg/kg body weight
Method: OECD Test Guideline 443
GLP: yes

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

Test Type: reproductive and developmental toxicity study
Species: Rat, male and female
Application Route: Oral
Dose: 0/33/110/300 mg/kg bw/day
Duration of Single Treatment: 18 d
General Toxicity Maternal: NOAEL: 110 mg/kg body weight
Embryo-fetal toxicity.: NOAEL: 300 mg/kg body weight
Method: OECD Test Guideline 414
GLP: yes

Test Type: Pre-natal
Species: Rabbit
Application Route: Oral
Dose: 0/125/250/500 mg/kg bw/day
General Toxicity Maternal: NOAEL: 250 mg/kg body weight
Embryo-fetal toxicity.: NOAEL: 250 mg/kg body weight
Method: OECD Test Guideline 414
GLP: yes

Reproductive toxicity - Assessment : Clear evidence of adverse effects on sexual function and fertility, based on animal experiments.

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Effects on fertility : Species: Mouse, male
Application Route: inhalation (dust/mist/fume)
Dose: 2.5/10/50 mg/m³
General Toxicity Parent: NOAEC: ca. 2.5 mg/m³
Method: OECD Test Guideline 478
GLP: yes

Test Type: Fertility
Species: Rat, male
Application Route: Oral
Dose: 0.72/2.08/7.32 milligram per kilogram
Duration of Single Treatment: 64 d
Frequency of Treatment: 7 days/week
General Toxicity Parent: NOAEL: 7.32 mg/kg body weight
General Toxicity F1: NOEL: 2.08 mg/kg body weight
Target Organs: Reproductive organs
Method: OECD Test Guideline 408
Result: negative
GLP: yes

STOT-single exposure

Not classified due to lack of data.

STOT-repeated exposure

May cause damage to organs (lymphatic system) through prolonged or repeated exposure if swallowed.

Components:

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Exposure routes	:	Ingestion
Target Organs	:	lymphatic system
Assessment	:	May cause damage to organs through prolonged or repeated exposure.

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

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

1,4-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.

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Species	:	Rat, male and female
NOEL	:	2.08 mg/kg
LOAEL	:	7.32 mg/kg
Application Route	:	oral (feed)
Exposure time	:	94 d
Number of exposures	:	7 days/week
Dose	:	0/10/30/100 ppm
Method	:	OECD Test Guideline 408
GLP	:	yes

Species	:	Mouse, male
NOAEL	:	=<100 mg/m³
Application Route	:	inhalation (dust/mist/fume)
Exposure time	:	5 d 6 h
Dose	:	0/100/350/750 mg/m³
Method	:	OECD Test Guideline 412
GLP	:	yes

Aspiration toxicity

Not classified due to lack of data.

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 Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 1.8 mg/l Exposure time: 48 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50: 11 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: EPA-660/3-75-009 NOEC: 4.2 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: EPA-660/3-75-009
Toxicity to daphnia and other aquatic invertebrates	:	NOEC (Daphnia magna (Water flea)): 0.3 mg/l Exposure time: 21 d

(Chronic toxicity)		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.

barium sulfate:

Toxicity to fish	:	LC50 : 174 mg/l Exposure time: 96 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 14.5 mg/l Exposure time: 48 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50: > 100 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201 NOEC: > 1.15 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 5.8 mg/l Exposure time: 21 d Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211

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 fish (Chronic toxicity)	:	NOEC (Danio rerio (zebra fish)): > 3.2 mg/l Exposure time: 35 d Test Type: flow-through test Method: OECD Test Guideline 210
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 15 mg/l Exposure time: 21 d Test Type: semi-static test Method: OECD Test Guideline 211 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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Toxicity to fish	:	LC50 (Brachydanio rerio (zebrafish)): > 77 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: no

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): > 100 mg/l
End point: Immobilization
Exposure time: 24 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 202
GLP: no

Toxicity to algae/aquatic plants : EbC50 (Desmodesmus subspicatus (green algae)): 29 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
Test substance: Fresh water
Method: OECD Test Guideline 209
GLP: yes

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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Biodegradability : aerobic
Inoculum: activated sludge
Result: Not readily biodegradable.
Biodegradation: > 0.5 - < 1 %
Exposure time: 44 d
Method: OECD Test Guideline 301B
GLP: yes

Stability in water : Degradation half life (DT50): 6.66 d (25 °C) pH: 7
Method: OECD Test Guideline 111
Remarks: Fresh water

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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Partition coefficient: n-octanol/water : log Pow: ca. -0.8 (203 °F / 95 °C)
pH: 5 - 8

Method: OECD Test Guideline 107

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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Distribution among environmental compartments : Koc: 31.7
Method: OECD Test Guideline 121

Koc: 50.1
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.

Components:

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Results of PBT and vPvB assessment : This substance/mixture contains components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB).

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

UNRTDG

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BISPHENOL A EPOXY RESIN)
Class	:	9
Packing group	:	III
Labels	:	9
Environmentally hazardous	:	yes

IATA-DGR

UN/ID No.	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s. (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. (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 IMO instruments

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s. (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

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 sensitization
Germ cell mutagenicity
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione	2451-62-9	>= 1 - < 5 %

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

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.

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

TSCA : All substances listed as active on the TSCA inventory

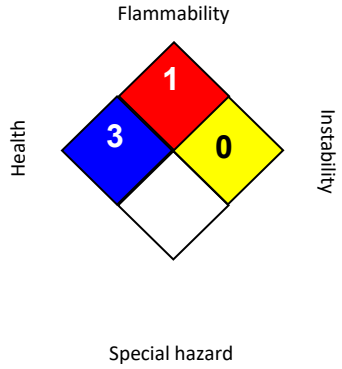
TSCA - 5(a) Significant New Use Rule List of Chemicals
No substances are subject to a Significant New Use Rule.

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.

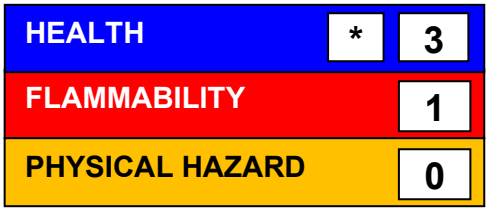
SECTION 16. OTHER INFORMATION

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	:	05/26/2025
ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA P0 / TWA	:	8-hour time weighted average
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® 2014 B US

Version	Revision Date:	SDS Number:	Date of last issue: 10/15/2020
2.1	01/09/2024	400001012585	Date of first issue: 04/12/2016

Print Date 07/29/2024

SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2014 B US

Manufacturer or supplier's details

Company name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980
The Woodlands,
TX 77387
United States of America (USA)
Telephone : Non-Emergency: (800) 257-5547

E-mail address : Global_Product_EHS_AdMat@huntsman.com

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

Recommended use of the chemical and restrictions on use

Recommended use : Hardener

Restrictions on use : For Research and Development or Export Only.

SECTION 2. HAZARDS IDENTIFICATION

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

Skin irritation : Category 2

Serious eye damage : Category 1

Skin sensitisation : Category 1

Reproductive toxicity : Category 1B

Short-term (acute) aquatic hazard : Category 2

Long-term (chronic) aquatic hazard : Category 2

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H360F May damage fertility.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P261 Avoid breathing mist or vapours.
P264 Wash skin thoroughly after handling.
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:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash 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
Fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine	68082-29-1	20 - 30

Fatty acids, C16-18 and C18-unsatd., branched and linear, polymers with C18-unsatd. fatty acids dimers, and an amine	ACCN #: 255120	5 - 10
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	10563-29-8	5 - 9.65
Diethylenetriamine	111-40-0	1 - 5
Triethylenetetramine	112-24-3	1 - 5
4,4'-isopropylidenediphenol	80-05-7	1 - 5

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

SECTION 4. FIRST AID MEASURES

General advice	:	Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance. Treat symptomatically. Get medical attention if symptoms occur.
If inhaled	:	Consult a physician after significant exposure. If inhaled, remove to fresh air. Get medical attention if symptoms occur.
In case of skin contact	:	If skin irritation persists, call a physician. 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	:	Induce vomiting immediately and call a physician. Keep respiratory tract clear. 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	:	Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage.

May damage fertility.

Protection of first-aiders	:	First Aid responders should pay attention to self-protection and use the recommended protective clothing If potential for exposure exists refer to Section 8 for specific personal protective equipment. Avoid inhalation, ingestion and contact with skin and eyes. No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
Notes to physician	:	Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Water spray Alcohol-resistant foam Carbon dioxide (CO2) Dry chemical
Unsuitable extinguishing media	:	Exercise caution when using a high volume water jet as it may scatter and spread fire
Specific hazards during firefighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	Sulphur oxides Carbon oxides 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. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Ensure adequate ventilation. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so.

If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

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

Advice on safe handling : Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons.
Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.
Avoid formation of aerosol.
Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
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 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	Control	Basis

		(Form of exposure)	parameters / Permissible concentration	
barium sulfate	7727-43-7	TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
		TWA (Inhalable particulate matter)	5 mg/m3	ACGIH
		TWA (Respirable)	5 mg/m3	NIOSH REL
		TWA (total)	10 mg/m3	NIOSH REL
		TWA (Total dust)	10 mg/m3	OSHA P0
		TWA (respirable dust fraction)	5 mg/m3	OSHA P0
Diethylenetriamine	111-40-0	TWA	1 ppm	ACGIH
		TWA	1 ppm 4 mg/m3	NIOSH REL
		TWA	1 ppm 4 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.

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

Hand protection

Material : butyl-rubber
Break through time : > 8 h

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

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

Remarks	:	The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Eye protection	:	Eye wash bottle with pure water Tightly fitting safety goggles Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	:	Impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	paste
Colour	:	grey
Odour	:	slight
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	:	No data is available on the product itself.
Flash point	:	> 199 °F / > 93 °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	:	1.57
Density	:	No data is available on the product itself.
Solubility(ies)		
Water solubility	:	< 0.1 g/l (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	:	No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	:	No data is available on the product itself.
Viscosity		
Viscosity, dynamic	:	thixotropic
Explosive properties	:	No data is available on the product itself.
Oxidizing properties	:	No data is available on the product itself.
Particle size	:	No data is available on the product itself.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No hazards to be specially mentioned.
Conditions to avoid	:	None known.

Incompatible materials	:	None known.
Hazardous decomposition products	:	No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified due to lack of data.

Product:

Acute oral toxicity	:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Acute toxicity estimate: 6.02 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method
Acute dermal toxicity	:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method

Components:

Fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine:

Acute oral toxicity	:	LD50 (Rat, female): > 2,000 mg/kg Method: OECD Test Guideline 423 GLP: yes Assessment: The substance or mixture has no acute oral toxicity
Acute dermal toxicity	:	LD50 (Rat, male and female): > 2,000 mg/kg Method: OECD Test Guideline 402 GLP: yes 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.

Diethylenetriamine:

Acute oral toxicity	:	LD50 (Rat, male): 1,553 mg/kg Assessment: The component/mixture is moderately toxic after single ingestion.
Acute inhalation toxicity	:	Acute toxicity estimate: 0.185 mg/l Test atmosphere: dust/mist

Method: Expert judgement
Assessment: The component/mixture is highly toxic after short term inhalation.

LC0 (Rat, male and female): 0.07 mg/l
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
GLP: yes
Assessment: The component/mixture is highly toxic after short term inhalation.

LC100 (Rat, male and female): 0.3 mg/l
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
GLP: yes
Assessment: The component/mixture is highly toxic after short term inhalation.

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

Triethylenetetramine:

Acute oral toxicity : LD50 (Rat, male and female): 1,716.2 mg/kg
Method: OECD Test Guideline 401
Assessment: The component/mixture is moderately toxic after single ingestion.

Acute dermal toxicity : LD50 (Rabbit, male and female): 1,465.4 mg/kg
Method: OECD Test Guideline 402
Assessment: The component/mixture is moderately toxic after single contact with skin.

4,4'-isopropylidenediphenol:

Acute oral toxicity : LD50 (Rat, male and female): > 2,000 - < 5,000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat, male and female): > 170 mg/m3
Exposure time: 6 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit, male): ca. 6,400 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation

Causes skin irritation.

Product:

Result : Skin irritation

Components:

barium sulfate:

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

Fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine:

Species	:	Human
Exposure time	:	1 h
Method	:	OECD Test Guideline 439
Result	:	Skin irritation
GLP	:	yes

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

Diethylenetriamine:

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

Triethylenetetramine:

Species	:	reconstructed human epidermis (RhE)
Assessment	:	Causes burns.
Method	:	OECD Test Guideline 435
Result	:	Corrosive after 3 minutes to 1 hour of exposure

Species	:	Rabbit
Assessment	:	Causes burns.
Method	:	OECD Test Guideline 404
Result	:	Corrosive after 3 minutes to 1 hour of exposure

4,4'-isopropylidenediphenol:

Species	:	Rabbit
Assessment	:	No skin irritation
Method	:	OECD Test Guideline 404
Result	:	No skin irritation
GLP	:	yes

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Result	:	Irreversible effects on the eye

Method : OECD Test Guideline 405
GLP : yes

Components:

barium sulfate:

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

Fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine:

Species : Rabbit
Result : Irreversible effects on the eye
Method : OECD Test Guideline 405
GLP : yes

Fatty acids, C16-18 and C18-unsatd., branched and linear, polymers with C18-unsatd. fatty acids dimers, and an amine:

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

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

Diethylenetriamine:

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

Triethylenetetramine:

Species : Rabbit
Result : Irreversible effects on the eye
Assessment : Risk of serious damage to eyes.
Method : OECD Test Guideline 405

4,4'-isopropylidenediphenol:

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

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified due to lack of data.

Components:

barium sulfate:

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

Fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine:

Test Type	:	Local lymph node assay (LLNA)
Exposure routes	:	Skin
Species	:	Mouse
Method	:	OECD Test Guideline 429
Result	:	Probability or evidence of high skin sensitisation rate in humans
GLP	:	yes

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

Diethylenetriamine:

Exposure routes	:	Skin
Species	:	Mouse
Assessment	:	Probability or evidence of low to moderate skin sensitisation rate in humans
Method	:	OECD Test Guideline 429
Result	:	Probability or evidence of low to moderate skin sensitisation rate in humans
GLP	:	yes
Remarks	:	Causes sensitisation.
Exposure routes	:	Respiratory Tract
Species	:	Mouse
Result	:	Does not cause respiratory sensitisation.

Triethylenetetramine:

Exposure routes	:	Skin
Species	:	Guinea pig
Assessment	:	Probability or evidence of skin sensitisation in humans
Method	:	OECD Test Guideline 406
Result	:	Probability or evidence of skin sensitisation in humans

4,4'-isopropylidenediphenol:

Exposure routes	:	Skin
Species	:	Mouse
Assessment	:	Did not cause sensitisation on laboratory animals.
Method	:	OECD Test Guideline 429
Result	:	Did not cause sensitisation on laboratory animals.
GLP	:	yes

Exposure routes	:	Skin
Species	:	Humans
Assessment	:	May cause sensitisation by skin contact.
Result	:	Causes sensitisation.

Germ cell mutagenicity

Not classified due to lack of data.

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

Fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine:

Genotoxicity in vitro	:	Test Type: Micronucleus test 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 GLP: yes

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

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

Diethylenetriamine:

Genotoxicity in vitro : Test Type: reverse mutation assay
Test system: Salmonella tryphimurium and E. coli
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

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

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

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

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

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

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

Triethylenetetramine:

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

Test Type: Micronucleus test
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
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: 0 - 600 mg/kg
Method: OECD Test Guideline 474
Result: negative

4,4'-isopropylidenediphenol:

Genotoxicity in vitro	:	Test Type: Chromosome aberration test in vitro Test system: Chinese hamster ovary cells Metabolic activation: with and without metabolic activation Result: negative Test Type: reverse mutation assay Test system: Salmonella tryphimurium and E. coli Metabolic activation: with and without metabolic activation Result: negative Test Type: gene mutation test Test system: mouse lymphoma cells Metabolic activation: with and without metabolic activation Result: negative
Genotoxicity in vivo	:	Test Type: Micronucleus test Species: Mouse (male and female) Cell type: Bone marrow Application Route: Oral Dose: 0, 500, 1000, or 2000 mg/kg Result: negative

Carcinogenicity

Not classified due to lack of data.

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

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.

Diethylenetriamine:

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

Triethylenetetramine:

Species	:	Mouse, male
Application Route	:	Dermal
NOAEL	:	>= 50 mg/kg bw/day
Method	:	OECD Test Guideline 451
Result	:	negative

Species	:	Mouse, male
Application Route	:	Dermal
Exposure time	:	104 weeks
NOAEL	:	>= 20 mg/kg bw/day
Method	:	OECD Test Guideline 451
Result	:	negative

4,4'-isopropylidenediphenol:

Species	:	Rat, male and female
Application Route	:	Oral
Exposure time	:	103 weeks
Frequency of Treatment	:	7 daily
Result	:	negative
GLP	:	yes

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

May damage fertility.

Components:

Fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine:

Effects on fertility	:	Test Type: Fertility Species: Rat, male and female Application Route: Oral Dose: 0, 100, 300, 1000 mg/kg bw/d Fertility: NOAEL: 1,000 mg/kg body weight Method: OECD Test Guideline 422

Result: No effects on fertility and early embryonic development were detected.
GLP: yes

Effects on foetal development : Test Type: Pre-natal
Species: Rat, female
Strain: wistar
Application Route: Oral
Dose: 100.300,1000 mg/kg bw/day
Duration of Single Treatment: 15 d
General Toxicity Maternal: NOAEL: 300 mg/kg body weight
Teratogenicity: NOAEL: 1,000 mg/kg body weight
Developmental Toxicity: NOAEL: 1,000 mg/kg body weight
Embryo-foetal toxicity: NOAEL: 1,000 mg/kg body weight
Method: OECD Test Guideline 414
GLP: yes

Test Type: Pre-natal
Species: Rabbit, female
Application Route: Oral
Dose: 15,35,75 mg/kg bw/day
Duration of Single Treatment: 23 d
General Toxicity Maternal: NOAEL: 35 mg/kg body weight
Teratogenicity: NOAEL: 75 mg/kg body weight
Developmental Toxicity: NOAEL: 75 mg/kg body weight
Method: OECD Test Guideline 414
GLP: yes

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.

Diethylenetriamine:

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

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

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

Triethylenetetramine:

Effects on foetal development : Test Type: Pre-natal
Species: Rat
Application Route: Oral
Dose: 75/325/750 mg/kg bw/day
Duration of Single Treatment: 10 d
General Toxicity Maternal: NOAEL: >= 750 mg/kg body weight
Developmental Toxicity: NOAEL: >= 750 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Test Type: Pre-natal
Species: Rabbit
Application Route: Dermal
Dose: 5/50/125 mg/kg bw/day
Duration of Single Treatment: 13 d
General Toxicity Maternal: NOAEL: 50 mg/kg body weight
Developmental Toxicity: NOAEL: >= 125 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

4,4'-isopropylidenediphenol:

Effects on fertility	:	Test Type: Two-generation study Species: Rat, male and female Application Route: Oral Dose: 0, 0.2, 2, 20, and 200 µg/kg General Toxicity - Parent: NOAEL: 0.2 mg/kg body weight General Toxicity F1: NOAEL: 0.2 mg/kg body weight General Toxicity F2: NOAEL: 0.2 mg/kg body weight Method: OECD Test Guideline 416 Result: Embryotoxic effects and adverse effects on the offspring were detected. GLP: yes Species: Rat, male and female General Toxicity - Parent: NOAEL: 2.7 mg/kg body weight General Toxicity F1: NOAEL: 2.7 mg/kg body weight GLP: yes
Effects on foetal development	:	Species: Rat, female Application Route: Oral General Toxicity Maternal: NOAEL: 0.2 mg/kg body weight Method: OECD Test Guideline 416 Result: No teratogenic effects
Reproductive toxicity - Assessment	:	Clear evidence of adverse effects on sexual function and fertility, based on animal experiments.

STOT - single exposure

Not classified due to lack of data.

Components:

Diethylenetriamine:

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

4,4'-isopropylidenediphenol:

Assessment	:	The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

STOT - repeated exposure

Not classified due to lack of data.

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

Fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine:

Species	:	Rat, male and female
NOAEL	:	1000 mg/kg
Application Route	:	Oral
Exposure time	:	14 d
Dose	:	100,300,1000 mg/kg bw/d
Method	:	OECD Test Guideline 422
GLP	:	yes

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

Diethylenetriamine:

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

Species	:	Rat, male and female

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

Species	:	Rat, male and female
NOAEL	:	114 mg/kg
Application Route	:	Dermal
Number of exposures	:	6 days/week
Dose	:	0.4 mls of a 100 mg/cc solutio

Triethylenetetramine:

Species	:	Rat, male and female
NOAEL	:	350 mg/kg
Application Route	:	Oral
Exposure time	:	28 d
Number of exposures	:	7 d
Dose	:	100/350/1000 mg/kg bw/day
Method	:	OECD Test Guideline 407
Target Organs	:	Lungs
Remarks	:	Information given is based on data obtained from similar substances.

Species	:	Dog, male and female
NOAEL	:	125 mg/kg
Application Route	:	Oral
Target Organs	:	Lungs
Remarks	:	Information given is based on data obtained from similar substances.

Species	:	Dog, male and female
NOAEL	:	50 mg/kg
Application Route	:	Oral
Method	:	Subchronic toxicity
Remarks	:	Information given is based on data obtained from similar substances.

Species	:	Rat, male and female
NOAEL	:	50 mg/kg
Application Route	:	Oral
Exposure time	:	26 weeks
Dose	:	50/175/600 mg/kg bw/day
Method	:	OECD Test Guideline 408
Target Organs	:	Lungs
Remarks	:	Information given is based on data obtained from similar substances.

Species	:	Mouse, male and female
NOAEL	:	92 mg/kg, 600 ppm
Application Route	:	Oral
Exposure time	:	120/600/3000 ppm
Method	:	OECD Test Guideline 408
Remarks	:	Information given is based on data obtained from similar

substances.

4,4'-isopropylidenediphenol:

Species	:	Mouse, male and female
NOAEL	:	300 ppm
Application Route	:	oral (feed)
Exposure time	:	8 weeks
Number of exposures	:	7 days/week
Dose	:	0.018,0.18,1.8,30,300,3500 ppm
Method	:	OECD Test Guideline 416
GLP	:	yes

Species	:	Rat, male and female
NOEL	:	75 ppm
NOAEL	:	750 ppm
Application Route	:	oral (feed)
Number of exposures	:	7 days/week
Dose	:	0,0.015,0.3,4.5,75,750,7500ppm
Method	:	OECD Test Guideline 416
GLP	:	yes

Species	:	Rat, male and female
LOAEL	:	600 mg/kg
Application Route	:	oral (gavage)
Exposure time	:	28 d
Number of exposures	:	7 days/week
Dose	:	0, 40, 200, 600 1000 mg/kg-day
Method	:	OECD Test Guideline 407
GLP	:	yes

Species	:	Rat, male and female
NOEC	:	10 mg/m3
Application Route	:	inhalation (dust/mist/fume)
Exposure time	:	13 weeks 6 h
Number of exposures	:	5 days/week
Dose	:	0, 10, 50, or 150 mg/m3

Species	:	Rat, male and female
NOAEL	:	90 mg/m³
Application Route	:	inhalation (dust/mist/fume)
Exposure time	:	8 weeks 6 h
Number of exposures	:	5 days/week
Dose	:	10/30/90 mg/m3

Aspiration toxicity

Not classified due to lack of data.

Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

barium sulfate:

Toxicity to fish	:	LC50 : 174 mg/l Exposure time: 96 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 14.5 mg/l Exposure time: 48 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50: > 100 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201 NOEC: > 1.15 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 5.8 mg/l Exposure time: 21 d Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211

Fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine:

Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): 7.07 mg/l Exposure time: 96 h Test Type: semi-static test Method: OECD Test Guideline 203 GLP: yes
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 7.07 mg/l Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 202

GLP: yes

Toxicity to algae/aquatic plants : EC50 (Raphidocelis subcapitata (freshwater green alga)): 4.34 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
GLP: yes

Toxicity to microorganisms : EC50 (activated sludge): 384 mg/l
Exposure time: 3 h
Test Type: static test
Method: OECD Test Guideline 209
GLP: yes

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

Diethylenetriamine:

Toxicity to fish : LC50 (Poecilia reticulata (guppy)): 430 mg/l
End point: mortality
Exposure time: 96 h
Test Type: semi-static test
Analytical monitoring: no
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.1.
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 64.6 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: Regulation (EC) No. 440/2008, Annex, C.2

EC50 (Daphnia magna (Water flea)): 16 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: DIN 38412

Toxicity to algae/aquatic plants : EbC50 (Selenastrum capricornutum (green algae)): 1,164 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

Toxicity to fish (Chronic toxicity) : NOEC (Gasterosteus aculeatus (threespine stickleback)): 10 mg/l
Exposure time: 28 d
Test Type: semi-static test
Analytical monitoring: no
Test substance: Fresh water
Method: OECD Test Guideline 210
GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 5.6 mg/l
Exposure time: 21 d
Test Type: semi-static test
Analytical monitoring: no
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.20
GLP: yes

Toxicity to microorganisms : EC50 (Bacteria): 32.7 mg/l
Exposure time: 3 h

Test Type: static test
Test substance: Fresh water
GLP: yes

NOEC (Bacteria): 6 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water
GLP: yes

Toxicity to soil dwelling organisms : EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg
Exposure time: 56 d
Method: OECD Test Guideline 222
GLP: yes

Ecotoxicology Assessment

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

Triethylenetetramine:

Toxicity to fish : LC50 (Poecilia reticulata (guppy)): 570 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.1.

LC50 (Leuciscus idus (Golden orfe)): 200 - 500 mg/l
Exposure time: 96 h

LC50 (Pimephales promelas (fathead minnow)): 330 mg/l
End point: mortality
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: Fish Acute Toxicity Test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 31.1 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.2.

Toxicity to algae/aquatic plants : ErC50 (Selenastrum capricornutum (green algae)): 20 mg/l
Exposure time: 72 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 201

EC10 (Selenastrum capricornutum (green algae)): 1.34 mg/l
Exposure time: 72 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	EC10 (Daphnia magna (Water flea)): 1.9 mg/l Exposure time: 21 d Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 202
Toxicity to microorganisms	:	NOEC (Bacteria): >= 100 mg/l Exposure time: 28 d Method: OECD Test Guideline 216 EC50 (Bacteria): > 100 mg/l Exposure time: 28 h Method: OECD Test Guideline 216 EC50 (Bacteria): 15.7 mg/l Exposure time: 2 h Test Type: static test Test substance: Fresh water NOEC (Bacteria): 1.3 mg/l Exposure time: 2 h Test Type: static test Test substance: Fresh water
Toxicity to soil dwelling organisms	:	NOEC (Eisenia fetida (earthworms)): ca. 62.5 mg/kg Exposure time: 56 d Method: OECD Test Guideline 222 EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg Exposure time: 56 d Method: OECD Test Guideline 222

Ecotoxicology Assessment

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

4,4'-isopropylidenediphenol:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 4.6 mg/l End point: mortality Exposure time: 96 h Test Type: flow-through test Analytical monitoring: yes Test substance: Fresh water Method: ASTM Method, other GLP: yes LC50 (Oryzias latipes (Orange-red killifish)): 6.8 mg/l End point: mortality Exposure time: 72 h Test substance: Fresh water Method: OECD Test Guideline 203
Toxicity to daphnia and other	:	EC50 (Daphnia magna (Water flea)): 10.2 mg/l

aquatic invertebrates		End point: Immobilization Exposure time: 48 h Test Type: static test Analytical monitoring: yes Test substance: Fresh water Method: Other guidelines GLP: yes EC50 (Chironomus sp. (midge)): 2.7 mg/l End point: Immobilization Exposure time: 96 h Test Type: semi-static test Analytical monitoring: yes Test substance: Fresh water Method: Other guidelines GLP: yes EC50 (Acartia tonsa): 0.885 mg/l Exposure time: 48 h Method: Measured
Toxicity to algae/aquatic plants	:	EbC50 (Pseudokirchneriella subcapitata (green algae)): 2.73 mg/l Exposure time: 96 h Test Type: static test Analytical monitoring: yes Test substance: Fresh water GLP: yes EC10 (Pseudokirchneriella subcapitata (green algae)): 1.41 mg/l Exposure time: 96 h Test Type: static test Analytical monitoring: yes Test substance: Fresh water GLP: yes EC50 (Lemna minor (duckweed)): 20 mg/l Exposure time: 7 d Test Type: semi-static test Analytical monitoring: yes Test substance: Fresh water Method: OECD Test Guideline 221 GLP: yes NOEC (Lemna minor (duckweed)): 7.8 mg/l Exposure time: 7 d Test Type: semi-static test Analytical monitoring: yes Test substance: Fresh water Method: OECD Test Guideline 221 GLP: yes
M-Factor (Acute aquatic	:	1

toxicity)

Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): >= 0.640 mg/l Exposure time: 36 d Test Type: flow-through test Analytical monitoring: yes Test substance: Fresh water Method: OECD Test Guideline 210 GLP: yes NOEC (Danio rerio (zebra fish)): 0.000372 mg/l Exposure time: 300 d Test substance: Fresh water
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0.025 mg/l Exposure time: 181 d Test Type: flow-through test Analytical monitoring: yes Test substance: Fresh water GLP: yes
M-Factor (Chronic aquatic toxicity)	:	10

Persistence and degradability

Components:

Fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine:

Biodegradability	:	aerobic Inoculum: Fresh water Concentration: 1 mg/l Result: Not readily biodegradable. Biodegradation: 15 % Exposure time: 28 d Method: OECD Test Guideline 301D GLP: yes

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

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

Diethylenetriamine:

Biodegradability	:	aerobic Inoculum: activated sludge, non-adapted Result: Readily biodegradable.

Biodegradation: 87 %
Exposure time: 21 d
Method: OECD Test Guideline 301D
Test substance: Fresh water

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

Triethylenetetramine:

Biodegradability : Inoculum: activated sludge
Result: Not readily biodegradable.
Biodegradation: 0 %
Exposure time: 162 d
Method: OECD Test Guideline 301D
Test substance: Fresh water

aerobic
Inoculum: activated sludge
Dissolved organic carbon (DOC)
Result: Not inherently biodegradable.
Biodegradation: 20 %
Exposure time: 84 d
Method: OECD Test Guideline 302A
Test substance: Fresh water

4,4'-isopropylidenediphenol:

Biodegradability : aerobic
Inoculum: activated sludge, non-adapted
Concentration: 100 mg/l
Result: Readily biodegradable.
Biodegradation: 89 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
Test substance: Fresh water
GLP: yes

aerobic
Inoculum: activated sludge, non-adapted
Concentration: 25 mg/l
Dissolved organic carbon (DOC)
Result: Readily biodegradable.
Biodegradation: 74.7 - 81.4 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
Test substance: Fresh water
GLP: yes

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

Diethylenetriamine:

Bioaccumulation	:	Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 0.3 - 6.3 Exposure time: 42 d Concentration: 0.2 - 2 mg/l Test substance: Fresh water Method: OECD Test Guideline 305C Remarks: Bioaccumulation is unlikely.
Partition coefficient: n-octanol/water	:	log Pow: -1.58 (68 °F / 20 °C) pH: > 12 Method: Calculation method GLP: no log Pow: -5.58 (68 °F / 20 °C) pH: 7 Method: Calculation method GLP: no

Triethylenetetramine:

Partition coefficient: n-octanol/water	:	log Pow: -2.08 - 2.90 (68 °F / 20 °C) Method: QSAR

4,4'-isopropylidenediphenol:

Bioaccumulation	:	Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 5.1 - 13.3 Exposure time: 42 d
Partition coefficient: n-octanol/water	:	log Pow: 3.4 (70.7 °F / 21.5 °C) pH: 6.4 Method: OECD Test Guideline 107

Mobility in soil

Components:

Diethylenetriamine:

Distribution among environmental compartments	:	Medium: Soil Koc: 19111 Method: Sediment and Soil Adsorption Isotherm

Triethylenetetramine:

Distribution among environmental compartments	:	Koc: 3162.28, log Koc: 3.5 Method: OECD Test Guideline 106

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. Harmful 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

UNRTDG

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (4,4'-Isopropylidenediphenol, Dimers Tall-oil Fatty acids Triethylenetetramine Polymer)
Class	:	9
Packing group	:	III
Labels	:	9
Environmentally hazardous	:	yes

IATA-DGR

UN/ID No.	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s. (4,4'-Isopropylidenediphenol, Dimers Tall-oil Fatty acids Triethylenetetramine Polymer)
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. (4,4'-Isopropylidenediphenol, Dimers Tall-oil Fatty acids Triethylenetetramine Polymer)
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. (4,4'-Isopropylidenediphenol, Dimers Tall-oil Fatty acids Triethylenetetramine Polymer)
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

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

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

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

4,4'-isopropylidenediphenol	80-05-7	>= 1 - < 5 %

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

WARNING: This product can expose you to chemicals including 4,4'-isopropylidenediphenol, 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:

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

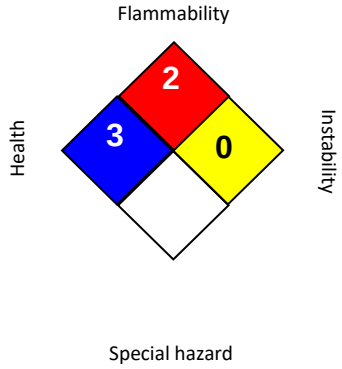
TSCA - 5(a) Significant New Use Rule List of Chemicals
No substances are subject to a Significant New Use Rule.

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.

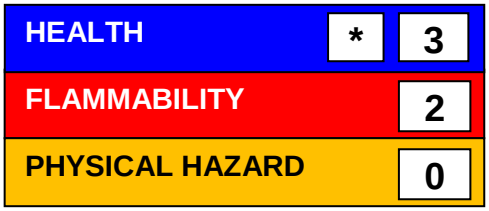
SECTION 16. OTHER INFORMATION

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

Revision Date	:	01/09/2024
ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA P0 / TWA	:	8-hour time weighted average
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.

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toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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