

# SAFETY DATA SHEET

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## RENGEL® 4026 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	11/20/2018	400001012676	02/14/2017
			Date of first issue: 02/14/2017

### SECTION 1. IDENTIFICATION

Product name : RENGEL® 4026 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 : Adhesives



### SECTION 2. HAZARDS IDENTIFICATION

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

Skin irritation : Category 2  
Serious eye damage : Category 1  
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 : Danger

Hazard statements : H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H318 Causes serious eye damage.  
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 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

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

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)
aluminium	7429-90-5	30 - 50
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	1675-54-3	30 - 50
Epoxyphenol Novolac Resin	28064-14-4	10 - 20
1,4-bis(2,3-epoxypropoxy)butane	2425-79-8	5 - 10
p-tert-butylphenyl 1-(2,3-epoxy)propyl ether	3101-60-8	1 - 2.5
quartz (SiO <sub>2</sub> )	14808-60-7	0.1 - 1

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 safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.

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- |   |   |
|---|---|
| If inhaled  | : If unconscious, place in recovery position and seek medical advice.<br>If symptoms persist, call a physician.   |
| In case of skin contact                                     | : If skin irritation persists, call a physician.<br>If on skin, rinse well with water.<br>If on clothes, remove clothes.  |
| In case of eye contact                                      | : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.<br>In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.<br>Continue rinsing eyes during transport to hospital.<br>Remove contact lenses.<br>Protect unharmed eye.<br>Keep eye wide open while rinsing.<br>If eye irritation persists, consult a specialist. |
| If swallowed  | : Keep respiratory tract clear.<br>Do NOT induce vomiting.<br>Do not give milk or alcoholic beverages.<br>Never give anything by mouth to an unconscious person.<br>If symptoms persist, call a physician.<br>Take victim immediately to hospital.  |
| Most important symptoms and effects, both acute and delayed | : None known.   |

**SECTION 5. FIREFIGHTING MEASURES**

- |   |   |
|---|---|
| Unsuitable extinguishing media                | : High volume water jet   |
| Specific hazards during firefighting          | : Do not allow run-off from fire fighting to enter drains or water courses.   |
| Hazardous combustion products                 | : No hazardous combustion products are known  |
| Specific extinguishing methods                | : No data is available on the product itself.   |
| Further information                           | : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.<br>Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |
| Special protective equipment for firefighters | : Wear self-contained breathing apparatus for firefighting if necessary.  |

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

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- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
- 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.  
To avoid spills during handling keep bottle on a metal tray.  
Dispose of rinse water in accordance with local and national regulations.  
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Observe label precautions.  
Electrical installations / working materials must comply with the technological safety standards.
- Further information on storage stability : No decomposition if stored and applied as directed.

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

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
aluminium	7429-90-5	TWA (total dust)	15 mg/m <sup>3</sup> (Aluminium)	OSHA Z-1
		TWA (respirable)	5 mg/m <sup>3</sup> (Aluminium)	OSHA Z-1



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		fraction)		
		TWA (Respirable fraction)	1 mg/m3 (Aluminium)	ACGIH
		TWA (total dust)	15 mg/m3 (Aluminium)	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3 (Aluminium)	OSHA Z-1
		TWA (Respirable fraction)	1 mg/m3 (Aluminium)	ACGIH

### 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 : grey

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 : > 350.01 °F / > 176.67 °C

Flash point : > 300.00 °F / > 148.89 °C  
Method: Pensky-Martens closed cup

Evaporation rate : No data is available on the product itself.

Flammability (solid, gas) : No data is available on the product itself.

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Flammability (liquids)	: No data is available on the product itself.
Upper explosion limit / Upper flammability limit	: No data is available on the product itself.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.
Vapour pressure	: 0.01333 hPa (77 °F / 25 °C)
Relative vapour density	: No data is available on the product itself.
Relative density	: 1.49
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 decomposition if stored and applied as directed.
Chemical stability	: No decomposition if stored and applied as directed.
Possibility of hazardous reactions	: No decomposition if stored and applied as directed.
Conditions to avoid	: No data available

### SECTION 11. TOXICOLOGICAL INFORMATION

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

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exposure

**Acute toxicity**

Acute oral toxicity - Product : Acute toxicity estimate : > 5,000 mg/kg  
Method: Calculation method

Acute inhalation toxicity - Product : Acute toxicity estimate: 130.53 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour  
Method: Calculation method

Acute dermal toxicity - Product : Acute toxicity estimate : > 5,000 mg/kg  
Method: Calculation method

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

**Skin corrosion/irritation****Product:**

Remarks: Extremely corrosive and destructive to tissue.

**Serious eye damage/eye irritation****Product:**

Remarks: May cause irreversible eye damage.

**Respiratory or skin sensitisation****Product:**

Remarks: Causes sensitisation.

Assessment: No data available

**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

Epoxyphenol Novolac Resin:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
Result: positive

Concentration: 0 - 5000 ug/plate

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Metabolic activation: with and without metabolic activation  
Result: positive

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

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

Concentration: 1 - 100 µg/L  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: positive  
Remarks: Not classified due to data which are conclusive although insufficient for classification.

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro  
Test system: Chinese hamster ovary cells  
Concentration: 50 ug/plate  
Metabolic activation: negative  
Method: OECD Test Guideline 473  
Result: positive

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

**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

Epoxyphenol Novolac Resin:

Genotoxicity in vivo : Cell type: Germ  
Application Route: Oral  
Result: negative

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

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

Genotoxicity in vivo

: Test Type: In vivo micronucleus test

Species: Mouse

Cell type: Somatic

Application Route: Oral

Exposure time: 4 d

Dose: 187.5 - 750 mg/kg

Method: OECD Test Guideline 474

Result: negative

Test Type: unscheduled DNA synthesis assay

Species: Rat

Cell type: Liver cells

Application Route: Oral

Method: OECD Test Guideline 486

Result: negative

**Components:****1,4-bis(2,3-epoxypropoxy)butane:**Germ cell mutagenicity-  
Assessment: Weight of evidence does not support classification as a germ  
cell mutagen.Germ cell mutagenicity-  
Assessment

: No data available

**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

Epoxyphenol Novolac Resin:



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Species: Rat, male and female  
Application Route: Oral  
Exposure time: 24 month(s)  
Dose: 15 mg/kg  
Frequency of Treatment: 7 daily  
Method: OECD Test Guideline 453  
Result: negative

Species: Mouse, male  
Application Route: Dermal  
Exposure time: 24 month(s)  
Dose: .1 mg/kg  
Frequency of Treatment: 3 daily  
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 daily  
Method: OECD Test Guideline 453  
Result: negative

Carcinogenicity - Assessment : No data available

### IARC

#### ACGIH

Suspected human carcinogen

quartz (SiO<sub>2</sub>)

### 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

#### 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: >750 milligram per kilogram  
General Toxicity - Parent: No-observed-effect level: 540 mg/kg body weight  
General 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.

Epoxyphenol Novolac Resin:

Species: Rat, male and female  
Application Route: Oral

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Method: OECD Test Guideline 416  
Result: No effects on fertility and early embryonic development were detected.

**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  
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

Epoxyphenol Novolac Resin:

Species: Rabbit, female  
Application Route: Dermal  
General Toxicity Maternal: No observed adverse effect level:  
30 mg/kg body weight  
Result: No teratogenic effects

Species: Rabbit, female  
Application Route: Oral  
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

Reproductive toxicity - Assessment : No data available

**STOT - single exposure**

No data available

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### STOT - repeated exposure

No data available

### Repeated dose toxicity

#### Components:

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

Species: Rat, male and female

NOAEL: 50 mg/kg

Application Route: 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

Epoxyphenol Novolac Resin:

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

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

Species: Rat, male and female

NOAEL: 200 mg/kg

Application Route: Ingestion

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Exposure time: 28 d  
Number of exposures: 7 d  
Method: Subacute toxicity

Repeated dose toxicity - : No data available  
Assessment

### 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

## 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

Epoxyphenol Novolac Resin:

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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

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

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): 24 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

## p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 7.5 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh 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

## Epoxyphenol Novolac Resin:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.7 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

EC50 (Daphnia magna (Water flea)): 2.7 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water

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

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 75 mg/l  
Exposure time: 24 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

## p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): ca. 67.9 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

**Components:**

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



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Toxicity to algae : 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

Epoxyphenol Novolac Resin:  
Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 9.4 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water

1,4-bis(2,3-epoxypropoxy)butane:  
Toxicity to algae : EL50: > 160 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:  
Toxicity to algae : EbC50 (Selenastrum capricornutum (green algae)): ca. 9 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

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

**Components:**

Epoxyphenol Novolac Resin:  
Toxicity to fish (Chronic toxicity) : GLP: yes

**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

Epoxyphenol Novolac Resin:  
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

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

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l

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Exposure time: 3 h  
Test Type: static test  
Test substance: Fresh water

**Epoxyphenol Novolac Resin:**

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

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

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

**p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:**

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

Toxicity to soil dwelling organisms : No data available

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

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:****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

**Epoxyphenol Novolac Resin:**

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

1,4-bis(2,3-epoxypropoxy)butane:  
Biodegradability : Inoculum: activated sludge  
Concentration: 20 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 43 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:  
Biodegradability : Test Type: aerobic  
Inoculum: activated sludge  
Concentration: 5 mg/l  
Result: Not readily biodegradable.  
Biodegradation: ca. 1.1 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D

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

Epoxyphenol Novolac Resin:  
Stability in water: Degradation half life(DT50): 4.83 d (77 °F / 25 °C) pH: 4  
Method: OECD Test Guideline 111  
Remarks: Fresh waterDegradation half life(DT50): 7.1 d (77 °F / 25 °C) pH: 9  
Method: OECD Test Guideline 111  
Remarks: Fresh waterDegradation half life(DT50): 3.58 d (77 °F / 25 °C) pH: 7  
Method: OECD Test Guideline 111  
Remarks: Fresh water

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

Stability in water

: Degradation half life(DT50): ca. 17 d (77 °F / 25 °C) pH: 7  
Method: OECD Test Guideline 111  
Remarks: Fresh waterDegradation half life(DT50): ca. 7.98 d (77 °F / 25 °C) pH: 4  
Method: OECD Test Guideline 111  
Remarks: Fresh waterDegradation half life(DT50): ca. 10.8 d (77 °F / 25 °C) pH: 9  
Method: OECD Test Guideline 111  
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.

Epoxyphenol Novolac Resin:

Bioaccumulation

: Bioconcentration factor (BCF): 31  
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

Epoxyphenol Novolac Resin:

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

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**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

**p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:**

Partition coefficient: n-octanol/water : log Pow: 3.59 (68 °F / 20 °C)  
pH: 7  
Method: OECD Test Guideline 107

**Mobility in soil**

Mobility : No data available

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

Distribution among environmental compartments : Koc: 445

**Epoxyphenol Novolac Resin:**

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

**p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:**

Distribution among environmental compartments : OECD Test Guideline 121  
Koc: ca. 755, log Koc: ca. 2.88  
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

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).



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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, EPOXY PHENOL NOVOLAC RESIN)
Class	: 9
Packing group	: III
Labels	: Miscellaneous
Packing instruction (cargo aircraft)	: 964
Packing instruction (passenger aircraft)	: 964

**IMDG**

UN number	: UN 3082
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BISPHENOL A EPOXY RESIN, EPOXY PHENOL NOVOLAC RESIN)
Class	: 9
Packing group	: III
Labels	: 9
EmS Code	: F-A, S-F
Marine pollutant	: yes

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

Not applicable for product as supplied.

**National Regulations****DOT Classification**

UN/ID/NA number	: UN 3082
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BISPHENOL A EPOXY RESIN, EPOXY PHENOL NOVOLAC RESIN)
Class	: 9
Packing group	: III
Labels	: CLASS 9
ERG Code	: 171
Marine pollutant	: yes(BISPHENOL A EPOXY RESIN, EPOXY PHENOL NOVOLAC RESIN)

**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**

<b>SARA 311/312 Hazards</b>	: Skin corrosion or irritation Serious eye damage or eye irritation Respiratory or skin sensitisation
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<b>SARA 313</b>	: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
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This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

**California Prop. 65**

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

WARNING: This product can expose you to chemicals including quartz (SiO<sub>2</sub>), 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	: Low volume exemption, 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

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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.

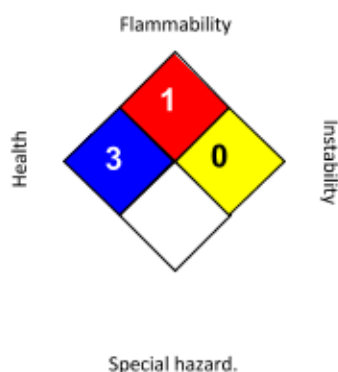
### US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

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

## SECTION 16. OTHER INFORMATION

### Further information

#### NFPA 704:



#### HMIS® IV:

HEALTH		3
FLAMMABILITY		1
PHYSICAL HAZARD		0

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

Revision Date : 11/20/2018

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

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

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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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## REN® 1500 US

Version 1.0	Revision Date: 06/02/2016	SDS Number: 400001010557	Date of last issue: - Date of first issue: 06/02/2016
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### SECTION 1. IDENTIFICATION

Product name : REN® 1500 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  
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

Acute toxicity (Dermal) : Category 4  
Skin corrosion : Category 1B  
Serious eye damage : Category 1  
Skin sensitisation : Category 1  
Acute aquatic toxicity : Category 3  
Chronic aquatic toxicity : Category 3

#### GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H312 Harmful in contact with skin.  
H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.  
H412 Harmful 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/ protective clothing/ eye protection/ face protection.

**Response:**

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

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

P363 Wash contaminated clothing before reuse.

**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)
triethylenetetramine	112-24-3	30 - 60
metaxylenediamine	1477-55-0	13 - 30
1-methylimidazole	616-47-7	3 - 7
2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine	25513-64-8	0.1 - 1

The specific chemical identity and/or exact percentage (concentration) of composition has been 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.  
Do not leave the victim unattended.

If inhaled : If unconscious place in recovery position and seek medical

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- advice.  
If symptoms persist, call a physician.
- In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.  
If on skin, rinse well with water.  
If on clothes, remove clothes.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.  
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
Continue rinsing eyes during transport to hospital.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
Do NOT induce vomiting.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : None known.
- Notes to physician : Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.

## SECTION 5. FIREFIGHTING MEASURES

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

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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.

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. To avoid spills during handling keep bottle on a metal tray. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

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

Components	CAS-No.	Value type (Form of	Control parameters /	Basis
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		exposure)	Permissible concentration	
metaxylenediamine	1477-55-0	C	0.1 mg/m3	ACGIH
		C	0.1 mg/m3	OSHA P0

**Engineering measures** : Maintain air concentrations below occupational exposure standards.

### Personal protective equipment

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Respiratory protection : No personal respiratory protective equipment normally required.

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 : light yellow

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.

Boiling point : > 204 °C

Flash point : > 110 °C Method: 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.

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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	: 1.04
Density	: No data is available on the product itself.
Solubility(ies)	
Water solubility	: No data is available on the product itself.
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.

## SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No decomposition if stored and applied as directed.
Chemical stability	: No decomposition if stored and applied as directed.
Possibility of hazardous reactions	: No decomposition if stored and applied as directed.
Conditions to avoid	: No data available

## SECTION 11. TOXICOLOGICAL INFORMATION

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

### Acute toxicity

Acute oral toxicity - Product	: Acute toxicity estimate : 2,043 mg/kg Method: Calculation method
-------------------------------	---

Acute inhalation toxicity - Product	: Acute toxicity estimate: 9.31 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method
-------------------------------------	--

Acute dermal toxicity -	: Acute toxicity estimate : 1,477 mg/kg
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Product Method: Calculation method

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

**Skin corrosion/irritation****Product:**

Remarks: Extremely corrosive and destructive to tissue.

**Serious eye damage/eye irritation****Product:**

Remarks: May cause irreversible eye damage.

**Respiratory or skin sensitisation****Product:**

Remarks: Causes sensitisation.

**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.

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

triethylenetetramine:

Genotoxicity in vitro

: Concentration: 0 - 200 µg/L  
Metabolic activation: negative  
Method: OECD Test Guideline 482  
Result: negative

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  
GLP: yes

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  
GLP: yes

Test Type: In vitro mammalian cell gene mutation test  
Species: mouse lymphoma cells  
Metabolic activation: with and without metabolic activation

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Method: OECD Test Guideline 476  
Result: negative  
GLP: yes

**1-methylimidazole:**

Genotoxicity in vitro

: Metabolic activation: with and without metabolic activation  
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 476  
Result: negative

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

Genotoxicity in vitro

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

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

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

**Components:****triethylenetetramine:**

Genotoxicity in vivo

: Application Route: Intraperitoneal injection  
Dose: 0 - 600 mg/kg  
Method: OECD Test Guideline 474  
Result: negative

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

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

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

Test Type: In vivo micronucleus test  
Species: Mouse (male and female)  
Application Route: Oral  
Dose: 850 - 1000 mg/kg  
Method: OECD Test Guideline 474  
Result: negative

### Components:

metaxylenediamine:

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

Germ cell mutagenicity- : No data available  
Assessment

### **Carcinogenicity**

#### Components:

triethylenetetramine:

Species: Mouse, (male)  
Application Route: Dermal  
Dose: 42 mg/kg  
Frequency of Treatment: 3 days/week  
Method: OECD Test Guideline 451  
Result: negative

Species: Mouse, (male)  
Application Route: Dermal  
Exposure time: 104 weeks  
Dose: 16.8 mg/kg  
Frequency of Treatment: 3 days/week  
Method: OECD Test Guideline 451

Carcinogenicity - : No data available  
Assessment

### **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 identified as a carcinogen or potential carcinogen by OSHA.

### **NTP**

No component of this product present at levels greater than or

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equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**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.  
GLP: yes

1-methylimidazole:

Species: Rat, male and female  
Application Route: Oral  
Method: OECD Test Guideline 422  
Result: No effects on fertility and early embryonic development were detected.

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

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

**Components:**

triethylenetetramine:  
Effects on foetal  
development

: Species: Rat  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level: > 750 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

Species: Rabbit  
Application Route: Dermal  
General Toxicity Maternal: No observed adverse effect level: 125 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

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

Species: Rabbit, female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level: 50,000 ppm

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Result: No teratogenic effects

### Components:

metaxylenediamine:

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:

triethylenetetramine:

Species: Rat, male and female

NOAEL: 50 mg/kg/d

Application Route: Ingestion

Exposure time: 26 Weeks

Number of exposures: 7 d

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

GLP: yes

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

GLP: yes

Target Organs: Lungs

1-methylimidazole:

Species: Rat, male and female

NOAEL: 30 mg/kg/d

Application Route: Ingestion

Number of exposures: 7 d

Method: Subacute toxicity



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

Species: Rat, male and female

NOAEL: 10 mg/kg bw/day

Application Route: Ingestion

Exposure time: 13 Weeks

Number of exposures: Daily

Dose: 10, 60, 180mg/kg bw

Target Organs: Liver

Species: Rat, male and female

LOAEL: 60 mg/kg bw/day

Application Route: Ingestion

Exposure time: 13 Weeks

Number of exposures: Daily

Dose: 10, 60, 180mg/kg bw

Target Organs: Liver

### 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.

### **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:**

triethylenetetramine:

Toxicity to fish

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

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  
GLP: yes

1-methylimidazole:

Toxicity to fish

: LC50 (Leuciscus idus (Golden orfe)): > 100 - < 215 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: DIN 38412

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

Toxicity to fish

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

**Components:**

triethylenetetramine:

Toxicity to daphnia and other aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 31.1 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.2.

metaxylenediamine:

Toxicity to daphnia and other aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 15.2 mg/l  
Exposure time: 48 h  
Test Type: static test  
Method: OECD Test Guideline 202  
GLP: yes

1-methylimidazole:

Toxicity to daphnia and other aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 267.9 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.2.

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

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

**Components:**

triethylenetetramine:

Toxicity to algae : 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

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  
GLP: yes

1-methylimidazole:

Toxicity to algae : ErC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 180.7 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

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

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

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

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

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

**Components:**

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

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

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

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### Components:

triethylenetetramine:

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

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  
GLP: yes

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

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

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

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

### Components:

triethylenetetramine:

Toxicity to bacteria : EC50 (activated sludge): 800 mg/l  
Exposure time: 0.5 h  
Test Type: static test  
Test substance: Fresh water

metaxylenediamine:

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

1-methylimidazole:

Toxicity to bacteria : EC50 (activated sludge): 1,050 mg/l  
Exposure time: 7 h  
Method: DIN 38 412 Part 8

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

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

### Components:

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

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

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

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

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

Further information:  
 No data available

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

triethylenetetramine:

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

Inoculum: activated sludge  
 Result: Not readily biodegradable.  
 Biodegradation: 20 %  
 Exposure time: 84 d  
 Method: Inherent Biodegradability: Modified SCAS Test

metaxylenediamine:

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

1-methylimidazole:

Biodegradability : Inoculum: activated sludge  
 Result: Not readily biodegradable.



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Biodegradation: 0 - 10 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

Inoculum: activated sludge  
Concentration: 9,000 mg/l  
Result: Inherently biodegradable.  
Biodegradation: 79 %  
Exposure time: 60 d  
Method: ISO Method, other

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

Biodegradability : Inoculum: activated sludge  
Concentration: 11.4 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 7 %  
Exposure time: 28 d

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

Stability in water : No data available

Photodegradation : No data available

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.

#### Components:

triethylenetetramine:

Partition coefficient: n- : log Pow: -2.65 (20 °C)

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octanol/water Method: OECD Test Guideline 117

metaxylenediamine:  
Partition coefficient: n-octanol/water : log Pow: 0.18 (25 °C)  
pH: 10.3 - 10.4  
Method: OECD Test Guideline 107  
GLP: yes

1-methylimidazole:  
Partition coefficient: n-octanol/water : log Pow: -0.19 (25 °C)  
pH: 9.25 - 9.85  
Method: OECD Test Guideline 107

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:  
Partition coefficient: n-octanol/water : log Pow: -0.3 (25 °C)  
Method: OECD Test Guideline 117

### Mobility in soil

Mobility : No data available

### Components:

triethylenetetramine:  
Distribution among environmental compartments : Koc: 1584.9 - 5012 Method: OECD Test Guideline 106  
1-methylimidazole:  
Distribution among environmental compartments : Koc: 27 Method: Calculation method  
Stability in soil : No data available

### Other adverse effects

Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

### Hazardous to the ozone layer

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

Additional ecological information - Product : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

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Harmful 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 Regulation****IATA**

UN/ID No.	: UN 2735
Proper shipping name	: Polyamines, liquid, corrosive, n.o.s. (TRIETHYLENE TETRAMINE, M-XYLYLENE DIAMINE)
Class	: 8
Packing group	: II
Labels	: Corrosive
Packing instruction (cargo aircraft)	: 855
Packing instruction (passenger aircraft)	: 851

**IMDG**

UN number	: UN 2735
Proper shipping name	: POLYAMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENE TETRAMINE, M-XYLYLENE DIAMINE)
Class	: 8
Packing group	: II
Labels	: 8
EmS Code	: F-A, S-B
Marine pollutant	: no

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

Not applicable for product as supplied.

**National Regulations**

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**DOT Classification**

UN/ID/NA number	: UN 2735
Proper shipping name	: POLYAMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENE TETRAMINE, M-XYLYLENE DIAMINE)
Class	: 8
Packing group	: II
Labels	: CORROSIVE
ERG Code	: 153
Marine pollutant	: no

**SECTION 15. REGULATORY INFORMATION****EPCRA - Emergency Planning and Community Right-to-Know Act****SARA 311/312 Hazards** : Acute Health Hazard**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** This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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

CH INV	: The formulation contains substances listed on the Swiss Inventory, Not in compliance with the inventory
TSCA	: On the inventory, or in compliance with the inventory
DSL	: All components of this product are on the Canadian DSL
AICS	: Not in compliance with the inventory
NZIoC	: not determined
ENCS	: Low volume exemption, 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

**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.

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

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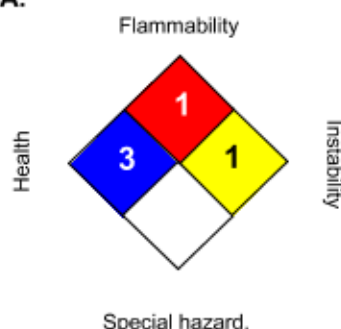
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No substances are subject to TSCA 12(b) export notification requirements.

### SECTION 16. OTHER INFORMATION

#### Further information

##### NFPA:



##### HMIS III:

HEALTH	3
FLAMMABILITY	1
PHYSICAL HAZARD	1

0 = not significant, 1 = Slight,

2 = Moderate, 3 = High

4 = Extreme, \* = Chronic

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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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## REN® 1500 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/02/2016	400001010557	Date of first issue: 06/02/2016

**REN® 1501 US**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	06/29/2017	400001012618	07/02/2016
			Date of first issue: 07/02/2016

**SECTION 1. IDENTIFICATION**

Product name : REN® 1501 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 (Inhalation) : Category 3  
Acute toxicity (Dermal) : Category 4  
Skin corrosion : Category 1B  
Serious eye damage : Category 1  
Skin sensitisation : Category 1  
Reproductive toxicity : Category 1B  
Specific target organ toxicity - single exposure : Category 3 (Respiratory system)  
Acute aquatic toxicity : Category 3  
Chronic aquatic toxicity : Category 3

**GHS label elements**

Hazard pictograms :



Signal word : Danger

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- Hazard statements**
- : H312 Harmful in contact with skin.
  - H314 Causes severe skin burns and eye damage.
  - H317 May cause an allergic skin reaction.
  - H331 Toxic if inhaled.
  - H335 May cause respiratory irritation.
  - H360F May damage fertility.
  - H412 Harmful 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 dust/ fume/ gas/ mist/ vapours/ spray.
    - P264 Wash skin thoroughly after handling.
    - P271 Use only outdoors or in a well-ventilated area.
    - 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 + 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.
  - : **Storage:**
    - P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
    - 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

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Chemical name	CAS-No.	Concentration (% w/w)
2,2'-iminodi(ethylamine)	111-40-0	30 - 50
4,4'-isopropylidenediphenol	80-05-7	10 - 20
metaxylenediamine	1477-55-0	10 - 20
Accelerator	—	3 - 5
2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine	25620-58-0	0.25 - 1

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.  
Symptoms of poisoning may appear several hours later.  
Do not leave the victim unattended.
- If inhaled : Call a physician or poison control centre immediately.  
If unconscious, place in recovery position and seek medical advice.
- In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.  
If on skin, rinse well with water.  
If on clothes, remove clothes.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.  
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
Continue rinsing eyes during transport to hospital.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
Do NOT induce vomiting.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : None known.

### SECTION 5. FIREFIGHTING MEASURES

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- |   |   |
|---|---|
| Suitable extinguishing media                  | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.   |
| Unsuitable extinguishing media                | : High volume water jet   |
| Specific hazards during firefighting          | : Do not allow run-off from fire fighting to enter drains or water courses.   |
| Hazardous combustion products                 | : No hazardous combustion products are known  |
| Specific extinguishing methods                | : No data is available on the product itself.   |
| Further information                           | : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.<br>Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |
| Special protective equipment for firefighters | : Wear self-contained breathing apparatus for firefighting if necessary.  |

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

- |   |   |
|---|---|
| Personal precautions, protective equipment and emergency procedures | : Use personal protective equipment.<br>Ensure adequate ventilation.<br>Evacuate personnel to safe areas.   |
| Environmental precautions   | : Prevent product from entering drains.<br>Prevent further leakage or spillage if safe to do so.<br>If the product contaminates rivers and lakes or drains inform respective authorities. |
| Methods and materials for containment and cleaning up               | : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).<br>Keep in suitable, closed containers for disposal.                             |

**SECTION 7. HANDLING AND STORAGE**

- |   |  |
|---|--|
| Advice on protection against fire and explosion | : Normal measures for preventive fire protection.  |
| Advice on safe handling                         | : Avoid formation of aerosol.<br>Do not breathe vapours/dust.<br>Avoid exposure - obtain special instructions before use.<br>Avoid contact with skin and eyes.<br>For personal protection see section 8.<br>Smoking, eating and drinking should be prohibited in the application area.<br>Provide sufficient air exchange and/or exhaust in work rooms.<br>To avoid spills during handling keep bottle on a metal tray.<br>Dispose of rinse water in accordance with local and national regulations. |



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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 : Prevent unauthorized access.  
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.  
Electrical installations / working materials must comply with the technological safety standards.

Materials to avoid : No materials to be especially mentioned.

Further information on storage stability : No decomposition if stored and applied as directed.

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

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
2,2'-iminodi(ethylamine)	111-40-0	TWA	1 ppm	ACGIH
metaxylenediamine	1477-55-0	C	0.1 mg/m3	ACGIH

**Personal protective equipment**

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

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 : Avoid contact with skin, eyes and clothing.  
When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and immediately after handling the product.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

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Appearance	: liquid
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	: > 204 °C
Flash point	: 121 °C Method: Pensky-Martens closed cup, 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	: 0.1333 hPa (25 °C)
Relative vapour density	: No data is available on the product itself.
Relative density	: 1.06
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.

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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.

### SECTION 11. TOXICOLOGICAL INFORMATION

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

#### Acute toxicity

Acute oral toxicity - Product : Acute toxicity estimate : 2,475 mg/kg  
Method: Calculation method

Acute inhalation toxicity - Product : Acute toxicity estimate: 0.52 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

Acute dermal toxicity - Product : Acute toxicity estimate : 1,846 mg/kg  
Method: Calculation method

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

#### Skin corrosion/irritation

##### Product:

Remarks: Extremely corrosive and destructive to tissue.

#### Serious eye damage/eye irritation

##### Product:

Remarks: May cause irreversible eye damage.

#### Respiratory or skin sensitisation

##### Product:

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Remarks: Causes sensitisation.

**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.

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

4,4'-isopropylidenediphenol:

Genotoxicity in vitro

: Metabolic activation: with and without metabolic activation  
 Result: negative

metaxylenediamine:

Genotoxicity in vitro

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

Test Type: Chromosome aberration test in vitro  
 Test system: 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  
 Test system: mouse lymphoma cells  
 Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 476  
 Result: negative

Accelerator:

Genotoxicity in vitro

: Metabolic activation: with and without metabolic activation  
 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 476  
 Result: negative

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

Genotoxicity in vitro

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

Test Type: Chromosome aberration test in vitro

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Test system: Chinese hamster ovary cells  
 Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 473  
 Result: negative

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

**Components:**

2,2'-iminodi(ethylamine):  
 Genotoxicity in vivo

: Cell type: Somatic  
 Application Route: Oral  
 Dose: 85 - 850 mg/kg  
 Method: OECD Test Guideline 474  
 Result: negative  
  
 Application Route: Oral  
 Result: negative

4,4'-isopropylidenediphenol:  
 Genotoxicity in vivo

: Method: OECD Test Guideline 474  
 Result: negative

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

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

Genotoxicity in vivo

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

Test Type: In vivo micronucleus test  
 Species: Mouse (male and female)  
 Application Route: Oral  
 Dose: 850 - 1000 mg/kg  
 Method: OECD Test Guideline 474  
 Result: negative

**Components:**

metaxylenediamine:  
 Germ cell mutagenicity-

: Tests on bacterial or mammalian cell cultures did not show



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Assessment mutagenic effects., Animal testing did not show any mutagenic effects.

Germ cell mutagenicity-  
Assessment : No data available

**Carcinogenicity****Components:**

2,2'-iminodi(ethylamine):  
Species: Mouse, (male)  
Application Route: Dermal  
Dose: 56.3 mg/kg  
Frequency of Treatment: 3 daily  
Result: negative

4,4'-isopropylidenediphenol:  
Species: Rat, (male and female)  
Application Route: Oral  
Exposure time: 103 weeks  
Frequency of Treatment: 7 daily  
Result: negative

Carcinogenicity -  
Assessment : No data available

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

**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'-iminodi(ethylamine):  
Effects on fertility : Species: Rat, male and female  
Application Route: Oral  
General Toxicity - Parent: No observed adverse effect level:  
30 mg/kg wet weight  
Method: OECD Test Guideline 421  
Result: positive

4,4'-isopropylidenediphenol:  
Species: Rat, male and female  
Application Route: Oral  
Method: OECD Test Guideline 416  
Result: Embryotoxic effects and adverse effects on the offspring were detected.

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## metaxylenediamine:

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.

## Accelerator:

Species: Rat, male and female  
Application Route: Oral  
Method: OECD Test Guideline 422  
Result: No effects on fertility and early embryonic development were detected.

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

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

**Components:**

2,2'-iminodi(ethylamine):  
Effects on foetal development

: Species: Rat  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level: 100 mg/kg body weight  
Method: OECD Test Guideline 421  
Result: No adverse effects

## 4,4'-isopropylidenediphenol:

Species: Rat, female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level: < 160 mg/kg body weight  
Method: OECD Test Guideline 416  
Result: No teratogenic effects

## metaxylenediamine:

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

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mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No effects on fertility and early embryonic development were detected.

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

Species: Rabbit, female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
50,000 ppm  
Result: No teratogenic effects

**Components:**

4,4'-isopropylidenediphenol:

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

metaxylenediamine:

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

**STOT - single exposure****Components:**

2,2'-iminodi(ethylamine):

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**

No data available

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

2,2'-iminodi(ethylamine):

Species: Rat, male and female

NOEC: 70 - 80 mg/m<sup>3</sup>

Application Route: Ingestion

Test atmosphere: vapour

Exposure time: 360 h

Number of exposures: 7 d

Method: Subchronic toxicity

Species: Rat, male and female

NOAEL: 114 mg/kg/d

Application Route: Skin contact

Exposure time: 9,600 h

Number of exposures: 6 d

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Method: Chronic toxicity

4,4'-isopropylidenediphenol:

Species: Dog, male and female

NOEC: 75 mg/kg, 10 mg/m<sup>3</sup>

Application Route: Ingestion

Test atmosphere: dust/mist

Exposure time: 2,160 h

Number of exposures: 7 d

Method: Subchronic toxicity

Species: Rat, male and female

LOAEL: 600 mg/kg

Application Route: Ingestion

Exposure time: 672 h

Number of exposures: 7 d

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

NOEC: 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

Accelerator:

Species: Rat, male and female

NOAEL: 30 mg/kg/d

Application Route: Ingestion

Number of exposures: 7 d

Method: Subacute toxicity

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

Species: Rat, male and female

NOAEL: 10 mg/kg bw/day

Application Route: Ingestion

Exposure time: 13 Weeks

Number of exposures: Daily

Dose: 10, 60, 180mg/kg bw

Target Organs: Liver

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

### 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.

### **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

## SECTION 12. ECOLOGICAL INFORMATION

### **Ecotoxicity**

#### Components:



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**2,2'-iminodi(ethylamine):**

Toxicity to fish : LC50: 430 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.1.

**4,4'-isopropylidenediphenol:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 7.5 mg/l  
Exposure time: 96 h

**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

**Accelerator:**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): > 100 - < 215 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: DIN 38412

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

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

**Components:****2,2'-iminodi(ethylamine):**

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 32 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water

**4,4'-isopropylidenediphenol:**

Toxicity to daphnia and other aquatic invertebrates : EC50: 3.9 - 10.2 mg/l  
Exposure time: 48 h

(Ceriodaphnia dubia (Water flea)):

**metaxylenediamine:**

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 15.2 mg/l  
Exposure time: 48 h  
Test Type: static test  
Method: OECD Test Guideline 202

**Accelerator:**

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 267.9 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.2.

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

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

**Components:**

2,2'-iminodi(ethylamine):

Toxicity to algae : EbC50 (Selenastrum capricornutum (green algae)): 1,164 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

4,4'-isopropylidenediphenol:

Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 2.5 - 3.1 mg/l  
Exposure time: 96 h

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

Accelerator:

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 180.7 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

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

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

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

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

M-Factor (Acute aquatic toxicity)

: No data available

**Components:**

2,2'-iminodi(ethylamine):

Toxicity to fish (Chronic toxicity) : NOEC: 10 mg/l  
Exposure time: 28 d  
Test Type: semi-static test  
Test substance: Fresh water  
Method: OECD Test Guideline 210

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**4,4'-isopropylidenediphenol:**

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 0.016 mg/l  
 Exposure time: 444 d  
 Test Type: flow-through test  
 Test substance: Fresh water  
 Method: Fish Life Cycle Toxicity  
 Remarks: Toxic to aquatic organisms.

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

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

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

**Components:****2,2'-iminodi(ethylamine):**

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  
 Test substance: Fresh water  
 Method: Directive 67/548/EEC, Annex V, C.20

**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

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

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

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

**Components:****4,4'-isopropylidenediphenol:**

M-Factor (Chronic aquatic toxicity) : 1

**Components:****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

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### Accelerator:

Toxicity to microorganisms : EC50 (activated sludge): 1,050 mg/l  
Exposure time: 7 h  
Method: DIN 38 412 Part 8

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

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

### Components:

#### 2,2'-iminodi(ethylamine):

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

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

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

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

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

### Ecotoxicology Assessment

### Components:

#### 2,2'-iminodi(ethylamine):

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

### Components:

#### 4,4'-isopropylidenediphenol:

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

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

### Persistence and degradability

### Components:

#### 2,2'-iminodi(ethylamine):

Biodegradability : Inoculum: activated sludge  
Result: Readily biodegradable.  
Biodegradation: 87 %  
Exposure time: 21 d

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Method: OECD Test Guideline 301D

4,4'-isopropylidenediphenol:  
Biodegradability

: Result: Not readily biodegradable.  
Biodegradation: 1 - 2 %  
Exposure time: 28 d

metaxylenediamine:  
Biodegradability

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

Accelerator:  
Biodegradability

: Inoculum: activated sludge  
Result: Not readily biodegradable.  
Biodegradation: 0 - 10 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

Inoculum: activated sludge  
Concentration: 9,000 mg/l  
Result: Inherently biodegradable.  
Biodegradation: 79 %  
Exposure time: 60 d  
Method: ISO Method, other

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

Biodegradability

: Inoculum: activated sludge  
Concentration: 11.4 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 7 %  
Exposure time: 28 d

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

Stability in water

: No data available



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**Components:**

2,2'-iminodi(ethylamine):

Photodegradation

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

Impact on Sewage  
Treatment

: No data available

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

2,2'-iminodi(ethylamine):

Bioaccumulation

: Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): 0.3 - 6.3  
Exposure time: 42 d  
Test substance: Fresh water  
Method: flow-through test  
Remarks: Bioaccumulation is unlikely.

metaxylenediamine:

Bioaccumulation

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

**Components:**

2,2'-iminodi(ethylamine):

Partition coefficient: n-  
octanol/water

: log Pow: -1.58 (20 °C)  
pH: 7

metaxylenediamine:

Partition coefficient: n-  
octanol/water

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

Accelerator:

Partition coefficient: n-  
octanol/water

: log Pow: -0.19 (25 °C)  
pH: 9.25 - 9.85  
Method: OECD Test Guideline 107

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

Partition coefficient: n-  
octanol/water

: log Pow: -0.3 (25 °C)  
Method: OECD Test Guideline 117

**Mobility in soil**

Mobility

: No data available

**Components:**

2,2'-iminodi(ethylamine):

Distribution among  
environmental compartments  
Accelerator:

: Koc: 19111

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Distribution among environmental compartments : Koc: 27  
Method: Calculation method

Stability in soil : No data available

### Other adverse effects

Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

### Hazardous to the ozone layer

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

Additional ecological information - Product : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Harmful 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

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### IATA

UN/ID No. : UN 2735  
Proper shipping name : Polyamines, liquid, corrosive, n.o.s.  
(DIETHYLENE TRIAMINE, M-XYLYLENE DIAMINE)  
Class : 8  
Packing group : II  
Labels : Corrosive  
Packing instruction (cargo aircraft) : 855  
Packing instruction (passenger aircraft) : 851

### IMDG

UN number : UN 2735  
Proper shipping name : POLYAMINES, LIQUID, CORROSIVE, N.O.S.  
(DIETHYLENE TRIAMINE, M-XYLYLENE DIAMINE)  
Class : 8  
Packing group : II  
Labels : 8  
EmS Code : F-A, S-B  
Marine pollutant : no

### 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.  
(DIETHYLENE TRIAMINE, M-XYLYLENE DIAMINE)  
Class : 8  
Packing group : II  
Labels : CORROSIVE  
ERG Code : 153  
Marine pollutant : no

## SECTION 15. REGULATORY INFORMATION

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

**SARA 311/312 Hazards** : Acute Health Hazard

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

4,4'- isopropylidenediphenol	80-05-7	16.65 %
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This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean

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Air Act Section 112 (40 CFR 61).

### California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

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

CH INV	: The formulation contains substances listed on the Swiss Inventory, Not in compliance with the inventory
DSL	: All components of this product are on the Canadian DSL
AICS	: Not in compliance with the inventory
NZIoC	: Not in compliance with the inventory
ENCS	: Low volume exemption, 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.

### 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.

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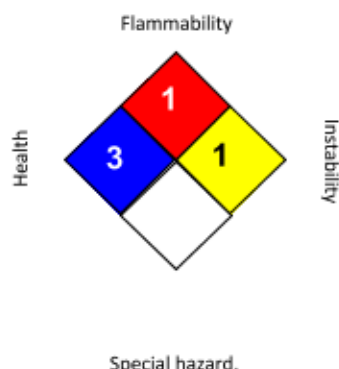
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### SECTION 16. OTHER INFORMATION

#### Further information

##### NFPA:



##### HMIS® IV:

HEALTH	*	3
FLAMMABILITY		1
PHYSICAL HAZARD		1

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

Revision Date : 06/29/2017

ACGIH : USA. ACGIH Threshold Limit Values (TLV)  
ACGIH / TWA : 8-hour, time-weighted average  
ACGIH / C : Ceiling limit

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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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## REN 1510 US

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### SECTION 1. IDENTIFICATION

Product name : REN 1510 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  
Telephone : Non-Emergency: (800) 257-5547  
E-mail address of person responsible for the SDS : MSDS@huntsman.com  
Emergency telephone : 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

Acute toxicity (Oral) : Category 4  
Acute toxicity (Inhalation) : Category 4  
Skin corrosion : Category 1B  
Serious eye damage : Category 1  
Skin sensitization : Category 1  
Acute aquatic toxicity : Category 3  
Chronic aquatic toxicity : Category 3

#### GHS Label element

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H302 + H332 Harmful if swallowed or if inhaled.  
H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.  
H318 Causes serious eye damage.

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H412 Harmful to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**  
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P272 Contaminated work clothing must not be allowed out of the workplace.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
**Response:**  
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER or doctor/ physician 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 or doctor/ physician.  
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 or doctor/ physician.  
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
P363 Wash contaminated clothing before reuse.  
**Storage:**  
P405 Store locked up.  
**Disposal:**  
P501 Dispose of contents/ container to an approved waste disposal plant.

### Other hazards

The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity:  
43.55 %

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Hazardous ingredients

Chemical Name	CAS-No.	Concentration (%)
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-	2855-13-2	30 - 60
metaxylenediamine	1477-55-0	13 - 30
1-methylimidazole	616-47-7	3 - 7
1,6-Hexanediamine, C,C,C-trimethyl-	25620-58-0	0.1 - 1

## SECTION 4. FIRST AID MEASURES

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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. If symptoms persist, call a physician.
In case of skin contact	: Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water.
In case of eye contact	: Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing.
If swallowed	: Clean mouth with water and drink afterwards plenty of water. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person.
Most important symptoms and effects, both acute and delayed	: None known.

### SECTION 5. FIRE-FIGHTING 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 extinguishing methods	: No data is available on the product itself.
Further information	: Standard procedure for chemical fires.
Special protective equipment for fire-fighters	: In the event of fire, wear self-contained breathing apparatus.

### 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	: Normal measures for preventive fire protection.
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fire and explosion

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

### Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
metaxylenediamine	1477-55-0	C	0.1 mg/m3	ACGIH
		C	0.1 mg/m3	NIOSH REL
		C	0.1 mg/m3	OSHA P0

### 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

Color : amber, clear

Odor : No data is available on the product itself.

Odor Threshold : No data is available on the product itself.

pH : No data is available on the product itself.

Boiling point : > 204.44 °C

Flash point : > 121 °C  
Method: Pensky-Martens closed cup, closed cup

Evaporation rate : No data is available on the product itself.



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Flammability (solid, gas)	: 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.
Vapor pressure	: No data is available on the product itself.
Relative vapor density	: No data is available on the product itself.
Relative density	: 1.04 - 1.06
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.
Autoignition temperature	: No data is available on the product itself.
Thermal decomposition	: No data is available on the product itself.
Viscosity	: No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	: 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

### 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 : 1,011 mg/kg  
Method: Calculation method

Acute inhalation toxicity - Product : Acute toxicity estimate: 3.64 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

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Acute dermal toxicity - Product : Acute toxicity estimate : 3,421 mg/kg  
Method: Calculation method

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

### Skin corrosion/irritation

#### Product:

Remarks: According to the classification criteria of the European Union, 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 sensitization

#### Product:

Remarks: No data available

Assessment: No data available

### Germ cell mutagenicity

#### Ingredients:

metaxylenediamine:

Genotoxicity in vitro : 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

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

1-methylimidazole:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
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 476  
Result: negative

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**Ingredients:**metaxylenediamine:  
Genotoxicity in vivo: Application Route: Oral  
Method: OECD Test Guideline 474  
Result: negative**Carcinogenicity**

No data available

Carcinogenicity -  
Assessment

: No data available

**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.

**ACGIH**

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

**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****Ingredients:**metaxylenediamine:  
Effects on fertility: Species: Rat, male and female  
Application Route: Oral  
Method: OECD Test Guideline 421

1-methylimidazole:

Species: Rat, male and female  
Application Route: Oral  
Method: OECD Test Guideline 422

1,6-Hexanediamine, C,C,C-trimethyl-:

Species: Rat, male and female  
Application Route: Oral  
Method: OECD Test Guideline 416**Ingredients:**

Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-:

Effects on fetal development

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

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Result: No teratogenic effects.

1,6-Hexanediamine, C,C,C-trimethyl-:

Species: Rabbit, female

Application Route: Oral

General Toxicity Maternal: NOAEL (No observed adverse effect level): 50,000 ppm

Result: No teratogenic effects.

Reproductive toxicity - Assessment : No data available

### STOT-single exposure

No data available

### STOT-repeated exposure

No data available

### Repeated dose toxicity

#### Ingredients:

Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-:

Species: Rat, male and female

NOEC: 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

Method: Subchronic toxicity

metaxylenediamine:

Species: Rat, male and female

No-observed-effect level: 150 mg/kg

Application Route: Ingestion

Exposure time: 672 h

Number of exposures: 7 d

Method: Subacute toxicity

1-methylimidazole:

Species: Rat, male and female

NOAEL (No observed adverse effect level): 30 mg/kg/d

Application Route: Ingestion

Number of exposures: 7 d

Method: Subacute toxicity

1,6-Hexanediamine, C,C,C-trimethyl-:

Species: Rat, male and female

NOAEL (No observed adverse effect level): 10 mg/kg

Application Route: Ingestion

Exposure time: 13 Weeks

Method: Subchronic toxicity

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Repeated dose toxicity - Assessment : No data available

### 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

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Ingredients:

Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-:

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  
Test substance: Fresh water  
Method: OECD Test Guideline 203



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**1-methylimidazole:**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): > 100 - < 215 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: DIN 38412

**Ingredients:****Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-:**

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

**metaxylenediamine:**

Toxicity to daphnia and other aquatic invertebrates : EC50: 15.2 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

**1-methylimidazole:**

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 267.9 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.2.

**Ingredients:****Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-:**

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

**1-methylimidazole:**

Toxicity to algae : ErC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 180.7 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

**1,6-Hexanediamine, C,C,C-trimethyl-:**

Toxicity to algae : EgC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 29.5 mg/l

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Exposure time: 72 h

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

Toxicity to fish (Chronic toxicity) : No data available

### Ingredients:

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  
Test substance: Fresh water  
Method: OECD Test Guideline 211

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

### Ingredients:

Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-:

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

1-methylimidazole:

Toxicity to bacteria : EC50 (activated sludge): 1,050 mg/l  
Exposure time: 7 h  
Method: DIN 38 412 Part 8

1,6-Hexanediamine, C,C,C-trimethyl-:

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

Toxicity to soil dwelling organisms : No data available

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

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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

**Further information**

The following percentage of the mixture consists of ingredient(s) with unknown hazards to the aquatic environment: 43.55 %

**Persistence and degradability****Ingredients:**

Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-:

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.

metaxylenediamine:

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

1-methylimidazole:

Biodegradability : Inoculum: activated sludge  
Result: Not readily biodegradable.  
Biodegradation: 0 - 10 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

Inoculum: activated sludge  
Concentration: 9,000 mg/l  
Result: Inherently biodegradable.  
Biodegradation: 79 %  
Exposure time: 60 d  
Method: ISO Method, other

1,6-Hexanediamine, C,C,C-trimethyl-:

Biodegradability : Inoculum: activated sludge  
Concentration: 11.4 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 7 %  
Exposure time: 28 d

Biochemical Oxygen Demand (BOD) : No data available

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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

Stability in water : No data available

Photodegradation : No data available

Impact on Sewage Treatment : No data available

### Bioaccumulative potential

#### Ingredients:

metaxylenediamine:

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

#### Ingredients:

Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-:

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

1-methylimidazole:

Partition coefficient: n-octanol/water : log Pow: -0.19 (25 °C)  
pH: 9.25 - 9.85  
Method: OECD Test Guideline 107

1,6-Hexanediamine, C,C,C-trimethyl-:

Partition coefficient: n-octanol/water : log Pow: 0.77 (23 °C)  
Method: OECD Test Guideline 107

### Mobility in soil

Mobility : No data available

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### **Ingredients:**

Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-:

Distribution among environmental compartments : Koc: 928.

1-methylimidazole:

Distribution among environmental compartments : Koc: 27. Method: Calculation method

Stability in soil : No data available

### **Other adverse effects**

Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

### **Hazardous to the ozone layer**

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

Additional ecological information - Product : 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 Regulation**



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### IATA

UN/ID No. : UN 2735  
Proper shipping name : Polyamines, liquid, corrosive, n.o.s.  
(ISOPHORONE DIAMINE, M-XYLYLENE DIAMINE)  
Class : 8  
Packing group : II  
Labels : Corrosive  
Packing instruction (cargo aircraft) : 855  
Packing instruction (passenger aircraft) : 851

### IMDG

UN number : UN 2735  
Proper shipping name : POLYAMINES, LIQUID, CORROSIVE, N.O.S.  
(ISOPHORONE DIAMINE, M-XYLYLENE DIAMINE)  
Class : 8  
Packing group : II  
Labels : 8  
EmS Code : F-A, S-B  
Marine pollutant : no

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

Not applicable for product as supplied.

### Domestic regulation

### 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 : no

## SECTION 15. REGULATORY INFORMATION

**TSCA - 5(a) Significant New Use Rule List of Chemicals** : Not relevant

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

**SARA 311/312 Hazards** : No SARA Hazards

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

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### Clean Air Act

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

### Pennsylvania Right To Know

1,3-Benzenedimethanamine, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane] and 2,2,4-trimethyl-1,6	68738-77-2	30 - 50 %
Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-	2855-13-2	30 - 50 %
metaxylenediamine	1477-55-0	20 - 30 %
1-methylimidazole	616-47-7	1 - 5 %

### California Prop 65

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

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

CH INV	: The mixture contains substances listed on the Swiss Inventory
TSCA	: On TSCA Inventory
DSL	: All components of this product are on the Canadian DSL.
AICS	: Not in compliance with the inventory
NZIoC	: Not in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
ISHL	: 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

### Inventories

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

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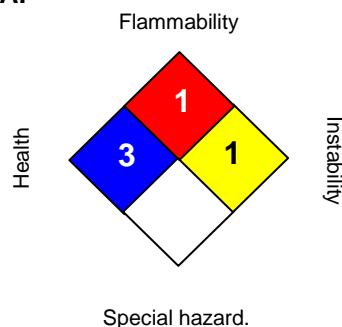
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### SECTION 16. OTHER INFORMATION

#### Further information

##### NFPA:



##### HMIS III:

HEALTH	3
FLAMMABILITY	1
PHYSICAL HAZARD	1

0 = not significant, 1 = Slight,

2 = Moderate, 3 = High

4 = Extreme, \* = Chronic

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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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