SECTION 1. IDENTIFICATION

Product name : RENLAM® 4014 US

Manufacturer or supplier’s details
Company name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980
The Woodlands,
TX 77387
United States of America (USA)
Telephone : Non-Emergency: (800) 257-5547
E-mail address of person responsible for the SDS : SDS@huntsman.com
Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

Recommended use of the chemical and restrictions on use
Recommended use : Epoxy resin solution

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200
Skin irritation : Category 2
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:
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ 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

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,2'-(1-methylene)-bis(4,1-phenyleneoxymethylene)bisoxirane</td>
<td>1675-54-3</td>
<td>30 - 50</td>
</tr>
<tr>
<td>limestone</td>
<td>1317-65-3</td>
<td>10 - 20</td>
</tr>
<tr>
<td>Epoxaphenol Novolac Resin</td>
<td>28064-14-4</td>
<td>10 - 20</td>
</tr>
<tr>
<td>1,4-bis(2,3-epoxypropoxy)butane</td>
<td>2425-79-8</td>
<td>5 - 10</td>
</tr>
<tr>
<td>Talc (Mg3H2(SiO3)4)</td>
<td>14807-96-6</td>
<td>1 - 5</td>
</tr>
<tr>
<td>p-tert-butylphenyl 1-(2,3-epoxy)propyl ether</td>
<td>3101-60-8</td>
<td>1 - 2.5</td>
</tr>
<tr>
<td>titanium dioxide</td>
<td>13463-67-7</td>
<td>0.1 - 1</td>
</tr>
</tbody>
</table>

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.
Treat symptomatically.
Get medical attention if symptoms occur.

If inhaled: If inhaled, remove to fresh air.
Get medical attention if symptoms occur.

In case of skin contact: If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes.

In case of eye contact: Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed: Keep respiratory tract clear.
Do NOT induce vomiting.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.

Most important symptoms and effects, both acute and delayed: None known.

Notes to physician: Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media: High volume water jet

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

Hazardous combustion products: Carbon oxides
Halogenated compounds
Carbon dioxide (CO2)
Carbon monoxide

Specific extinguishing methods: No data is available on the product itself.

Further information: Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must
be disposed of in accordance with local regulations.

Special protective equipment for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

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

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

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

SECTION 7. HANDLING AND STORAGE

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

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. Keep in properly labelled containers.

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

Further information on storage stability: Stable under normal conditions.
SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>limestone</td>
<td>1317-65-3</td>
<td>TWA (total dust)</td>
<td>15 mg/m³</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (respirable fraction)</td>
<td>5 mg/m³</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td>titanium dioxide</td>
<td>13463-67-7</td>
<td>TWA (total dust)</td>
<td>15 mg/m³</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>10 mg/m³ (Titanium dioxide)</td>
<td>ACGIH</td>
</tr>
</tbody>
</table>

Personal protective equipment

Respiratory protection: No personal respiratory protective equipment normally required.

Hand protection

Remarks: For prolonged or repeated contact use protective gloves.
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
: No data is available on the product itself.

## Flash point
: 300.00 °F / 143.69 °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
: 0.0097309 hPa (176 °F / 80 °C)

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

## Relative density
: 1.3 - 1.36

## Density
: No data is available on the product itself.

## Solubility(ies)

<table>
<thead>
<tr>
<th>Solubility in other solvents</th>
</tr>
</thead>
<tbody>
<tr>
<td>: No data is available on the product itself.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water solubility</th>
</tr>
</thead>
<tbody>
<tr>
<td>: negligible</td>
</tr>
</tbody>
</table>

## Partition coefficient: n-octanol/water
: No data is available on the product itself.

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

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

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

## Viscosity
: No data is available on the product itself.

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

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

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

### SECTION 10. STABILITY AND REACTIVITY

## Reactivity
: No dangerous reaction known under conditions of normal use.
Chemical stability: Stable under normal conditions.
Possibility of hazardous reactions: No hazards to be specially mentioned.
Conditions to avoid: None known.
Incompatible materials: None known.
Hazardous decomposition products:
  carbon dioxide
  carbon monoxide
  Halogenated compounds

SECTION 11. TOXICOLOGICAL INFORMATION

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

Acute toxicity

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

Acute inhalation toxicity - Product: Acute toxicity estimate: 19.48 mg/l
  Exposure time: 4 h
  Test atmosphere: dust/mist
  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: The product is not considered as being a skin irritant.

Serious eye damage/eye irritation

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

Respiratory or skin sensitisation

Product:
Remarks: No data available

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

Germ cell mutagenicity

Components:
2,2′-[(1-methylene)bis(4,1-phenylene)imino]bisoxirane:
Genotoxicity in vitro: Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: positive
Concentration: 0 - 5000 µg/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 µg/plate
Metabolic activation: with and without metabolic activation
Result: positive

1,4-bis(2,3-epoxypropoxy)butane:
Genotoxicity in vitro: Concentration: 10 - 5000 µg/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 µg/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
**SAFETY DATA SHEET**

**RENLAM® 4014 US**

**Version** 1.2  
**Revision Date:** 12/04/2018  
**SDS Number:** 400001012674  
**Date of last issue:** 12/04/2018  
**Date of first issue:** 10/23/2016

---

**Genotoxicity in vitro**

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

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

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

---

**Components:**

**2,2'-(1-methylethylidene)bis(4,1-phenyleneoxy)methylene)biscyclohexane:**

**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

**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

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

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

**Components:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Germ cell mutagenicity-Assessment</th>
<th>Germ cell mutagenicity-Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,4-bis(2,3-epoxypropoxy)butane:</td>
<td>Weight of evidence does not support classification as a germ cell mutagen.</td>
<td>Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Animal testing did not show any mutagenic effects.</td>
</tr>
<tr>
<td>titanium dioxide:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germ cell mutagenicity-Assessment</td>
<td></td>
<td>No data available</td>
</tr>
</tbody>
</table>

**Carcinogenicity**

**Components:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Germ cell mutagenicity-Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,2'-(1-methylethylene)(bis(4,1-phenyleneoxymethylene))bisoxirane:</td>
<td></td>
</tr>
<tr>
<td>Species: Rat, male and female</td>
<td></td>
</tr>
<tr>
<td>Application Route: Oral</td>
<td></td>
</tr>
<tr>
<td>Exposure time: 24 month(s)</td>
<td></td>
</tr>
<tr>
<td>Dose: 15 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Frequency of Treatment: 7 days/week</td>
<td></td>
</tr>
<tr>
<td>Method: OECD Test Guideline 453</td>
<td></td>
</tr>
<tr>
<td>Result: negative</td>
<td></td>
</tr>
</tbody>
</table>

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:
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

Titanium dioxide:
Species: Rat, male and female
Application Route: Oral
Exposure time: 103 weeks
Dose: 0, 25000, 50000 ppm
Frequency of Treatment: 7 days/week
NOAEL: > 50.000 ppm

Method: No information available
Remarks: Titanium Dioxide: based on the results of chronic inhalation studies (with positive results only in a single species - rat), IARC has concluded that: "There is inadequate evidence in humans for the carcinogenicity of titanium dioxide, but that: "There is sufficient evidence in experimental animals for carcinogenicity of titanium dioxide", IARC's overall evaluation was that "titanium dioxide is possibly carcinogenic to humans (Group 2B)."

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

Components:
titanium dioxide:
Carcinogenicity - 
Assessment
IARC
: Not classifiable as a human carcinogen.

ACGIH
Group 2B: Possibly carcinogenic to humans
titanium dioxide

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 ACGIH.

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

Known to be human carcinogen
Talc (Mg3H2(SiO3)4)
(Silica, Crystalline (Respirable Size))

Reproductive toxicity

Components:
2,2’-[(1-methylene) bis(4,1-phenyleneoxy) methylene)] 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.

Epoxysphenol Novolac Resin:
Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 416
Result: No effects on fertility and early embryonic development were detected.

Components:
2,2’-[(1-methylene) bis(4,1-phenyleneoxy) methylene)] 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

titanium dioxide:

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

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

STOT - single exposure
No data available

STOT - repeated exposure
No data available
Repeated dose toxicity

Components:
2,2'-(1-methylene)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

Epoxypentol 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
Exposure time: 28 d
Number of exposures: 7 d
Method: Subacute toxicity
titanium dioxide:
Species: Rat, male and female
NOEC: 3500 mg/m3
Application Route: Ingestion
Test atmosphere: dust/mist
Exposure time: 2 yr
Number of exposures: 5 d
Method: Chronic toxicity

Species: Rat, male and female
NOEC: 10 - 50 mg/m3
Application Route: Inhalation
Exposure time: 2 yr
Number of exposures: 6 hours/day, 5 days/week
Method: Chronic toxicity

**Components:**
titanium dioxide:
Repeated dose toxicity - Assessment: No skin irritation, No eye irritation
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**

<table>
<thead>
<tr>
<th>Components:</th>
<th>Toxicity to fish</th>
<th>LC50:</th>
<th>Exposure time:</th>
<th>Test Type:</th>
<th>Test substance:</th>
<th>Method:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,2'-[[1-methylethylidene]bis(4,1-phenyleneoxymethylene)]bisoxirane:</td>
<td>LC50 (Oncorhynchus mykiss (rainbow trout)):</td>
<td>1.5 mg/l</td>
<td>96 h</td>
<td>static test</td>
<td>Fresh water</td>
<td>OECD Test Guideline 203</td>
</tr>
<tr>
<td>limestone:</td>
<td>LC50:</td>
<td>&gt; 56,000 mg/l</td>
<td>96 h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epoxypheonol Novolac Resin:</td>
<td>LC50 (Oncorhynchus mykiss (rainbow trout)):</td>
<td>1.5 mg/l</td>
<td>96 h</td>
<td>static test</td>
<td>Fresh water</td>
<td>OECD Test Guideline 203</td>
</tr>
<tr>
<td>1,4-bis(2,3-epoxypropoxy)butane:</td>
<td>LC50 (Brachydanio rerio (zebrafish)):</td>
<td>24 mg/l</td>
<td>96 h</td>
<td>static test</td>
<td>Fresh water</td>
<td>OECD Test Guideline 203</td>
</tr>
<tr>
<td>Talc (Mg3H2(SiO3)4):</td>
<td>LC50 (Brachydanio rerio (zebrafish)):</td>
<td>&gt; 100 mg/l</td>
<td>24 h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:</td>
<td>LC50 (Oncorhynchus mykiss (rainbow trout)):</td>
<td>7.5 mg/l</td>
<td>96 h</td>
<td>static test</td>
<td>Fresh water</td>
<td>OECD Test Guideline 203</td>
</tr>
<tr>
<td>titanium dioxide:</td>
<td>LC50 (Cyprinodon variegatus (sheepshead minnow)):</td>
<td>&gt; 10,000 mg/l</td>
<td>96 h</td>
<td>semi-static test</td>
<td>Marine water</td>
<td>OECD Test Guideline 203</td>
</tr>
<tr>
<td>2,2'-[[1-methylethylidene]bis(4,1-phenyleneoxymethylene)]bisoxirane:</td>
<td>EC50 (Daphnia magna (Water flea)):</td>
<td>2.7 mg/l</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**SAFETY DATA SHEET**  
*RENLAM® 4014 US*

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date:</th>
<th>SDS Number:</th>
<th>Date of last issue:</th>
<th>Date of first issue:</th>
</tr>
</thead>
</table>

**Components:**

- **2,2'-(1-methylene)bis(4,1-phenyleneoxy)methylene)bisoxirane:**
  - **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

- **Epoxphenol 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**
    - EC50: > 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-pheny/enecoxymethylene)]bisoxirane:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.3 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

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

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-pheny/enecoxymethylene)]bisoxirane:
Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l
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

**Components:**
titanium dioxide:
Plant toxicity: NOEC: 100,000 mg/kg
  Exposure time: 480 h

**Components:**
titanium dioxide:
Sediment toxicity:
  (Gammarus pulex (Amphipod)): > 100000 mg/kgsedimentdw
    Study: Acute
    Test Type: semi-static test
    Water: Fresh water
    Exposure duration: 28 d
    Method: ASTM Method, other

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

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

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

Ecotoxicology Assessment:
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-methylene)bis(4,1-phenyleneoxy)methylene]bisclosirane:**
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:**
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
2,2'-[(1-methylene)bis(4,1-phenyleneoxy)methylene]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
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 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
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 water
Degradation half life (DT50): ca. 7.98 d (77 °F / 25 °C) pH: 4
Method: OECD Test Guideline 111
Remarks: Fresh water
Degradation 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-methylene)bis(4,1-phenyleneoxy)methylene]bisoxirane:
Bioaccumulation: Bioconcentration factor (BCF): 31
Remarks: Does not bioaccumulate.
Epoxyphenol Novolac Resin:
Bioaccumulation: Bioconcentration factor (BCF): 31
Remarks: Does not bioaccumulate.
titanium dioxide:
Bioaccumulation
Species: Oncorhynchus mykiss (rainbow trout)
Bioconcentration factor (BCF): 19 - 352
Exposure time: 14 d
Test substance: Fresh water
Method: semi-static test
Remarks: Does not bioaccumulate.

Components:
2,2'-(1-methylene)bis(4,1-phenyleneoxy)methylene)biscoumarane:
Partition coefficient: n-octanol/water
log Pow: 3.242 (77 °F / 25 °C)
pH: 7.1
Method: OECD Test Guideline 117

limestone:
Partition coefficient: n-octanol/water
log Pow: < 1

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

1,4-bis(2,3-epoxypropoxy)butane:
Partition coefficient: n-octanol/water
log Pow: -0.269 (77 °F / 25 °C)
pH: 6.7
Method: OECD Test Guideline 117

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:
Partition coefficient: n-octanol/water
log Pow: 3.59 (58 °F / 20 °C)
pH: 7
Method: OECD Test Guideline 107

Mobility in soil
Mobility
No data available

Components:
2,2'-(1-methylene)bis(4,1-phenyleneoxy)methylene)biscoumarane:
Distribution among environmental compartments: Koc: 445

Epoxidephenol 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).

Additional ecological information - Product
: There is no data available for this 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
: Offer surplus and non-recyclable solutions to a licensed
disposal company.

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

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

Empty remaining contents.
Dispose of as unused product.
SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA
UN/ID No. : UN 3062
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 3062
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

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 3062
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

CERCLA Reportable Quantity

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Component RQ (lbs)</th>
<th>Calculated product RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-chloro-2,3-epoxypropane</td>
<td>106-89-8</td>
<td>100</td>
<td>*</td>
</tr>
</tbody>
</table>

*: Calculated RQ exceeds reasonably attainable upper limit.

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

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

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

California Prop. 65
WARNING: This product can expose you to chemicals including 4,4'-isopropylidenediphenol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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

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

Inventories
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHIL (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.
SECTION 16. OTHER INFORMATION

Further information

NFPA 704:

HMIS® IV:

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

Revision Date : 12/04/2018

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

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

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

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

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

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>triethylenetetramine</td>
<td>112-24-3</td>
<td>30 - 60</td>
</tr>
<tr>
<td>metaxylenediamine</td>
<td>1477-55-0</td>
<td>13 - 30</td>
</tr>
<tr>
<td>1-methylimidazole</td>
<td>616-47-7</td>
<td>3 - 7</td>
</tr>
<tr>
<td>2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine</td>
<td>25513-64-8</td>
<td>0.1 - 1</td>
</tr>
</tbody>
</table>

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 attention.
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.
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

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of)</th>
<th>Control parameters / Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance</td>
<td>Exposure</td>
<td>Permissible Concentration</td>
<td>Source</td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------</td>
<td>---------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>metaxylene diamine</td>
<td>1477-55-0</td>
<td>C 0.1 mg/m³</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C 0.1 mg/m³</td>
<td>OSHA P0</td>
</tr>
</tbody>
</table>

**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.
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
**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
    - **GLP:** yes
  - **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

- **metaxylenediamine:**
  - **Genotoxicity in vitro:**
    - **Test Type:** In vitro mammalian cell gene mutation test
      - **Species:** mouse lymphoma cells
      - **Metabolic activation:** with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
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
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
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-
Assessment:
Tests on bacterial or mammalian cell cultures did not show mutagenic effects., Animal testing did not show any mutagenic effects.

Germ cell mutagenicity-
Assessment:
No data available

Carcinogenicity

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 -
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 identified as a carcinogen or potential carcinogen by OSHA.

NTP
No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by NTP.
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
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/m3
Application Route: Inhalation
Exposure time: 13 weeks
Number of exposures: 6 hours per day, 5 days per we
Dose: 0, 0.64, 5.1, 31 mg/m3
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
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, 180 mg/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, 180 mg/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:
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 : EC50 (Daphnia magna (Water flea)): 31.1 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:
Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): > 100 - < 215 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water

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

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
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 201

Lowest Observed Effect Concentration (Brachydanio rerio (zebrafish)): 10.9 mg/l
Exposure time: 30 d
Method: OECD Test Guideline 201
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:
Toxicity to soil dwelling organisms:
- NOEC (Eisenia fetida (earthworms)): \(\geq 1,000 \text{ mg/kg}\)
  Exposure time: 56 d
  Method: OECD Test Guideline 222
- EC50 (Eisenia fetida (earthworms)): \(\geq 1,000 \text{ mg/kg}\)
  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

- **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.
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: 9,000 mg/l |
| Result: Inherently biodegradable. |
| Biodegradation: 79 % |
| Exposure time: 60 d |
| Method: ISO Method, other |

| 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) |
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.
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
## 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:

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH INV</td>
<td>The formulation contains substances listed on the Swiss</td>
</tr>
<tr>
<td></td>
<td>Inventory, Not in compliance with the inventory</td>
</tr>
<tr>
<td>TSCA</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>DSL</td>
<td>All components of this product are on the Canadian DSL</td>
</tr>
<tr>
<td>AICS</td>
<td>Not in compliance with the inventory</td>
</tr>
<tr>
<td>NZIoC</td>
<td>not determined</td>
</tr>
<tr>
<td>ENCS</td>
<td>Low volume exemption, On the inventory, or in compliance</td>
</tr>
<tr>
<td></td>
<td>with the inventory</td>
</tr>
<tr>
<td>KECI</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>PICCS</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>iECSC</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>TCSI</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
</tbody>
</table>

#### 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:

Health: 3
Flammability: 1
Instability: 1
Special hazard.

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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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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