

SAFETY DATA SHEET

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RENLAM® 4017 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	10/09/2018	400001012675	01/10/2017
			Date of first issue: 01/10/2017

SECTION 1. IDENTIFICATION

Product name : RENLAM® 4017 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 : Component for special laminating systems



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:**

RENLAM® 4017 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	10/09/2018	400001012675	01/10/2017
			Date of first issue: 01/10/2017

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)
4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]	28768-32-3	13 - 30
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	1675-54-3	30 - 60
1,4-bis(2,3-epoxypropoxy)butane	2425-79-8	7 - 13
Epoxyphenol Novolac Resin	28064-14-4	30 - 60

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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RENLAM® 4017 US

Version 1.1	Revision Date: 10/09/2018	SDS Number: 400001012675	Date of last issue: 01/10/2017 Date of first issue: 01/10/2017
----------------	------------------------------	-----------------------------	---

- | | |
|---|---|
| If inhaled | : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician. |
| 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.
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

- | | |
|---|---|
| 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.
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

RENLAM® 4017 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	10/09/2018	400001012675	01/10/2017
			Date of first issue: 01/10/2017

- 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.
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
limestone	1317-65-3	TWA (total dust)	15 mg/m ³	OSHA Z-1
		TWA (respirable fraction)	5 mg/m ³	OSHA Z-1

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RENLAM® 4017 US

Version 1.1	Revision Date: 10/09/2018	SDS Number: 400001012675	Date of last issue: 01/10/2017 Date of first issue: 01/10/2017
----------------	------------------------------	-----------------------------	---

carbon black	1333-86-4	TWA (Inhalable fraction)	3 mg/m3	ACGIH
		TWA	3.5 mg/m3	OSHA Z-1

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 : 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 : black
- Odour : mild
- 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, 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.

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Version 1.1	Revision Date: 10/09/2018	SDS Number: 400001012675	Date of last issue: 01/10/2017 Date of first issue: 01/10/2017
----------------	------------------------------	-----------------------------	---

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	: 1.26
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 exposure	: No data is available on the product itself.
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Acute toxicity

Acute oral toxicity - Product	: Acute toxicity estimate : > 5,000 mg/kg Method: Calculation method
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**RENLAM® 4017 US**

Version	Revision Date:	SDS Number:	Date of last issue: 01/10/2017
1.1	10/09/2018	400001012675	Date of first issue: 01/10/2017

Acute inhalation toxicity - Product : Acute toxicity estimate: 126.73 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:**

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

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

Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: positive

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

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

RENLAM® 4017 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	10/09/2018	400001012675	01/10/2017
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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.

Epoxyphenol Novolac Resin:

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

Concentration: 0 - 5000 ug/plate
Metabolic activation: with and without metabolic activation
Result: positive

Components:

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

Genotoxicity in vivo : Application Route: Oral
Method: OECD Test Guideline 474
Result: negative

Cell type: Germ
Application Route: Oral
Exposure time: 5 d
Method: OECD Test Guideline 483
Result: negative

Cell type: Germ
Application Route: Oral
Method: OECD Test Guideline 483
Result: negative

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

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

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse
Cell type: Somatic

RENLAM® 4017 US

Version	Revision Date:	SDS Number:	Date of last issue: 01/10/2017
1.1	10/09/2018	400001012675	Date of first issue: 01/10/2017

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

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

Components:

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

Germ cell mutagenicity- : Contains no ingredient listed as a mutagen
Assessment

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

Germ cell mutagenicity- : Weight of evidence does not support classification as a germ
Assessment cell mutagen.

Germ cell mutagenicity- : No data available
Assessment

Carcinogenicity**Components:**

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

Species: Rat, male and female

Application Route: Oral

Exposure time: 24 month(s)

Dose: 15 mg/kg

Frequency of Treatment: 7 days/week

Method: OECD Test Guideline 453

Result: negative

Species: Mouse, male

Application Route: Dermal

Exposure time: 24 month(s)

Dose: 0.1 mg/kg

Frequency of Treatment: 3 days/week

Method: OECD Test Guideline 453

Result: negative

**RENLAM® 4017 US**

Version	Revision Date:	SDS Number:	Date of last issue: 01/10/2017
1.1	10/09/2018	400001012675	Date of first issue: 01/10/2017

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

Components:

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

Carcinogenicity - : Contains no ingredient listed as a carcinogen
Assessment

IARC Group 2B: Possibly carcinogenic to humans
carbon black

ACGIH Confirmed animal carcinogen with unknown relevance to
humans

carbon black

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

RENLAM® 4017 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	10/09/2018	400001012675	01/10/2017
			Date of first issue: 01/10/2017

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

Components:

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

Effects on foetal development : Species: Rat, female
 Application Route: Oral
 General Toxicity Maternal: No observed adverse effect level: 90 mg/kg body weight
 Method: OECD Test Guideline 414
 Result: No teratogenic effects

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

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:

RENLAM® 4017 US

Version	Revision Date:	SDS Number:	Date of last issue: 01/10/2017
1.1	10/09/2018	400001012675	Date of first issue: 01/10/2017

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

Components:

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

Reproductive toxicity - : Contains no ingredient listed as toxic to reproduction
Assessment

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Repeated dose toxicity**Components:**

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

Species: Rat, male and female

NOAEL: 50 mg/kg/d

Application Route: Ingestion

Exposure time: 13 Weeks

Number of exposures: 7 d

Method: Subchronic toxicity

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

SAFETY DATA SHEET

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RENLAM® 4017 US

Version	Revision Date:	SDS Number:	Date of last issue: 01/10/2017
1.1	10/09/2018	400001012675	Date of first issue: 01/10/2017

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

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

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

RENLAM® 4017 US

Version	Revision Date:	SDS Number:	Date of last issue: 01/10/2017
1.1	10/09/2018	400001012675	Date of first issue: 01/10/2017

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:**

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): > 6 - < 8 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203
Remarks: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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

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

Epoxyphenol Novolac Resin:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 1.5 mg/l

**RENLAM® 4017 US**

Version	Revision Date:	SDS Number:	Date of last issue: 01/10/2017
1.1	10/09/2018	400001012675	Date of first issue: 01/10/2017

Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

Components:

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 4.7 mg/l
Exposure time: 48 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 202

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

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

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

Components:

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

Toxicity to algae : EC50 (Selastrum capricornutum (green algae)): > 11 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

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

Toxicity to algae : EC50 (Selastrum 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

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

Toxicity to algae : EL50: > 160 mg/l

**RENLAM® 4017 US**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	10/09/2018	400001012675	01/10/2017
			Date of first issue: 01/10/2017

Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

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

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:

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

Toxicity to microorganisms : IC50 (Pseudomonas putida): > 10,000 mg/l
Exposure time: 24 h
Test Type: static test
Test substance: Fresh water
Method: DIN 38 412 Part 8

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

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

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

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

**RENLAM® 4017 US**

Version	Revision Date:	SDS Number:	Date of last issue: 01/10/2017
1.1	10/09/2018	400001012675	Date of first issue: 01/10/2017

Test substance: Fresh water
 Method: OECD Test Guideline 209

Epoxyphenol Novolac Resin:

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

Toxicity to soil dwelling organisms : No data available

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

Components:**4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:**

Chronic aquatic toxicity : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

Persistence and degradability**Components:****4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:**

Biodegradability : Inoculum: activated sludge
 Result: Not biodegradable
 Biodegradation: > 9 - < 10 %
 Exposure time: 29 - 30 d
 Method: OECD Test Guideline 301B

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

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

Biodegradability : Inoculum: activated sludge
 Concentration: 20 mg/l
 Result: Not readily biodegradable.
 Biodegradation: 43 %

**RENLAM® 4017 US**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	10/09/2018	400001012675	01/10/2017
			Date of first issue: 01/10/2017

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

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
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

**RENLAM® 4017 US**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	10/09/2018	400001012675	01/10/2017
			Date of first issue: 01/10/2017

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:**

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

Partition coefficient: n-octanol/water : log Pow: 2.12 (72 °F / 22 °C)
pH: 6.7
Method: OECD Test Guideline 107

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

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

Epoxyphenol Novolac Resin:

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

Mobility : No data available

Components:

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]:

Distribution among environmental compartments : Koc: < 18
Method: OECD Test Guideline 121

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

Distribution among environmental compartments : Koc: 445

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

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

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Version 1.1	Revision Date: 10/09/2018	SDS Number: 400001012675	Date of last issue: 01/10/2017 Date of first issue: 01/10/2017
----------------	------------------------------	-----------------------------	---

Epoxyphenol Novolac Resin:
Distribution among environmental compartments : Koc: 445
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.
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

**RENLAM® 4017 US**

Version	Revision Date:	SDS Number:	Date of last issue: 01/10/2017
1.1	10/09/2018	400001012675	Date of first issue: 01/10/2017

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

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

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.

RENLAM® 4017 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	10/09/2018	400001012675	01/10/2017
			Date of first issue: 01/10/2017

SECTION 15. REGULATORY INFORMATION**EPCRA - Emergency Planning and Community Right-to-Know Act**

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

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 carbon black, 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.

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

CH INV	: The formulation contains substances listed on the Swiss Inventory, On the inventory, or in compliance with the inventory
DSL	: 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	: Not in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or in compliance with the inventory
TSCA	: On 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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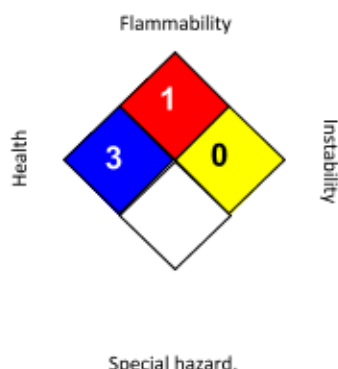
RENLAM® 4017 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	10/09/2018	400001012675	01/10/2017
			Date of first issue: 01/10/2017

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 : 10/09/2018

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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RENLAM® 4017 US

Version	Revision Date:	SDS Number:	Date of last issue: 01/10/2017
1.1	10/09/2018	400001012675	Date of first issue: 01/10/2017

PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.

SAFETY DATA SHEET

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REN® 1510 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/12/2015	400001012653	Date of first issue: 08/12/2015

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.

REN® 1510 US

Version 1.0	Revision Date: 08/12/2015	SDS Number: 400001012653	Date of last issue: - Date of first issue: 08/12/2015
----------------	------------------------------	-----------------------------	--

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
metaxylendiamine	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

REN® 1510 US

Version 1.0	Revision Date: 08/12/2015	SDS Number: 400001012653	Date of last issue: - Date of first issue: 08/12/2015
----------------	------------------------------	-----------------------------	--

- | | |
|---|--|
| 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. |
|------------------------------|---|

REN® 1510 US

Version 1.0	Revision Date: 08/12/2015	SDS Number: 400001012653	Date of last issue: - Date of first issue: 08/12/2015
----------------	------------------------------	-----------------------------	--

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/m ³	ACGIH
		C	0.1 mg/m ³	NIOSH REL
		C	0.1 mg/m ³	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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Version 1.0	Revision Date: 08/12/2015	SDS Number: 400001012653	Date of last issue: - Date of first issue: 08/12/2015
----------------	------------------------------	-----------------------------	--

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
-------------------------------------	--

REN® 1510 US

Version 1.0	Revision Date: 08/12/2015	SDS Number: 400001012653	Date of last issue: - Date of first issue: 08/12/2015
----------------	------------------------------	-----------------------------	--

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

REN® 1510 US

Version 1.0	Revision Date: 08/12/2015	SDS Number: 400001012653	Date of last issue: - Date of first issue: 08/12/2015
----------------	------------------------------	-----------------------------	--

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

REN® 1510 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/12/2015	400001012653	Date of first issue: 08/12/2015

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 - : No data available
Assessment**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/m³

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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Version 1.0	Revision Date: 08/12/2015	SDS Number: 400001012653	Date of last issue: - Date of first issue: 08/12/2015
----------------	------------------------------	-----------------------------	--

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

**REN® 1510 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/12/2015	400001012653	Date of first issue: 08/12/2015

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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Version 1.0	Revision Date: 08/12/2015	SDS Number: 400001012653	Date of last issue: - Date of first issue: 08/12/2015
----------------	------------------------------	-----------------------------	--

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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Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/12/2015	400001012653	Date of first issue: 08/12/2015

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

**REN® 1510 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/12/2015	400001012653	Date of first issue: 08/12/2015

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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Version 1.0	Revision Date: 08/12/2015	SDS Number: 400001012653	Date of last issue: - Date of first issue: 08/12/2015
----------------	------------------------------	-----------------------------	--

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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Version 1.0	Revision Date: 08/12/2015	SDS Number: 400001012653	Date of last issue: - Date of first issue: 08/12/2015
----------------	------------------------------	-----------------------------	--

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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Version 1.0	Revision Date: 08/12/2015	SDS Number: 400001012653	Date of last issue: - Date of first issue: 08/12/2015
----------------	------------------------------	-----------------------------	--

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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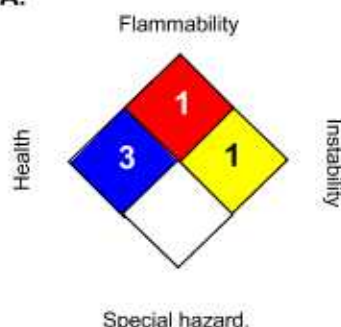
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Version 1.0	Revision Date: 08/12/2015	SDS Number: 400001012653	Date of last issue: - Date of first issue: 08/12/2015
----------------	------------------------------	-----------------------------	--

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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