

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511

**HUNTSMAN**

Enriching lives through innovation

RENGEL® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	02/08/2019	400001012634	11/21/2017
			Date of first issue: 11/21/2017

SECTION 1. IDENTIFICATION

Product name : RENGEL® 1118 US

Manufacturer or supplier's details

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

Recommended use of the chemical and restrictions on use

Recommended use : Epoxy resin solution



SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

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

GHS label elements

Hazard pictograms :



Signal word : Warning

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

Precautionary statements : **Prevention:**

RENGEL® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	02/08/2019	400001012634	11/21/2017
			Date of first issue: 11/21/2017

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

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

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

P362 Take off contaminated clothing and wash before reuse.

P391 Collect spillage.

Storage:

Not available

Disposal:

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

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	1675-54-3	30 - 50
limestone	1317-65-3	30 - 50
titanium dioxide	13463-67-7	1 - 5
p-tert-butylphenyl 1-(2,3-epoxy)propyl ether	3101-60-8	2.5 - 5

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

Both 25068-38-6 and 1675-54-3 can be used to describe the epoxy resin which is produced through the reaction of bisphenol A and epichlorohydrin

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Treat symptomatically.
Get medical attention if symptoms occur.

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

RENGEL® 1118 US

Version 1.1	Revision Date: 02/08/2019	SDS Number: 400001012634	Date of last issue: 11/21/2017 Date of first issue: 11/21/2017
----------------	------------------------------	-----------------------------	---

- | | |
|---|---|
| If inhaled | : If inhaled, remove to fresh air.
Get medical attention if symptoms occur. |
| In case of skin contact | : If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes. |
| In case of eye contact | : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist. |
| If swallowed | : Keep respiratory tract clear.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician. |
| Most important symptoms and effects, both acute and delayed | : None known. |
| Notes to physician | : Treat symptomatically. |

SECTION 5. FIREFIGHTING MEASURES

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

SECTION 6. ACCIDENTAL RELEASE MEASURES

- | | |
|--|--------------------------------------|
| Personal precautions, protective equipment and | : Use personal protective equipment. |
|--|--------------------------------------|

RENGEL® 1118 US

Version 1.1	Revision Date: 02/08/2019	SDS Number: 400001012634	Date of last issue: 11/21/2017 Date of first issue: 11/21/2017
----------------	------------------------------	-----------------------------	---

emergency procedures

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

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

SECTION 7. HANDLING AND STORAGE

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

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

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

Further information on storage stability : Stable under normal conditions.

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

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

**RENGEL® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	02/08/2019	400001012634	11/21/2017
			Date of first issue: 11/21/2017

Personal protective equipment

- Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.
- 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 : white
- 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 : > 390 °F / > 199 °C
Method: estimated, closed cup
- Evaporation rate : No data is available on the product itself.

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

RENGEL® 1118 US

Version 1.1	Revision Date: 02/08/2019	SDS Number: 400001012634	Date of last issue: 11/21/2017 Date of first issue: 11/21/2017
----------------	------------------------------	-----------------------------	---

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	: 0.09331 hPa (68 °F / 20 °C)
Relative vapour density	: No data is available on the product itself.
Relative density	: 1.5 - 1.6
Density	: No data is available on the product itself.
Solubility(ies) Water solubility	: negligible
Solubility in other solvents	: No data is available on the product itself.
Partition coefficient: n-octanol/water	: No data is available on the product itself.
Auto-ignition temperature	: No data is available on the product itself.
Thermal decomposition	: No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	: No data is available on the product itself.
Viscosity	: No data is available on the product itself.
Explosive properties	: No data is available on the product itself.
Oxidizing properties	: No data is available on the product itself.
Particle size	: No data is available on the product itself.

SECTION 10. STABILITY AND REACTIVITY

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

**RENGEL® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

products

carbon monoxide

Halogenated compounds

SECTION 11. TOXICOLOGICAL INFORMATION

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

Acute toxicity**Components:**

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

Acute oral toxicityComponents : LD50 (Rat, female): > 2,000 mg/kg
Method: OECD Test Guideline 420
Assessment: The substance or mixture has no acute oral toxicity

limestone:

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

titanium dioxide:

Acute oral toxicityComponents : LD50 (Rat, female): > 5,000 mg/kg
Method: OECD Test Guideline 425
Assessment: The substance or mixture has no acute oral toxicity

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

Acute oral toxicityComponents : LD50 (Rat, female): > 2,000 mg/kg
Method: OECD Test Guideline 425
Assessment: The substance or mixture has no acute oral toxicity

Components:

titanium dioxide:

Acute inhalation toxicity : LC50 (Rat, male and female): 3.43 - 5.09 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity

Components:

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

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402

RENGEL® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

Assessment: The substance or mixture has no acute dermal toxicity

titanium dioxide:

Acute dermal toxicity : LD50 Dermal (Rabbit): > 10,000 mg/kg

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

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal toxicity

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

Skin corrosion/irritation**Components:**

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

Species: Rabbit

Assessment: Mild skin irritant

Method: OECD Test Guideline 404

Result: Irritating to skin.

titanium dioxide:

Species: Rabbit

Assessment: No skin irritation

Method: OECD Test Guideline 404

Result: Normally reversible injuries

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

Species: Rat

Assessment: No skin irritation

Method: OECD Test Guideline 402

Result: No skin irritation

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

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

Species: Rabbit

Result: Irritating to eyes.

Assessment: Mild eye irritant

Method: OECD Test Guideline 405

limestone:

Species: Rabbit

Result: Mechanical irritation of the eyes is possible.

Assessment: No eye irritation

titanium dioxide:

Species: Rabbit

Result: Normally reversible injuries

RENGEL® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

Assessment: No eye irritation
Method: OECD Test Guideline 405

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:
Species: Rabbit
Result: No eye irritation
Assessment: No eye irritation
Method: OECD Test Guideline 405

Respiratory or skin sensitisation**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:
Exposure routes: Skin
Species: Mouse
Assessment: May cause sensitisation by skin contact.
Method: OECD Test Guideline 429
Result: Causes sensitisation.

limestone:
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.

titanium dioxide:
Test Type: Local lymph node assay (LLNA)
Exposure routes: Skin
Species: Mouse
Assessment: Does not cause skin sensitisation.
Method: OECD Test Guideline 429
Result: Does not cause skin sensitisation.

Exposure routes: Skin
Species: Guinea pig
Assessment: Does not cause skin sensitisation.
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:
Exposure routes: Skin
Species: Mouse
Method: OECD Test Guideline 429
Result: The product is a skin sensitizer, sub-category 1A.

Components:

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

Germ cell mutagenicity**Components:**

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

**RENGEL® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

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

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

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

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:
Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Concentration: 50 ug/plate
Metabolic activation: negative
Method: OECD Test Guideline 473
Result: positive

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

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:
Genotoxicity in vivo : Cell type: Germ
Application Route: Oral
Method: OECD Test Guideline 478
Result: negative

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

**RENGEL® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	02/08/2019	400001012634	11/21/2017
			Date of first issue: 11/21/2017

titanium dioxide:

Genotoxicity in vivo

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

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

Components:

titanium dioxide:

Germ cell mutagenicity-
Assessment

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

Germ cell mutagenicity-
Assessment

: No data available

Carcinogenicity**Components:**

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

Species: Rat, male and female

Application Route: Oral

Exposure time: 24 month(s)

Dose: 15 mg/kg

Frequency of Treatment: 7 days/week

Method: OECD Test Guideline 453

Result: negative

Species: Mouse, male

Application Route: Dermal

Exposure time: 24 month(s)

Dose: 0.1 mg/kg

Frequency of Treatment: 3 days/week

Method: OECD Test Guideline 453

Result: negative

Species: Rat, female

Application Route: Dermal

Exposure time: 24 month(s)

Dose: 1 mg/kg

Frequency of Treatment: 5 days/week

Method: OECD Test Guideline 453

Result: negative

**RENGEL® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

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.

Group 2B: Possibly carcinogenic to humans
titanium dioxide

ACGIH

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

OSHA

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

NTP

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

Reproductive toxicity**Components:**

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

Effects on fertility

: Test Type: Two-generation study

Species: Rat, male and female

Application Route: Oral

Dose: >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

**RENGEL® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

development were detected.

Components:

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

Effects on foetal
development

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

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

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

titanium dioxide:

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

Components:

titanium dioxide:

Reproductive toxicity -
Assessment

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

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Repeated dose toxicity**Components:**

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

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN

Enriching lives through innovation

RENGEL® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

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

titanium dioxide:
Species: Rat, male and female
: 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
: 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

RENGEL® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

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

Ingestion: No data available

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

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

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

limestone:

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

titanium dioxide:

Toxicity to fish : LC50 (Cyprinodon variegatus (sheepshead minnow)): > 10,000 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Marine water
Method: OECD Test Guideline 203

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

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 7.5 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

Components:

**RENGEL® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

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

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

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

Components:

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

Toxicity to algae/aquatic plants : EC50 (Selenastrum capricornutum (green algae)): 9.4 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water
 Method: EPA-660/3-75-009

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

Toxicity to algae/aquatic plants : 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

Toxicity to fish (Chronic toxicity) : No data available

Components:

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

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

limestone:

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

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

Components:

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

Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l

**RENGEL® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

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

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/kg sediment dw
Study: Acute
Test Type: semi-static test
Water: Fresh water
Exposure duration: 28 d
Method: ASTM Method, other

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

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

Components:

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

Ecotoxicology Assessment
Acute aquatic toxicity : No data available

Chronic aquatic toxicity : No data available

Toxicity Data on Soil : No data available

Other organisms relevant to : No data available

**RENGEL® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

the environment

Persistence and degradability**Components:**

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

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

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

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Concentration: 5 mg/l
Result: Not readily biodegradable.
Biodegradation: ca. 1.1 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

Biochemical Oxygen Demand (BOD) : No data available

Chemical Oxygen Demand (COD) : No data available

BOD/COD : No data available

ThOD : No data available

BOD/ThOD : No data available

Dissolved organic carbon (DOC) : No data available

Physico-chemical removability : No data available

Components:

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

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

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

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

RENGEL® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

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

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

titanium dioxide:

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

Components:

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

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

limestone:

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

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

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

Mobility in soil

Mobility : No data available

Components:

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

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

RENGEL® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	02/08/2019	400001012634	11/21/2017
			Date of first issue: 11/21/2017

Distribution among environmental compartments : Koc: 445
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 : 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.

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

RENGEL® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA

UN/ID No. : UN 3082
Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.
(BISPHENOL A EPOXY RESIN, Butylphenylglycidylether)
Class : 9
Packing group : III
Labels : Miscellaneous
Packing instruction (cargo aircraft) : 964
Packing instruction (passenger aircraft) : 964
Environmentally hazardous : yes

IMDG

UN number : UN 3082
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,
N.O.S.
(BISPHENOL A EPOXY RESIN, Butylphenylglycidylether)
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, Butylphenylglycidylether)
Class : 9
Packing group : III
Labels : CLASS 9
ERG Code : 171
Marine pollutant : yes(BISPHENOL A EPOXY RESIN, Butylphenylglycidylether)
Remarks : Above applies only to containers over 119 gallons or 450
liters. Not regulated if shipped in packages less than or equal
to 119 gallons (450 liters).

RENGEL® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	02/08/2019	400001012634	11/21/2017
			Date of first issue: 11/21/2017

Special precautions for user

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

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

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
1-chloro-2,3-epoxypropane	106-89-8	100	*

*: 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 titanium dioxide, 1-chloro-2,3-epoxypropane, which is/are known to the State of California to cause cancer, and 1-chloro-2,3-epoxypropane, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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

CH INV : The formulation contains substances listed on the Swiss Inventory

DSL : This product contains one or several components listed in the Canadian NDSL.

AICS : On the inventory, or in compliance with the inventory

NZIoC : Not in compliance with the inventory

ENCS : Not 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

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

RENGEL® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	02/08/2019	400001012634	11/21/2017
			Date of first issue: 11/21/2017

TSCA : On the inventory, or in compliance with the inventory

Inventories

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

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

No substances are subject to a Significant New Use Rule.

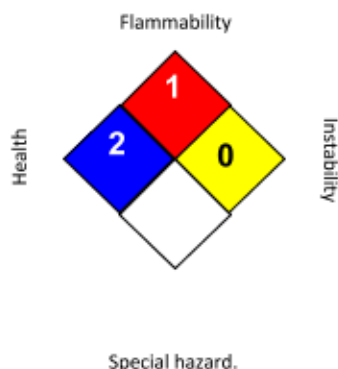
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

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

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH	2
FLAMMABILITY	1
PHYSICAL HAZARD	0

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

Revision Date : 02/08/2019

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

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.

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

RENGEL® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue: 11/21/2017
1.1	02/08/2019	400001012634	Date of first issue: 11/21/2017

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.

The trademarks above are the property of Huntsman Corporation or an affiliate thereof.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

SECTION 1. IDENTIFICATION

Product name : REN® 1118 US

Manufacturer or supplier's details

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

Recommended use of the chemical and restrictions on use

Recommended use : Hardener

SECTION 2. HAZARDS IDENTIFICATION**GHS classification in accordance with 29 CFR 1910.1200**

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

GHS label elements

Hazard pictograms :



Signal word : Danger

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN

Enriching lives through innovation

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

- Hazard statements**
- : H312 Harmful in contact with skin.
 - H314 Causes severe skin burns and eye damage.
 - H317 May cause an allergic skin reaction.
 - H331 Toxic if inhaled.
 - H335 May cause respiratory irritation.
 - H360F May damage fertility.
 - H412 Harmful to aquatic life with long lasting effects.
- Precautionary statements**
- : **Prevention:**
 - P201 Obtain special instructions before use.
 - P202 Do not handle until all safety precautions have been read and understood.
 - P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
 - P264 Wash skin thoroughly after handling.
 - P271 Use only outdoors or in a well-ventilated area.
 - P272 Contaminated work clothing should not be allowed out of the workplace.
 - P273 Avoid release to the environment.
 - P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 - : **Response:**
 - P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
 - P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 - P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
 - P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
 - P308 + P313 IF exposed or concerned: Get medical advice/ attention.
 - P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
 - P363 Wash contaminated clothing before reuse.
 - : **Storage:**
 - P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
 - P405 Store locked up.
 - : **Disposal:**
 - P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

REN® 1118 US

Version 1.2 Revision Date: 07/26/2017 SDS Number: 400001012635 Date of last issue: 07/19/2017
Date of first issue: 06/26/2016

Chemical name	CAS-No.	Concentration (% w/w)
triethylenetetramine	112-24-3	30 - 60
2,2'-iminodi(ethylamine)	111-40-0	13 - 30
4,4'-isopropylidenediphenol	80-05-7	7 - 13
metaxylenediamine	1477-55-0	7 - 13
1-methylimidazole	616-47-7	3 - 7
2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine	25620-58-0	0.1 - 1

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

SECTION 4. FIRST AID MEASURES

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

SECTION 5. FIREFIGHTING MEASURES

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

- | | |
|---|---|
| Suitable extinguishing media | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Unsuitable extinguishing media | : High volume water jet |
| Specific hazards during firefighting | : Do not allow run-off from fire fighting to enter drains or water courses. |
| Hazardous combustion products | : No 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.
Ensure adequate ventilation.
Evacuate personnel to safe areas. |
| 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 | : Avoid formation of aerosol.
Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations. |

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

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

Materials to avoid : No materials to be especially mentioned.

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

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

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
2,2'-iminodi(ethylamine)	111-40-0	TWA	1 ppm	ACGIH
metaxylenediamine	1477-55-0	C	0.1 mg/m ³	ACGIH

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.

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

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

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

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

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

**REN® 1118 US**

Version 1.2	Revision Date: 07/26/2017	SDS Number: 400001012635	Date of last issue: 07/19/2017 Date of first issue: 06/26/2016
----------------	------------------------------	-----------------------------	---

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Colour	: blue
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	: > 98 °C Method: estimated, closed cup
Evaporation rate	: No data is available on the product itself.
Flammability (solid, gas)	: No data is available on the product itself.
Flammability (liquids)	: No data is available on the product itself.
Upper explosion limit / Upper flammability limit	: No data is available on the product itself.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.
Vapour pressure	: No data is available on the product itself.
Relative vapour density	: No data is available on the product itself.
Relative density	: 1.01 - 1.05
Density	: No data is available on the product itself.
Solubility(ies)	
Water solubility	: partly soluble
Solubility in other solvents	: No data is available on the product itself.
Partition coefficient: n-octanol/water	: No data is available on the product itself.
Auto-ignition temperature	: No data is available on the product itself.
Thermal decomposition	: No data is available on the product itself.
Self-Accelerating decomposition temperature	: No data is available on the product itself.

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

REN® 1118 US

Version 1.2	Revision Date: 07/26/2017	SDS Number: 400001012635	Date of last issue: 07/19/2017 Date of first issue: 06/26/2016
----------------	------------------------------	-----------------------------	---

(SADT)

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.

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 : 2,179 mg/kg
Method: Calculation method

Acute inhalation toxicity - Product : Acute toxicity estimate: 0.68 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity - Product : Acute toxicity estimate : 1,688 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.

**REN® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue: 07/19/2017
1.2	07/26/2017	400001012635	Date of first issue: 06/26/2016

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

4,4'-isopropylidenediphenol:

Genotoxicity in vitro

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

metaxylenediamine:

Genotoxicity in vitro

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

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

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

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® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue: 07/19/2017
1.2	07/26/2017	400001012635	Date of first issue: 06/26/2016

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

Genotoxicity in vitro

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

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

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

Components:**triethylenetetramine:**

Genotoxicity in vivo

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

2,2'-iminodi(ethylamine):

Genotoxicity in vivo

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

Application Route: Oral
 Result: negative

4,4'-isopropylidenediphenol:

Genotoxicity in vivo

: Method: OECD Test Guideline 474
 Result: negative

metaxylenediamine:

Genotoxicity in vivo

: Test Type: In vivo micronucleus test
 Species: Mouse (male and female)
 Cell type: Bone marrow
 Application Route: Oral
 Exposure time: single dose
 Dose: 750 mg/kg body weight
 Method: OECD Test Guideline 474
 Result: negative

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

Genotoxicity in vivo

: Species: Chinese hamster (male and female)
 Cell type: Bone marrow

**REN® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue: 07/19/2017
1.2	07/26/2017	400001012635	Date of first issue: 06/26/2016

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

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

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

Carcinogenicity - : No data available

**REN® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

Assessment**IARC**

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

ACGIH

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

OSHA

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

NTP

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

Reproductive toxicity**Components:**

2,2'-iminodi(ethylamine):
Effects on fertility

: Species: Rat, male and female
Application Route: Oral
General Toxicity - Parent: No observed adverse effect level:
30 mg/kg wet weight
Method: OECD Test Guideline 421
Result: positive

4,4'-isopropylidenediphenol:

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

metaxylenediamine:

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

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

**REN® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue: 07/19/2017
1.2	07/26/2017	400001012635	Date of first issue: 06/26/2016

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'-iminodi(ethylamine):

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

4,4'-isopropylidenediphenol:

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

metaxylenediamine:

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

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

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

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

Components:

4,4'-isopropylidenediphenol:

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

metaxylenediamine:

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

STOT - single exposure

Components:

2,2'-iminodi(ethylamine):

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

4,4'-isopropylidenediphenol:

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

STOT - repeated exposure

No data available

Repeated dose toxicity

Components:

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

2,2'-iminodi(ethylamine):

Species: Rat, male and female

NOEC: 70 - 80 mg/m³

Application Route: Ingestion

Test atmosphere: vapour

Exposure time: 360 h

Number of exposures: 7 d

Method: Subchronic toxicity

Species: Rat, male and female

NOAEL: 114 mg/kg/d

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN

Enriching lives through innovation

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue: 07/19/2017
1.2	07/26/2017	400001012635	Date of first issue: 06/26/2016

Application Route: Skin contact
Exposure time: 9,600 h
Number of exposures: 6 d
Method: Chronic toxicity

4,4'-isopropylidenediphenol:
Species: Dog, male and female
NOEC: 75 mg/kg, 10 mg/m³
Application Route: Ingestion
Test atmosphere: dust/mist
Exposure time: 2,160 h
Number of exposures: 7 d
Method: Subchronic toxicity

Species: Rat, male and female
LOAEL: 600 mg/kg
Application Route: Ingestion
Exposure time: 672 h
Number of exposures: 7 d
Method: Subchronic toxicity

metaxylenediamine:
Species: Rat, male and female
NOEL: 150 mg/kg
Application Route: oral (gavage)
Exposure time: 672 h
Number of exposures: 7 d
Dose: 0, 10, 40, 150 and 600 mg/kg/d
Method: OECD Test Guideline 407

Species: Rat, male and female
NOEC: 0.6 mg/m³
Application Route: Inhalation
Exposure time: 13 weeks
Number of exposures: 6 hours per day, 5 days per week
Dose: 0, 0.64, 5.1, 31 mg/m³
Method: OECD Test Guideline 413
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

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN

Enriching lives through innovation

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue: 07/19/2017
1.2	07/26/2017	400001012635	Date of first issue: 06/26/2016

Dose: 10, 60, 180mg/kg bw
Target Organs: Liver

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

Components:

metaxylenediamine:

Repeated dose toxicity -
Assessment

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

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Product:

Remarks: No data available

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

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

2,2'-iminodi(ethylamine):

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

4,4'-isopropylidenediphenol:

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

metaxylenediamine:

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

1-methylimidazole:

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

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

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

Components:

triethylenetetramine:

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

2,2'-iminodi(ethylamine):

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

**REN® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

4,4'-isopropylidenediphenol:

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

(Ceriodaphnia dubia (Water flea)):

metaxylenediamine:

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

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.

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

2,2'-iminodi(ethylamine):

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

4,4'-isopropylidenediphenol:

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

metaxylenediamine:

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

1-methylimidazole:

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 180.7 mg/l
Exposure time: 72 h
Test Type: static test

**REN® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

Test substance: Fresh water
Method: OECD Test Guideline 201

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

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

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

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

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

Components:

2,2'-iminodi(ethylamine):

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

4,4'-isopropylidenediphenol:

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

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

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

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

Components:

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

2,2'-iminodi(ethylamine):

Toxicity to daphnia and other : NOEC (Daphnia magna (Water flea)): 5.6 mg/l

**REN® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

aquatic invertebrates
(Chronic toxicity)

Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.20

metaxylenediamine:

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

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

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

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

Components:

4,4'-isopropylidenediphenol:
M-Factor (Chronic aquatic toxicity) : 1

Components:

triethylenetetramine:

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

metaxylenediamine:

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

1-methylimidazole:

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

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

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

Components:

2,2'-iminodi(ethylamine):

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

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

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN

Enriching lives through innovation

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

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

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

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment

Components:

2,2'-iminodi(ethylamine):

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

Components:

4,4'-isopropylidenediphenol:

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

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

Persistence and degradability

Components:

triethylenetetramine:

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

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

2,2'-iminodi(ethylamine):

Biodegradability : Inoculum: activated sludge
Result: Readily biodegradable.
Biodegradation: 87 %
Exposure time: 21 d
Method: OECD Test Guideline 301D

4,4'-isopropylidenediphenol:

Biodegradability : Result: Not readily biodegradable.

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511
FREEMAN



HUNTSMAN
Enriching lives through innovation

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

Biodegradation: 1 - 2 %
Exposure time: 28 d

metaxylenediamine:
Biodegradability

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

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

Biochemical Oxygen
Demand (BOD)

: No data available

Chemical Oxygen Demand
(COD)

: No data available

BOD/COD

: No data available

ThOD

: No data available

BOD/ThOD

: No data available

Dissolved organic carbon
(DOC)

: No data available

Physico-chemical
removability

: No data available

Stability in water

: No data available

Components:

2,2'-iminodi(ethylamine):

**REN® 1118 US**

Version	Revision Date:	SDS Number:	Date of last issue: 07/19/2017
1.2	07/26/2017	400001012635	Date of first issue: 06/26/2016

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

Impact on Sewage Treatment : No data available

Bioaccumulative potential**Components:**

2,2'-iminodi(ethylamine):

Bioaccumulation

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

metaxylenediamine:

Bioaccumulation

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

Components:

triethylenetetramine:

Partition coefficient: n-octanol/water

: log Pow: -2.65 (20 °C)
 Method: OECD Test Guideline 117

2,2'-iminodi(ethylamine):

Partition coefficient: n-octanol/water

: log Pow: -1.58 (20 °C)
 pH: 7

metaxylenediamine:

Partition coefficient: n-octanol/water

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

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

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

REN® 1118 US

Version 1.2	Revision Date: 07/26/2017	SDS Number: 400001012635	Date of last issue: 07/19/2017 Date of first issue: 06/26/2016
----------------	------------------------------	-----------------------------	---

2,2'-iminodi(ethylamine):
Distribution among
environmental compartments
1-methylimidazole:
Distribution among
environmental compartments

: Koc: 19111
: 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.

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue: 07/19/2017
1.2	07/26/2017	400001012635	Date of first issue: 06/26/2016

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA

UN/ID No.	: UN 2735
Proper shipping name	: Polyamines, liquid, corrosive, n.o.s. (TRIETHYLENE TETRAMINE, DIETHYLENE TRIAMINE)
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, DIETHYLENE TRIAMINE)
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, DIETHYLENE TRIAMINE)
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 toxicity (any route of exposure) Skin corrosion or irritation Serious eye damage or eye irritation Respiratory or skin sensitisation
-----------------------------	---

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511
FREEMAN



HUNTSMAN
Enriching lives through innovation

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue:
1.2	07/26/2017	400001012635	07/19/2017
			Date of first issue: 06/26/2016

Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)

SARA 313

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

4,4'-	80-05-7	12.9703 %
isopropylidenediphenol		

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

Inventories

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

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

No substances are subject to a Significant New Use Rule.

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

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

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

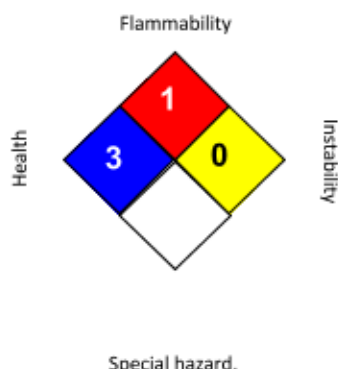
REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue: 07/19/2017
1.2	07/26/2017	400001012635	Date of first issue: 06/26/2016

SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS® IV:

HEALTH	*	3
FLAMMABILITY		1
PHYSICAL HAZARD		0

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

Revision Date : 07/26/2017

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

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.

The trademarks above are the property of Huntsman Corporation or an affiliate thereof.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.

SAFETY DATA SHEET

Distributed By
Freeman Manufacturing & Supply Co.
www.freemansupply.com 800-321-8511



HUNTSMAN
Enriching lives through innovation

REN® 1118 US

Version	Revision Date:	SDS Number:	Date of last issue: 07/19/2017
1.2	07/26/2017	400001012635	Date of first issue: 06/26/2016