

# SAFETY DATA SHEET

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## RENGEL® 1124 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	02/08/2019	400001012636	11/21/2017
			Date of first issue: 11/21/2017

### SECTION 1. IDENTIFICATION

Product name : RENGEL® 1124 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 of person responsible for the SDS : SDS@huntsman.com  
Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

#### Recommended use of the chemical and restrictions on use

Recommended use : Epoxy resin solution



### SECTION 2. HAZARDS IDENTIFICATION

#### GHS classification in accordance with 29 CFR 1910.1200

Skin irritation : Category 2  
Eye irritation : Category 2A  
Skin sensitisation : Category 1  
Short-term (acute) aquatic hazard : Category 2  
Long-term (chronic) aquatic hazard : Category 2

#### GHS label elements

Hazard pictograms :



Signal word : Warning

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

Precautionary statements : **Prevention:**

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

P264 Wash skin thoroughly after handling.

P272 Contaminated work clothing should not be allowed out of the workplace.

P273 Avoid release to the environment.

P280 Wear protective gloves/ eye protection/ face protection.

**Response:**

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P362 Take off contaminated clothing and wash before reuse.

P391 Collect spillage.

**Storage:**

Not available

**Disposal:**

P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

**Other hazards**

None known.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture

**Hazardous components**

Chemical name	CAS-No.	Concentration (% w/w)
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	1675-54-3	30 - 50
limestone	1317-65-3	30 - 50
2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate	15625-89-5	10 - 20
titanium dioxide	13463-67-7	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.  
Show this safety data sheet to the doctor in attendance.  
Treat symptomatically.  
Get medical attention if symptoms occur.

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If inhaled	: 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	: Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	: Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Most important symptoms and effects, both acute and delayed	: None known.
Notes to physician	: Treat symptomatically.

### SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	: High volume water jet
Specific hazards during firefighting	: Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	: Carbon oxides Halogenated compounds
Specific extinguishing methods	: No data is available on the product itself.
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,	: Use personal protective equipment.
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protective equipment and  
emergency procedures

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

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

Further information on  
storage stability : Stable under normal conditions.

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
limestone	1317-65-3	TWA (total dust)	15 mg/m <sup>3</sup>	OSHA Z-1
		TWA (respirable fraction)	5 mg/m <sup>3</sup>	OSHA Z-1
titanium dioxide	13463-67-7	TWA (total dust)	15 mg/m <sup>3</sup>	OSHA Z-1
		TWA	10 mg/m <sup>3</sup>	ACGIH

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			(Titanium dioxide)	
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### Personal protective equipment

Hand protection

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Eye wash bottle with pure water  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and at the end of workday.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Colour	: green
Odour	: No data is available on the product itself.
Odour Threshold	: No data is available on the product itself.
pH	: No data is available on the product itself.
Freezing point	: No data is available on the product itself.
Melting point	: No data is available on the product itself.
Boiling point	: No data is available on the product itself.
Flash point	: > 199.99 °F / > 93.33 °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.



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Relative vapour density : No data is available on the product itself.

Relative density : 1.5

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.

Auto-ignition temperature : No data is available on the product itself.

Thermal decomposition : No data is available on the product itself.

Self-Accelerating decomposition temperature (SADT) : No data is available on the product itself.

Viscosity : No data is available on the product itself.

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

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

Particle size : No data is available on the product itself.

### SECTION 10. STABILITY AND REACTIVITY

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

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : No hazards to be specially mentioned.

Conditions to avoid : None known.

Incompatible materials : None known.

Hazardous decomposition products : carbon dioxide  
carbon monoxide  
Halogenated compounds

### SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of : No data is available on the product itself.

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exposure

**Acute toxicity****Components:**

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

Acute oral : LD50 (Rat, female): &gt; 2,000 mg/kg

toxicityComponents Method: OECD Test Guideline 420

Assessment: The substance or mixture has no acute oral toxicity

limestone:

Acute oral : LD50 (Rat): 6,450 mg/kg

toxicityComponents

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Acute oral : LD50 (Rat): &gt; 5,000 mg/kg

toxicityComponents Assessment: The substance or mixture has no acute oral toxicity

titanium dioxide:

Acute oral : LD50 (Rat, female): &gt; 5,000 mg/kg

toxicityComponents Method: OECD Test Guideline 425

Assessment: The substance or mixture has no acute oral toxicity

**Components:**

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Acute inhalation toxicity : LC50 (Rat, male and female): &gt; 0.55 mg/l

Exposure time: 6 h

Test atmosphere: vapour

Assessment: The substance or mixture has no acute inhalation toxicity

titanium dioxide:

Acute inhalation toxicity : LC50 (Rat, male and female): 3.43 - 5.09 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Method: OECD Test Guideline 403

Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity -  
Product

: Acute toxicity estimate : &gt; 5,000 mg/kg

Method: Calculation method

Acute toxicity (other routes of  
administration) : No data available

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**Skin corrosion/irritation****Components:**

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

Species: Rabbit

Assessment: Mild skin irritant

Method: OECD Test Guideline 404

Result: Irritating to skin.

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Exposure time: 4 h

Method: OECD Test Guideline 404

Result: Skin irritation

GLP: yes

titanium dioxide:

Species: Rabbit

Assessment: No skin irritation

Method: OECD Test Guideline 404

Result: Normally reversible injuries

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

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

Species: Rabbit

Result: Irritating to eyes.

Assessment: Mild eye irritant

Method: OECD Test Guideline 405

limestone:

Species: Rabbit

Result: Mechanical irritation of the eyes is possible.

Assessment: No eye irritation

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Species: Rabbit

Result: Eye irritation

Method: OECD Test Guideline 405

titanium dioxide:

Species: Rabbit

Result: Normally reversible injuries

Assessment: No eye irritation

Method: OECD Test Guideline 405

**Respiratory or skin sensitisation****Components:**

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

Exposure routes: Skin

Species: Mouse

Assessment: May cause sensitisation by skin contact.

Method: OECD Test Guideline 429

Result: Causes sensitisation.



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limestone:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: Does not cause skin sensitisation.

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Result: Probability or evidence of high skin sensitisation rate in humans

titanium dioxide:

Test Type: Local lymph node assay (LLNA)

Exposure routes: Skin

Species: Mouse

Assessment: Does not cause skin sensitisation.

Method: OECD Test Guideline 429

Result: Does not cause skin sensitisation.

Exposure routes: Skin

Species: Guinea pig

Assessment: Does not cause skin sensitisation.

Method: OECD Test Guideline 406

Result: Does not cause skin sensitisation.

**Components:**

titanium dioxide:

Assessment: No skin irritation, No eye irritation  
Does not cause skin sensitisation., Does not cause respiratory sensitisation.

**Germ cell mutagenicity****Components:**

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

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

Concentration: 0 - 5000 ug/plate

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: positive

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: positive

titanium dioxide:

Genotoxicity in vitro : Test Type: Ames test  
Concentration: 100 - 200 ug/plate  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

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Test Type: In vitro mammalian cell gene mutation test  
 Concentration: 31 - 500 µg/L  
 Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 476  
 Result: negative

Test Type: Chromosome aberration test in vitro  
 Concentration: 125 - 2500 µg/L  
 Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 473  
 Result: negative

**Components:**

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

Genotoxicity in vivo : Cell type: Germ  
 Application Route: Oral  
 Method: OECD Test Guideline 478  
 Result: negative

Cell type: Somatic  
 Application Route: Oral  
 Dose: 0 - 5000 mg/kg  
 Method: OPPTS 870.5395  
 Result: negative

2-ethyl-2-[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Genotoxicity in vivo : Species: Mouse (male and female)  
 Cell type: Bone marrow  
 Application Route: Oral  
 Dose: 437.5, 875 and 1750 mg/kg bw  
 Method: OECD Test Guideline 474  
 Result: negative

titanium dioxide:

Genotoxicity in vivo : Test Type: Micronucleus test  
 Species: Mouse (males)  
 Application Route: Inhalation  
 Exposure time: 5 consecutive days  
 Dose: 0.8, 7.2, and 28.5 mg/m³  
 Method: OECD Test Guideline 474  
 Result: negative

Test Type: Micronucleus test  
 Species: Rat (male and female)  
 Application Route: Oral  
 Exposure time: once  
 Dose: 500, 1000, and 2000 mg/kg bw  
 Method: OECD Test Guideline 474  
 Result: negative

**Components:**

titanium dioxide:

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

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Germ cell mutagenicity- : No data available  
Assessment

**Carcinogenicity****Components:**

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

Species: Rat, male and female

Application Route: Oral

Exposure time: 24 month(s)

Dose: 15 mg/kg

Frequency of Treatment: 7 days/week

Method: OECD Test Guideline 453

Result: negative

Species: Mouse, male

Application Route: Dermal

Exposure time: 24 month(s)

Dose: 0.1 mg/kg

Frequency of Treatment: 3 days/week

Method: OECD Test Guideline 453

Result: negative

Species: Rat, female

Application Route: Dermal

Exposure time: 24 month(s)

Dose: 1 mg/kg

Frequency of Treatment: 5 days/week

Method: OECD Test Guideline 453

Result: negative

titanium dioxide:

Species: Rat, male and female

Application Route: Oral

Exposure time: 103 weeks

Dose: 0, 25000, 50000 ppm

Frequency of Treatment: 7 days/week

NOAEL: > 50.000 ppm

Method: No information available.

Remarks: Titanium Dioxide: based on the results of chronic inhalation studies (with positive results only in a single species - rat), IARC has concluded that: "There is inadequate evidence in humans for the carcinogenicity of titanium dioxide." but that : "There is sufficient evidence in experimental animals for carcinogenicity of titanium dioxide". IARC's overall evaluation was that "titanium dioxide is possibly carcinogenic to humans (Group 2B)."

Huntsman has examined all of the available animal carcinogenicity and mechanistic data together with workplace epidemiology data for titanium dioxide and concludes that the weight of scientific evidence indicates that there is no causative link between titanium dioxide exposure and cancer risk in humans and that workplace exposures in compliance with applicable exposure standards will not result in lung cancer or chronic respiratory diseases in humans.

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**Components:**

titanium dioxide:

Carcinogenicity -  
Assessment

: Not classifiable as a human carcinogen.

**IARC**Group 2B: Possibly carcinogenic to humans  
titanium dioxide**ACGIH**

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

**OSHA**

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

**NTP**

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

**Reproductive toxicity****Components:**

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: &gt;750 milligram per kilogram

General Toxicity - Parent: No-observed-effect level: 540  
mg/kg body weightGeneral Toxicity F1: No-observed-effect level: 540 mg/kg  
body weight

Symptoms: No adverse effects

Method: OECD Test Guideline 416

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

2-ethyl-2-[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Species: Rat, male and female

Application Route: Oral

Dose: 0, 30, 100, 300 milligram per kilogram

Fertility: No observed adverse effect level: 300 mg/kg body  
weight

Method: OECD Test Guideline 422

Result: Animal testing did not show any effects on fertility.

**Components:**

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

Effects on foetal  
development

: Species: Rabbit, female

Application Route: Dermal

General Toxicity Maternal: No observed adverse effect level:  
30 mg/kg body weight

Method: Other guidelines

Result: No teratogenic effects

Species: Rabbit, female

Application Route: Oral

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General Toxicity Maternal: No observed adverse effect level:  
60 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

Species: Rat, female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
180 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Species: Rat, female  
Application Route: Oral  
Dose: 500 milligram per kilogram  
Duration of Single Treatment: 10 d  
General Toxicity Maternal: No observed adverse effect level:  
500 mg/kg body weight  
Embryo-foetal toxicity: No observed adverse effect level: >  
500 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No effects on fertility and early embryonic  
development were detected.

titanium dioxide:

Species: Rat, male and female  
Application Route: Oral  
Dose: 100, 300, and 1000 mg/kg bw/  
Duration of Single Treatment: 20 d  
Frequency of Treatment: 7 days/week  
General Toxicity Maternal: No observed adverse effect level:  
1,000 mg/kg body weight  
Developmental Toxicity: No observed adverse effect level:  
1,000 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No adverse effects

**Components:**

titanium dioxide:

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

**STOT - single exposure**

No data available

**STOT - repeated exposure**

No data available

**Repeated dose toxicity****Components:**

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



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Species: Rat, male and female  
NOAEL: 50 mg/kg  
Application Route: Ingestion  
Exposure time: 14 Weeks  
Number of exposures: 7 d  
Method: Subchronic toxicity

Species: Rat, male and female  
NOEL: 10 mg/kg  
Application Route: Skin contact  
Exposure time: 13 Weeks  
Number of exposures: 5 d  
Method: Subchronic toxicity

Species: Mouse, male  
NOAEL: 100 mg/kg  
Application Route: Skin contact  
Exposure time: 13 Weeks  
Number of exposures: 3 d  
Method: Subchronic toxicity

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Species: Rat, male and female  
NOAEL: 300 mg/kg  
Application Route: Oral  
Dose: 0, 30, 100, 300 mg/kg bw/day  
Method: OECD Test Guideline 422

titanium dioxide:  
Species: Rat, male and female  
: 3500 mg/m<sup>3</sup>  
Application Route: Ingestion  
Test atmosphere: dust/mist  
Exposure time: 2 yr  
Number of exposures: 5 d  
Method: Chronic toxicity

Species: Rat, male and female  
: 10 - 50 mg/m<sup>3</sup>  
Application Route: Inhalation  
Exposure time: 2 yr  
Number of exposures: 6 hours/day, 5 days/week  
Method: Chronic toxicity

### Components:

titanium dioxide:  
Repeated dose toxicity - : No skin irritation, No eye irritation  
Assessment : No adverse effect has been observed in chronic toxicity tests.

### **Aspiration toxicity**

No data available

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**Experience with human exposure**

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

**Toxicology, Metabolism, Distribution**

No data available

**Neurological effects**

No data available

**Further information**

Ingestion: No data available

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:**

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

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 1.5 mg/l  
 Exposure time: 96 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 203

limestone:

Toxicity to fish : LC50: > 56,000 mg/l  
 Exposure time: 96 h

2-ethyl-2-[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 1.47 mg/l  
 Exposure time: 96 h  
 Test Type: static test  
 Method: DIN 38412

titanium dioxide:

Toxicity to fish : LC50 (Cyprinodon variegatus (sheepshead minnow)): >  
 10,000 mg/l  
 Exposure time: 96 h

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Test Type: semi-static test  
 Test substance: Marine water  
 Method: OECD Test Guideline 203

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
 Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.7 mg/l  
 Exposure time: 48 h  
 Test Type: static test  
 Test substance: Fresh water

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:  
 Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 19.9 mg/l  
 Exposure time: 48 h  
 Test Type: static test  
 Method: Other guidelines

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
 Toxicity to algae/aquatic plants : EC50 (Selenastrum capricornutum (green algae)): 9.4 mg/l  
 Exposure time: 72 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: EPA-660/3-75-009

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:  
 Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 4.86 mg/l  
 Exposure time: 96 h  
 Test Type: static test  
 Method: Directive 67/548/EEC, Annex V, C.3.

M-Factor (Acute aquatic toxicity) : No data available

Toxicity to fish (Chronic toxicity) : No data available

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
 Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.3 mg/l  
 Exposure time: 21 d  
 Test Type: semi-static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 211

limestone:  
 Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC50 (Daphnia magna (Water flea)): > 350 mg/l  
 Exposure time: 125 d  
 Test Type: semi-static test  
 Test substance: Fresh water

M-Factor (Chronic aquatic toxicity) : No data available

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**Components:**

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

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

Toxicity to soil dwelling organisms : No data available

**Components:**

titanium dioxide:

Plant toxicity : NOEC: 100,000 mg/kg  
 Exposure time: 480 h

**Components:**

titanium dioxide:

Sediment toxicity : (Gammarus pulex (Amphipod)): > 100000 mg/kg sediment dw  
 Study: Acute  
 Test Type: semi-static test  
 Water: Fresh water  
 Exposure duration: 28 d  
 Method: ASTM Method, other

(Gammarus pulex (Amphipod)): 100000 mg/kg sediment dw  
 Study: Chronic  
 Test Type: semi-static test  
 Water: Fresh water  
 Exposure duration: 28 d  
 Method: ASTM Method, other

(Gammarus pulex (Amphipod)): 14989 mg/kg sediment dw  
 Study: Acute  
 Test Type: semi-static test  
 Water: Marine water  
 Exposure duration: 10 d

**Components:**

titanium dioxide:

Toxicity to terrestrial organisms : NOEC: 10,000 mg/kg  
 Exposure time: 672 h

Ecotoxicology Assessment

**Components:**

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

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

**Components:**

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

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

Toxicity Data on Soil : No data available

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Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:**

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

Biodegradability : Inoculum: Sewage (STP effluent)  
Concentration: 20 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 5 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Biodegradability : Test Type: aerobic  
Inoculum: activated sludge  
Concentration: 33 mg/l  
Result: Readily biodegradable.  
Biodegradation: 82 - 90 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301B

Biochemical Oxygen Demand (BOD) : No data available

Chemical Oxygen Demand (COD) : No data available

BOD/COD : No data available

ThOD : No data available

BOD/ThOD : No data available

Dissolved organic carbon (DOC) : No data available

Physico-chemical removability : No data available

**Components:**

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

Stability in water : Degradation half life(DT50): 4.83 d (77 °F / 25 °C) pH: 4  
Method: OECD Test Guideline 111  
Remarks: Fresh water

Degradation half life(DT50): 7.1 d (77 °F / 25 °C) pH: 9  
Method: OECD Test Guideline 111  
Remarks: Fresh water

Degradation half life(DT50): 3.58 d (77 °F / 25 °C) pH: 7  
Method: OECD Test Guideline 111



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Remarks: Fresh water

Photodegradation : No data available

Impact on Sewage Treatment : No data available

**Bioaccumulative potential****Components:**

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

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

titanium dioxide:

Bioaccumulation : Species: Oncorhynchus mykiss (rainbow trout)  
Bioconcentration factor (BCF): 19 - 352  
Exposure time: 14 d  
Test substance: Fresh water  
Method: semi-static test  
Remarks: Does not bioaccumulate.**Components:**

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

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

limestone:

Partition coefficient: n-octanol/water : log Pow: &lt; 1

**Mobility in soil**

Mobility : No data available

**Components:**

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

Distribution among environmental compartments : Koc: 445

2-ethyl-2-[[[(1-oxoallyl)oxy]methyl]-1,3-propanediyl diacrylate:

Distribution among environmental compartments : OECD Test Guideline 121  
log Koc: 2.2  
Method: OECD Test Guideline 121

Stability in soil : No data available

**Other adverse effects**

Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

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Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

### Hazardous to the ozone layer

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

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

Global warming potential (GWP) : No data available

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Send to a licensed waste management company.

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

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA

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 : 964

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(passenger aircraft)  
Environmentally hazardous : yes

### IMDG

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 Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

### National Regulations

### DOT Classification

UN/ID/NA number : UN 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(BISPHENOL A EPOXY RESIN, EPICHLORHYDRINE)  
Remarks : Above applies only to containers over 119 gallons or 450  
liters. Not regulated if shipped in packages less than or equal  
to 119 gallons (450 liters).

### Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

## SECTION 15. REGULATORY INFORMATION

### EPCRA - Emergency Planning and Community Right-to-Know Act

#### CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
arsenic	7440-38-2	1	*
1-chloro-2,3-epoxypropane	106-89-8	100	*
methyloxirane	75-56-9	100	*
nickel	7440-02-0	100	*
zinc	7440-66-6	1000	*
copper	7440-50-8	5000	*

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antimony	7440-36-0	5000	*
chromium	7440-47-3	5000	*

\*: Calculated RQ exceeds reasonably attainable upper limit.

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

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

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

### California Prop. 65

WARNING: This product can expose you to chemicals including arsenic, nickel, methyloxirane, titanium dioxide, 1-chloro-2,3-epoxypropane, which is/are known to the State of California to cause cancer, and 1-chloro-2,3-epoxypropane, 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](http://www.P65Warnings.ca.gov).

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

CH INV	: The formulation contains substances listed on the Swiss Inventory
DSL	: This product contains one or several components listed in the Canadian NDSL.
AICS	: On the inventory, or in compliance with the inventory
NZIoC	: Not in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or in compliance with the inventory
TSCA	: On the inventory, or in compliance with the inventory

### Inventories

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

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

No substances are subject to a Significant New Use Rule.

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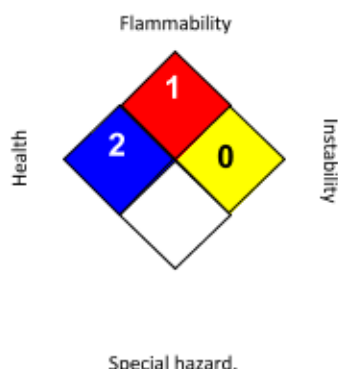
### US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

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

## SECTION 16. OTHER INFORMATION

### Further information

#### NFPA 704:



#### HMIS® IV:

HEALTH		2
FLAMMABILITY		1
PHYSICAL HAZARD		0

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

Revision Date : 02/08/2019

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

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

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

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



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### SECTION 1. IDENTIFICATION

Product name : REN 1124 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 of person responsible for the SDS : MSDS@huntsman.com  
Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

#### Recommended use of the chemical and restrictions on use

Recommended use : Hardener

### SECTION 2. HAZARDS IDENTIFICATION

#### GHS classification in accordance with 29 CFR 1910.1200

Acute toxicity (Oral) : Category 4  
Skin corrosion : Category 1B  
Serious eye damage : Category 1  
Skin sensitisation : Category 1  
Reproductive toxicity : Category 2  
Specific target organ toxicity - repeated exposure (Inhalation) : Category 1 (Respiratory Tract)  
Acute aquatic toxicity : Category 1  
Chronic aquatic toxicity : Category 1

#### GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H302 Harmful if swallowed.

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H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.  
H361 Suspected of damaging fertility or the unborn child.  
H372 Causes damage to organs (Respiratory Tract) through prolonged or repeated exposure if inhaled.  
H410 Very 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 dust/ fume/ gas/ mist/ vapours/ spray.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

#### **Response:**

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.  
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.  
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
P363 Wash contaminated clothing before reuse.  
P391 Collect spillage.

#### **Storage:**

P405 Store locked up.

#### **Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

### Other hazards

None known.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
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isophorone diamine	2855-13-2	13 - 30
metaxylenediamine	1477-55-0	13 - 30
Phenol, 4-nonyl-, branched	84852-15-3	13 - 30
Aminoethylpiperazine	140-31-8	13 - 30

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  | : No hazards which require special first aid measures.   |
| If inhaled  | : Move to fresh air in case of accidental inhalation of dust or fumes from overheating or combustion.<br>If symptoms persist, call a physician.                      |
| In case of skin contact                                     | : Take off contaminated clothing and shoes immediately.<br>Wash off with soap and plenty of water.   |
| In case of eye contact                                      | : Flush eyes with water as a precaution.<br>Remove contact lenses.<br>Protect unharmed eye.<br>Keep eye wide open while rinsing.                                     |
| If swallowed  | : Clean mouth with water and drink afterwards plenty of water.<br>Do not give milk or alcoholic beverages.<br>Never give anything by mouth to an unconscious person. |
| Most important symptoms and effects, both acute and delayed | : None known.  |

### SECTION 5. FIREFIGHTING MEASURES

- |   |   |
|---|---|
| Suitable extinguishing media                  | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Unsuitable extinguishing media                | : No data is available on the product itself.   |
| Specific hazards during firefighting          | : No data is available on the product itself.   |
| Hazardous combustion products                 | : No hazardous combustion products are known  |
| Specific extinguishing methods                | : No data is available on the product itself.   |
| Further information                           | : Standard procedure for chemical fires.  |
| Special protective equipment for firefighters | : In the event of fire, wear self-contained breathing apparatus.  |

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### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Not applicable for product as supplied.

Environmental precautions : No special environmental precautions required.

Methods and materials for containment and cleaning up : Wipe up with absorbent material (e.g. cloth, fleece).  
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 : For personal protection see section 8.  
No special handling advice required.

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

Materials to avoid : No special restrictions on storage with other products.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
metaxylenediamine	1477-55-0	C	0.1 mg/m <sup>3</sup>	ACGIH

#### Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.

Hand protection  
Remarks : For prolonged or repeated contact use protective gloves.

Eye protection : Safety glasses

Skin and body protection : Protective suit

Hygiene measures : General industrial hygiene practice.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid



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Colour	: amber, clear
Odour	: No data is available on the product itself.
Odour Threshold	: No data is available on the product itself.
pH	: No data is available on the product itself.
Freezing point	: No data is available on the product itself.
Melting point	: No data is available on the product itself.
Boiling point	: No data is available on the product itself.
Flash point	: No data is available on the product itself.
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	: No data is available on the product itself.
Lower explosion 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	: 0.99
Density	: No data is available on the product itself.
Solubility(ies)	
Water solubility	: partly soluble
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.
Thermal decomposition	: No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	: No data is available on the product itself.
Viscosity	: No data is available on the product itself.
Explosive properties	: No data is available on the product itself.
Oxidizing properties	: No data is available on the product itself.

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Particle size : No data is available on the product itself.

### SECTION 10. STABILITY AND REACTIVITY

Reactivity : Stable under recommended storage conditions.  
Chemical stability : No decomposition if stored and applied as directed.  
Possibility of hazardous reactions : No hazards to be specially mentioned.  
Conditions to avoid : No data available  
  
Hazardous decomposition products : water  
I-BOND MDF PM 4390

### SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : No data is available on the product itself.

#### Acute toxicity

Acute oral toxicity - Product : Acute toxicity estimate : 1,336 mg/kg  
Method: Calculation method

Acute inhalation toxicity - Product : Acute toxicity estimate: 5.36 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

Acute dermal toxicity - Product : Acute toxicity estimate : 2,320 mg/kg  
Method: Calculation method

Acute toxicity (other routes of administration) : No data available

#### Skin corrosion/irritation

##### Product:

Remarks: The product is not considered as being a skin irritant.

#### Serious eye damage/eye irritation

##### Product:

Remarks: According to the classification criteria of the European Union, the product is not considered as being an eye irritant.

#### Respiratory or skin sensitisation

##### Product:

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1.2	04/03/2017	400001012637	11/15/2016
			Date of first issue: 11/05/2015

Remarks: No data available

### Components:

metaxylenediamine:

Assessment:

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

Phenol, 4-nonyl-, branched:

Assessment:

Causes severe skin burns and eye damage.

### **Germ cell mutagenicity**

#### Components:

metaxylenediamine:

Genotoxicity in vitro

: Test Type: Ames test  
Species: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

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

Test Type: In vitro mammalian cell gene mutation test  
Species: mouse lymphoma cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative

Aminoethylpiperazine:

Genotoxicity in vitro

: Concentration: 5000 ug/plate  
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 476  
Result: negative

Metabolic activation: negative  
Method: OECD Test Guideline 482  
Result: negative

#### Components:

metaxylenediamine:

Genotoxicity in vivo

: Test Type: In vivo micronucleus test  
Species: Mouse (male and female)  
Cell type: Bone marrow  
Application Route: Oral  
Exposure time: single dose

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Dose: 750 mg/kg body weight  
 Method: OECD Test Guideline 474  
 Result: negative

Aminoethylpiperazine:  
 Genotoxicity in vivo

: Application Route: Intraperitoneal injection  
 Dose: 175 - 560 mg/kg  
 Method: OECD Test Guideline 474  
 Result: negative

**Components:**

metaxylenediamine:  
 Germ cell mutagenicity-  
 Assessment

: Tests on bacterial or mammalian cell cultures did not show mutagenic effects., Animal testing did not show any mutagenic effects.

Germ cell mutagenicity-  
 Assessment

: No data available

**Carcinogenicity**

No data available

Carcinogenicity -  
 Assessment

: No data available

**Reproductive toxicity****Components:**

metaxylenediamine:  
 Effects on fertility

: Species: Rat, male and female  
 Application Route: Oral  
 Dose: 0, 50, 150 and 450 mg/kg  
 General Toxicity - Parent: No-observed-effect level: 50 - 150 mg/kg body weight  
 General Toxicity F1: No-observed-effect level: 450 mg/kg body weight  
 Method: OECD Test Guideline 421  
 Result: No effects on fertility and early embryonic development were detected.

**Components:**

isophorone diamine:  
 Effects on foetal  
 development

: Species: Rat, female  
 Application Route: Oral  
 General Toxicity Maternal: No-observed-effect level: 50 mg/kg body weight  
 Method: OECD Test Guideline 414  
 Result: No teratogenic effects

metaxylenediamine:

Test Type: Pre-natal  
 Species: Rat, male and female

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Strain: Sprague-Dawley  
Application Route: Oral  
Dose: 0, 30, 100, 300 mg/kg milligram per kilogram  
Duration of Single Treatment: 19 d  
Frequency of Treatment: 1 daily  
General Toxicity Maternal: No observed adverse effect level:  
100 mg/kg body weight  
Embryo-foetal toxicity: No observed adverse effect level: 300  
mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No effects on fertility and early embryonic  
development were detected.

Phenol, 4-nonyl-, branched:

Species: Rat, female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
75 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

**Components:**

metaxylenediamine:

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

Phenol, 4-nonyl-, branched:

Reproductive toxicity - : Suspected human reproductive toxicant  
Assessment

Aminoethylpiperazine:

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

**STOT - single exposure**

No data available

**STOT - repeated exposure****Components:**

Aminoethylpiperazine:

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: Causes damage to organs through prolonged or repeated exposure.

**Repeated dose toxicity****Components:**

isophorone diamine:

Species: Rat, male and female

: 60 mg/kg, 200 mg/m<sup>3</sup>

Application Route: Ingestion

Test atmosphere: dust/mist

Exposure time: 216 h

Number of exposures: 6 h



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Method: Subchronic toxicity

metaxylenediamine:

Species: Rat, male and female

NOEL: 150 mg/kg

Application Route: oral (gavage)

Exposure time: 672 h

Number of exposures: 7 d

Dose: 0, 10, 40, 150 and 600 mg/kg/d

Method: OECD Test Guideline 407

Species: Rat, male and female

: 0.6 mg/m<sup>3</sup>

Application Route: Inhalation

Exposure time: 13 weeks

Number of exposures: 6 hours per day, 5 days per week

Dose: 0, 0.64, 5.1, 31 mg/m<sup>3</sup>

Method: OECD Test Guideline 413

Target Organs: Lungs

Phenol, 4-nonyl-, branched:

Species: Rat, male and female

NOAEL: 100 mg/kg

Application Route: Ingestion

Exposure time: 672 h

Number of exposures: 7 d

Method: Subacute toxicity

Species: Rat, male and female

NOAEL: 50 mg/kg

Application Route: Ingestion

Exposure time: 2,160 h

Number of exposures: 7 d

Method: Subchronic toxicity

Aminoethylpiperazine:

Species: Rat, male and female

NOAEL: 152 mg/kg/d

Application Route: Oral

Exposure time: 28 d

Method: OECD Test Guideline 422

Species: Rat, male and female

NOAEL: > 1000 mg/kg/d

Application Route: Skin contact

Exposure time: 29 d

Number of exposures: 6h/application, 5d/week

Method: OECD Test Guideline 410

Species: Rat, male and female

: 0.2 mg/m<sup>3</sup>

Application Route: Inhalation

Exposure time: 90 d

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Number of exposures: 6h/d, 5d/week  
Method: OECD Test Guideline 413  
Target Organs: Respiratory Tract  
Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Species: Rat, male and female  
: 53.3 mg/m<sup>3</sup>  
Application Route: Inhalation  
Exposure time: 90 d  
Number of exposures: 6h/d, 5d/week  
Method: OECD Test Guideline 413

### **Components:**

metaxylenediamine:

Repeated dose toxicity - Assessment : Harmful if swallowed or if inhaled, May be harmful in contact with skin., Causes severe skin burns and eye damage.  
No adverse effect has been observed in chronic toxicity tests.

Phenol, 4-nonyl-, branched:

Repeated dose toxicity - Assessment : Causes severe skin burns and eye damage.

### **Aspiration toxicity**

No data available

### **Experience with human exposure**

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

### **Toxicology, Metabolism, Distribution**

No data available

### **Neurological effects**

No data available

### **Further information**

#### **Product:**

Remarks: No data available

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**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:**

isophorone diamine:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 110 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.1.

metaxylenediamine:

Toxicity to fish : LC50 (Oryzias latipes (Orange-red killifish)): 87.6 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Method: OECD Test Guideline 203

Phenol, 4-nonyl-, branched:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 0.128 mg/l  
Exposure time: 96 h  
Test Type: flow-through test  
Test substance: Fresh water  
Method: ASTM Method, other

LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.209 mg/l  
Exposure time: 96 h  
Test Type: flow-through test  
Test substance: Fresh water  
Method: ASTM Method, other

LC50 (Oncorhynchus mykiss (rainbow trout)): 0.221 mg/l  
Exposure time: 96 h  
Test Type: flow-through test  
Test substance: Fresh water  
Method: ASTM Method, other

Aminoethylpiperazine:

Toxicity to fish : LC50: 2,190 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water

**Components:**

isophorone diamine:

Toxicity to daphnia and other : EC50: 23 mg/l  
aquatic invertebrates Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

metaxylenediamine:

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 15.2 mg/l

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aquatic invertebrates

Exposure time: 48 h  
Test Type: static test  
Method: OECD Test Guideline 202

Phenol, 4-nonyl-, branched:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.085 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: ASTM Method, other

EC50 (Daphnia magna (Water flea)): 0.14 mg/l  
Exposure time: 48 h  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.2.

Aminoethylpiperazine:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 58 mg/l  
Exposure time: 48 h  
Test Type: static test  
Method: OECD Test Guideline 202  
Remarks: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

### **Components:**

isophorone diamine:

Toxicity to algae : EC50: 37 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.3.

metaxylenediamine:

Toxicity to algae : ErC50 (Selenastrum capricornutum (green algae)): 32.1 mg/l  
Exposure time: 72 h  
Test Type: static test  
Method: OECD Test Guideline 201

Phenol, 4-nonyl-, branched:

Toxicity to algae : EbC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 1.3 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
ErC50 (Selenastrum capricornutum (green algae)): 0.41 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: Algal Toxicity, Tiers I and II

Aminoethylpiperazine:

Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): > 1,000 mg/l  
Exposure time: 72 h

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Test substance: Fresh water  
 Method: OECD Test Guideline 201

**Components:**

Phenol, 4-nonyl-, branched:  
 M-Factor (Acute aquatic toxicity) : 10

**Components:**

Phenol, 4-nonyl-, branched:  
 Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 0.006 mg/l  
 Exposure time: 91 d  
 Test Type: flow-through test  
 Test substance: Fresh water

**Components:**

metaxylenediamine:  
 Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 4.7 mg/l  
 Exposure time: 21 d  
 Test Type: semi-static test  
 Method: OECD Test Guideline 211

M-Factor (Chronic aquatic toxicity) : No data available

**Components:**

isophorone diamine:  
 Toxicity to microorganisms : EC10: 1,120 mg/l  
 Exposure time: 18 h  
 Method: Measured

: (Pseudomonas putida): 1,120 mg/l  
 Exposure time: 18 h  
 Test Type: static test  
 Test substance: Fresh water

metaxylenediamine:  
 Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l  
 Exposure time: 0.5 h  
 Test Type: static test  
 Method: OECD Test Guideline 209

Phenol, 4-nonyl-, branched:  
 Toxicity to microorganisms : EC50 (activated sludge): 950 mg/l  
 Exposure time: 3 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 209

**Components:**

Phenol, 4-nonyl-, branched:  
 Toxicity to soil dwelling organisms : EC10: 3.44 mg/kg  
 Exposure time: 504 h



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EC50 (Other): 906.7 mg/kg  
Exposure time: 4 Weeks  
Test substance: Synthetic

Aminoethylpiperazine:  
Toxicity to soil dwelling  
organisms

: LC50 (Eisenia fetida (earthworms)): 712 mg/kg  
Exposure time: 56 d  
Method: OECD Test Guideline 222

NOEC (Eisenia fetida (earthworms)): 500 mg/kg  
Exposure time: 56 d  
Method: OECD Test Guideline 222

Plant toxicity : No data available

Sediment toxicity : No data available

### Components:

Phenol, 4-nonyl-, branched:  
Toxicity to terrestrial  
organisms

: EC10: 63.2 mg/kg  
Exposure time: 672 h  
Test substance: Synthetic

Ecotoxicology Assessment  
Acute aquatic toxicity

: No data available

Chronic aquatic toxicity : No data available

Toxicity Data on Soil : No data available

Other organisms relevant to  
the environment : No data available

### **Persistence and degradability**

#### Components:

isophorone diamine:  
Biodegradability

: Inoculum: activated sludge  
Concentration: 6.9 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 8 %  
Exposure time: 28 d  
Method: Directive 67/548/EEC Annex V, C.4.A.

metaxylendiamine:  
Biodegradability

: Inoculum: activated sludge  
Concentration: 14.2 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 49 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301B

Phenol, 4-nonyl-, branched:  
Biodegradability

: Inoculum: activated sludge

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Concentration: 13 mg/l  
Result: Inherently biodegradable.  
Biodegradation: ca. 48.2 %  
Exposure time: 35 d  
Method: OECD Test Guideline 301B

Inoculum: Sediment  
Concentration: 2  
Result: Inherently biodegradable.  
Biodegradation: 100 %  
Exposure time: 63 - 84 d  
Method: Anaerobic Biodegradability in the Subsurface

Inoculum: Marine water  
Concentration: 11  
Biodegradation: 50 %  
Exposure time: 56 - 112 d  
Method: OECD Test Guideline 309

Aminoethylpiperazine:  
Biodegradability

: Inoculum: activated sludge  
Result: Not readily biodegradable.  
Biodegradation: 0 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

### Components:

Aminoethylpiperazine:  
Biochemical Oxygen Demand (BOD) : 5 mg/l  
Incubation time: 5 d

### Components:

Aminoethylpiperazine:  
Chemical Oxygen Demand (COD) : 560 mg/l  
BOD/COD : No data available

ThOD : No data available

BOD/ThOD : No data available

Dissolved organic carbon (DOC) : No data available

Physico-chemical removability : No data available

Stability in water : No data available

### Components:

Aminoethylpiperazine:  
Photodegradation : Test Type: Air  
Degradation (direct photolysis): 50 %

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Test Type: Water

Impact on Sewage Treatment : No data available

### Bioaccumulative potential

#### Components:

metaxylenediamine:  
Bioaccumulation

: Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): < 0.3  
Remarks: Does not bioaccumulate.

Phenol, 4-nonyl-, branched:  
Bioaccumulation

: Species: Lepomis macrochirus (Bluegill sunfish)  
Bioconcentration factor (BCF): 231  
Remarks: Does not bioaccumulate.

Species: Pimephales promelas (fathead minnow)  
Bioconcentration factor (BCF): 740  
Remarks: Bioaccumulation is unlikely.

Aminoethylpiperazine:  
Bioaccumulation

: Species: Fish  
Remarks: Does not bioaccumulate.

#### Components:

isophorone diamine:  
Partition coefficient: n-octanol/water

: log Pow: 0.99 (23 °C)  
pH: 6.34  
Method: OECD Test Guideline 107

metaxylenediamine:  
Partition coefficient: n-octanol/water

: log Pow: 0.18 (25 °C)  
pH: 10.3 - 10.4  
Method: OECD Test Guideline 107

Phenol, 4-nonyl-, branched:  
Partition coefficient: n-octanol/water

: log Pow: 5.4 (23 °C)  
pH: 5.7  
Method: OECD Test Guideline 117

Aminoethylpiperazine:  
Partition coefficient: n-octanol/water

: log Pow: -1.48 (20 °C)

### Mobility in soil

Mobility : No data available

#### Components:

isophorone diamine:  
Distribution among environmental compartments

: Koc: 928

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Phenol, 4-nonyl-, branched:  
Distribution among environmental compartments : Koc: 23000 - 489000  
Aminoethylpiperazine:  
Distribution among environmental compartments : Koc: ca. 37000  
Stability in soil : No data available

### Other adverse effects

Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

### Hazardous to the ozone layer

Ozone-Depletion Potential : Not applicable

Additional ecological information - Product : There is no data available for this product.

Global warming potential (GWP) : No data available

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging : Empty remaining contents.  
Empty containers should be taken to an approved waste handling site for recycling or disposal.

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA

UN/ID No. : UN 2735  
Proper shipping name : Polyamines, liquid, corrosive, n.o.s.  
(ISOPHORONE DIAMINE, M-XYLYLENE DIAMINE)  
Class : 8

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Packing group : II  
Labels : Corrosive  
Packing instruction (cargo aircraft) : 855  
Packing instruction (passenger aircraft) : 851

### IMDG

UN number : UN 2735  
Proper shipping name : POLYAMINES, LIQUID, CORROSIVE, N.O.S.  
(ISOPHORONE DIAMINE, M-XYLYLENE DIAMINE)  
Class : 8  
Packing group : II  
Labels : 8  
EmS Code : F-A, S-B  
Marine pollutant : yes

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

### National Regulations

### DOT Classification

UN/ID/NA number : UN 2735  
Proper shipping name : POLYAMINES, LIQUID, CORROSIVE, N.O.S.  
(ISOPHORONE DIAMINE, M-XYLYLENE DIAMINE)  
Class : 8  
Packing group : II  
Labels : CORROSIVE  
ERG Code : 153  
Marine pollutant : yes(4-NONYL PHENOL)

## SECTION 15. REGULATORY INFORMATION

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

CH INV : The formulation contains substances listed on the Swiss Inventory, On the inventory, or in compliance with the inventory  
DSL : All components of this product are on the Canadian DSL  
AICS : On the inventory, or in compliance with the inventory  
NZIoC : Not in compliance with the inventory  
ENCS : On the inventory, or in compliance with the inventory  
KECI : On the inventory, or in compliance with the inventory  
PICCS : On the inventory, or in compliance with the inventory  
IECSC : On the inventory, or in compliance with the inventory  
TCSI : On the inventory, or in compliance with the inventory  
TSCA : On the inventory, or in compliance with the inventory

### Inventories



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

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

This product is subject under TSCA 5(a) to Significant New Use Restrictions (SNUR).  
Phenol, 4-nonyl-, branched 84852-15-3

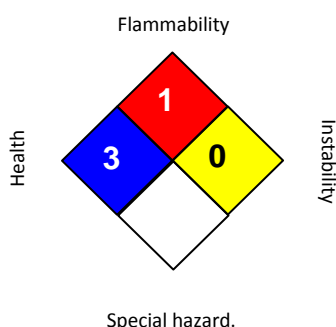
### US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)  
Phenol, 4-nonyl-, branched 84852-15-3

## SECTION 16. OTHER INFORMATION

### Further information

#### NFPA:



#### HMIS® IV:

HEALTH	*	3
FLAMMABILITY		1
PHYSICAL HAZARD		0

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

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# SAFETY DATA SHEET

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