

SAFETY DATA SHEET

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RENLAM® 1720 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

SECTION 1. IDENTIFICATION

Product name : RENLAM® 1720 US

Manufacturer or supplier's details

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

Recommended use of the chemical and restrictions on use

Recommended use : Adhesives
Restrictions on use : For industrial use only.



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.

RENLAM® 1720 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

H411 Toxic to aquatic life with long lasting effects.

Precautionary statements**Prevention:**

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
 P264 Wash skin thoroughly after handling.
 P272 Contaminated work clothing must not be allowed out of the workplace.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/ eye protection/ face protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
 P305 + P351 + P338 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	50 - 70
limestone	1317-65-3	20 - 30
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.	68609-97-2	10 - 20
Talc (Mg3H2(SiO3)4)	14807-96-6	5 - 10
titanium dioxide	13463-67-7	1 - 5

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

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

SECTION 4. FIRST AID MEASURES

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RENLAM® 1720 US

Version 1.0	Revision Date: 11/09/2018	SDS Number: 400001012657	Date of last issue: - Date of first issue: 11/09/2018
----------------	------------------------------	-----------------------------	--

- | | |
|---|--|
| 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. |
| 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.
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
Metal oxides |
| 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. |

RENLAM® 1720 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- 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.
- Materials to avoid : For incompatible materials please refer to Section 10 of this SDS.
- Further information on storage stability : Stable under normal conditions.

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

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
limestone	1317-65-3	TWA (total	15 mg/m ³	OSHA Z-1

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RENLAM® 1720 US

Version 1.0 Revision Date: 11/09/2018 SDS Number: 400001012657 Date of last issue: -
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		dust)		
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
titanium dioxide	13463-67-7	TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA	10 mg/m3 (Titanium dioxide)	ACGIH

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, opaque

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.

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Enriching lives through innovation

RENLAM® 1720 US

Version 1.0	Revision Date: 11/09/2018	SDS Number: 400001012657	Date of last issue: - Date of first issue: 11/09/2018
----------------	------------------------------	-----------------------------	--

Boiling point	: No data is available on the product itself.
Flash point	: > 300 °F / > 149 °C Method: Pensky-Martens closed cup
Evaporation rate	: No data is available on the product itself.
Flammability (solid, gas)	: No data is available on the product itself.
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	: 0.059985 hPa (140 °F / 60 °C)
Relative vapour density	: No data is available on the product itself.
Relative density	: 1.37 - 1.45 (77 °F / 25 °C)
Density	: 1.37 - 1.45 g/cm3 (77 °F / 25 °C)
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.
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**RENLAM® 1720 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

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

SECTION 11. TOXICOLOGICAL INFORMATION

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

Acute toxicity**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
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limestone:

Acute oral toxicityComponents	: LD50 (Rat): 6,450 mg/kg
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Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Acute oral toxicityComponents	: LD50 (Rat, male): ca. 26.8 g/kg Method: Other guidelines
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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
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Components:

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Acute inhalation toxicity	: LC0 (Rat): > 0.15 mg/l Exposure time: 7 h Test atmosphere: vapour Method: Other guidelines
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titanium dioxide:

Acute inhalation toxicity	: LC50 (Rat, male and female): 3.43 - 5.09 mg/l
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RENLAM® 1720 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

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
Assessment: The substance or mixture has no acute dermal toxicity

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Acute dermal toxicity : (Rabbit, male): > 4,000 mg/kg, 4,5 ml/kg
Assessment: The substance or mixture has no acute dermal toxicity

titanium dioxide:

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

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.

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Species: Rabbit
Exposure time: 24 h
Method: Acute Dermal Toxicity
Result: Irritating to skin.

titanium dioxide:

Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: Normally reversible injuries

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

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

Species: Rabbit
Result: Irritating to eyes.

**RENLAM® 1720 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

Assessment: Mild eye irritant
Method: OECD Test Guideline 405

limestone:
Species: Rabbit
Result: Mechanical irritation of the eyes is possible.
Assessment: No eye irritation

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:
Species: Rabbit
Result: slight irritation
Assessment: No eye irritation
Method: OECD Test Guideline 405

titanium dioxide:
Species: Rabbit
Result: Normally reversible injuries
Assessment: No eye irritation
Method: OECD Test Guideline 405

Respiratory or skin sensitisation**Components:**

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

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

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:
Test Type: Buehler Test
Exposure routes: Skin
Species: Guinea pig
Method: OPPTS 870.2600
Result: May cause sensitisation by skin contact.

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.

**RENLAM® 1720 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

Components:

titanium dioxide:

Assessment:

No skin irritation, No eye irritation

Does not cause skin sensitisation., Does not cause respiratory sensitisation.

Germ cell mutagenicity**Components:**

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

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

Concentration: 0 - 5000 ug/plate

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: positive

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

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

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary cells

Concentration: 0,5 - 5.000 µg/mL

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

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

Components:

RENLAM® 1720 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

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

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse (male and female)
Cell type: Bone marrow
Application Route: Intraperitoneal injection
Exposure time: 24 hr, 48 hr, and 72 hr
Method: OECD Test Guideline 474
Result: negative

titanium dioxide:

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

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

Components:

titanium dioxide:

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

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)

SAFETY DATA SHEET

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RENLAM® 1720 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

Dose: 15 mg/kg
Frequency of Treatment: 7 days/week
Method: OECD Test Guideline 453
Result: negative

Species: Mouse, male
Application Route: Dermal
Exposure time: 24 month(s)
Dose: 0.1 mg/kg
Frequency of Treatment: 3 days/week
Method: OECD Test Guideline 453
Result: negative

Species: Rat, female
Application Route: Dermal
Exposure time: 24 month(s)
Dose: 1 mg/kg
Frequency of Treatment: 5 days/week
Method: OECD Test Guideline 453
Result: negative

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

Method: No information available.

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

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

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

**RENLAM® 1720 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

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))

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.

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Species: Rat, male and female
Application Route: Dermal
Duration of Single Treatment: 13 Weeks
Frequency of Treatment: 5 days/week
General Toxicity - Parent: No observed adverse effect level: 100 mg/kg body weight
Method: OECD Test Guideline 411

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

**RENLAM® 1720 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Species: Rat, female
 Application Route: Dermal
 Duration of Single Treatment: 6 h
 General Toxicity Maternal: No observed adverse effect level:
 200 mg/kg body weight
 Developmental Toxicity: No observed adverse effect level:
 200 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:

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

SAFETY DATA SHEET

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RENLAM® 1720 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

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

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:
Species: Rat, male and female
NOEL: 1 mg/kg
LOAEL: 10 mg/kg
Application Route: Skin contact
Exposure time: 13 Weeks
Number of exposures: 5 days/week for 13 weeks
Method: OECD Test Guideline 411

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

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

Components:

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

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

RENLAM® 1720 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

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

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Toxicity to fish : LL50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l
 Exposure time: 96 h
 Test Type: semi-static test
 Method: OECD Test Guideline 203

Talc (Mg₃H₂(SiO₃)₄):

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l
 Exposure time: 24 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

Components:

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

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 2.7 mg/l

**RENLAM® 1720 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

aquatic invertebrates Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:
 Toxicity to daphnia and other : EL50 (Daphnia magna (Water flea)): 7.2 mg/l
 aquatic invertebrates Exposure time: 48 h
 Test Type: static test
 Method: OECD Test Guideline 202

Components:

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

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:
 Toxicity to algae : IC50 (Selenastrum capricornutum (green algae)): 843.75 mg/l
 Exposure time: 72 h
 Test Type: static test
 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 : NOEC (Daphnia magna (Water flea)): 0.3 mg/l
 aquatic invertebrates Exposure time: 21 d
 (Chronic toxicity) Test Type: semi-static test
 Test substance: Fresh water
 Method: OECD Test Guideline 211

limestone:
 Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): > 350 mg/l
 aquatic invertebrates Exposure time: 125 d
 (Chronic toxicity) 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
 Exposure time: 3 h
 Test Type: static test
 Test substance: Fresh water

**RENLAM® 1720 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l
 Exposure time: 3 h
 Test Type: static test
 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 the environment : No data available

Persistence and degradability**Components:**

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RENLAM® 1720 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

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

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Concentration: 100 mg/l
Result: Readily biodegradable.
Biodegradation: 87 %
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

Photodegradation : No data available

Impact on Sewage Treatment : No data available

RENLAM® 1720 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

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

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Partition coefficient: n-octanol/water : log Pow: 3.77 (68 °F / 20 °C)
Method: OECD Test Guideline 107**Mobility in soil**

Mobility : No data available

Components:

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

Distribution among : Koc: 445

environmental compartments

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

**RENLAM® 1720 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

- 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.
Dispose of as hazardous waste in compliance with local and
national regulations.
Dispose of contents/ container to an approved waste disposal
plant.
- Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION**International Regulations****IATA**

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

IMDG

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RENLAM® 1720 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

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

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

Not applicable for product as supplied.

National Regulations

DOT Classification

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

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).

RENLAM® 1720 US

Version 1.0	Revision Date: 11/09/2018	SDS Number: 400001012657	Date of last issue: - Date of first issue: 11/09/2018
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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, 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, 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	: Not in compliance with the inventory
KECI	: Not in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or in compliance with the inventory
TSCA	: On the inventory, or in compliance with the inventory

Inventories

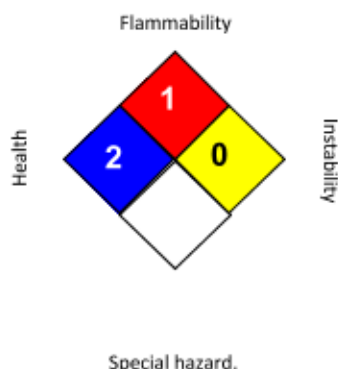
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

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

No substances are subject to a Significant New Use Rule.

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

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

SECTION 16. OTHER INFORMATION**Further information****NFPA 704:****HMIS® IV:**

HEALTH	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.

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RENLAM® 1720 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/09/2018	400001012657	Date of first issue: 11/09/2018

Revision Date : 11/09/2018

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

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

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

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

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REN® 956 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

SECTION 1. IDENTIFICATION

Product name : REN® 956 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 (Dermal) : Category 4
Skin irritation : Category 2
Serious eye damage : Category 1
Skin sensitisation : Category 1
Acute aquatic toxicity : Category 2
Chronic aquatic toxicity : Category 2

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H312 Harmful in contact with skin.
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:**

REN® 956 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

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/ protective clothing/ eye protection/ face protection.
Response:
P302 + P352 + P312 IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/doctor if you feel unwell.
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)
Triethylenetetramine, propoxylated	26950-63-0	50 - 70
Triethylenetetramine	112-24-3	30 - 50

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.
Treat symptomatically.
Get medical attention if symptoms occur.

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

In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with

REN® 956 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

- difficulty.
Take victim immediately to hospital.
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.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : None known.
- Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : Carbon oxides
Nitrogen oxides (NOx)
- 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.

REN® 956 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

SECTION 6. ACCIDENTAL RELEASE MEASURES

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

SECTION 7. HANDLING AND STORAGE

- | | |
|---|--|
| Advice on protection against fire and explosion | : Normal measures for preventive fire protection. |
| Advice on safe handling | : Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used. |
| Conditions for safe storage | : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
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**

Contains no substances with occupational exposure limit values.

Personal protective equipment

Hand protection

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

REN® 956 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

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	: amber
Odour	: amine-like
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	: > 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.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.
Vapour pressure	: < 1.333 hPa (21 °C)
Relative vapour density	: No data is available on the product itself.
Relative density	: 1.02
Density	: No data is available on the product itself.

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REN® 956 US

Version 1.0	Revision Date: 11/27/2017	SDS Number: 400001012609	Date of last issue: - Date of first issue: 11/27/2017
----------------	------------------------------	-----------------------------	--

Solubility(ies)	
Water solubility	: slightly soluble
Solubility in other solvents	: No data is available on the product itself.
Partition coefficient: n-octanol/water	: No data is available on the product itself.
Auto-ignition temperature	: No data is available on the product itself.
Thermal decomposition	: No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	: No data is available on the product itself.
Viscosity	: No data is available on the product itself.
Explosive properties	: No data is available on the product itself.
Oxidizing properties	: No data is available on the product itself.
Particle size	: No data is available on the product itself.

SECTION 10. STABILITY AND REACTIVITY

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

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 : 2,729 mg/kg Method: Calculation method
Acute inhalation toxicity	: No data available
Acute dermal toxicity - Product	: Acute toxicity estimate : 1,950 mg/kg Method: Calculation method

REN® 956 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

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

Skin corrosion/irritation**Product:**

Method: OECD Test Guideline 404

Result: Irritating to skin.

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

Triethylenetetramine, propoxylated:

Result: Eye irritation

Triethylenetetramine:

Species: Rabbit

Result: Corrosive

Assessment: Corrosive

Method: OECD Test Guideline 405

Respiratory or skin sensitisation**Components:**

Triethylenetetramine, propoxylated:

Exposure routes: Skin

Method: OECD Test Guideline 429

Result: Probability or evidence of low to moderate skin sensitisation rate in humans

Triethylenetetramine:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: May cause sensitisation by skin contact.

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: May cause sensitisation by skin contact.

Assessment: No data available

Germ cell mutagenicity**Components:**

Triethylenetetramine, propoxylated:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary cells

Method: OECD Test Guideline 476

Result: negative

Test Type: Ames test

Test system: Salmonella typhimurium

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Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

Method: OECD Test Guideline 471
Result: positive

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Method: OECD Test Guideline 473
Result: negative

Triethylenetetramine:
Genotoxicity in vitro

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

Components:

Triethylenetetramine:
Genotoxicity in vivo

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

Components:

Triethylenetetramine, propoxylated:

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

Germ cell mutagenicity-
Assessment : No data available

Carcinogenicity

Components:

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

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

Carcinogenicity -
Assessment : No data available

IARC

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

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Version 1.0	Revision Date: 11/27/2017	SDS Number: 400001012609	Date of last issue: - Date of first issue: 11/27/2017
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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:**

Triethylenetetramine, propoxylated:

Effects on fertility

: Test Type: Fertility
Species: Rat, male and female
Strain: wistar
Application Route: Ingestion
Dose: 100, 300 and 750 milligram per kilogram
General Toxicity - Parent: No-observed-effect level: Measured 750 mg/kg body weight
General Toxicity F1: No-observed-effect level: Measured 750 mg/kg body weight
Method: OECD Test Guideline 422

Components:

Triethylenetetramine, propoxylated:

Effects on foetal development

: Species: Rat, male and female
Strain: wistar
Application Route: Ingestion
Dose: 100, 300 and 750 milligram per kilogram
General Toxicity Maternal: No-observed-effect level: Measured 300 mg/kg body weight
Developmental Toxicity: No observed adverse effect level: Measured 750 mg/kg body weight
Method: OECD Test Guideline 422

Triethylenetetramine:

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

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Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

Components:

Triethylenetetramine, propoxylated:

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

Components:

Triethylenetetramine, propoxylated:

Exposure routes: Ingestion

Target Organs: Kidney

Assessment: No significant health effects observed at a concentration of 300mg/kg bw/day.

Repeated dose toxicity

Components:

Triethylenetetramine, propoxylated:

Species: Rat, male and female

NOAEL: 300 mg/kg

Application Route: Ingestion

Exposure time: 43 - 44 Days

Method: OECD Test Guideline 422

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

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

REN® 956 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

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:**

Triethylenetetramine, propoxylated:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): Measured > 4.1 mg/l
Exposure time: 96 h
Test Type: semi-static test
Analytical monitoring: yes
Method: OECD Test Guideline 203

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

Components:

Triethylenetetramine, propoxylated:

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

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.

Components:

REN® 956 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

Triethylenetetramine, propoxylated:

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (algae)): Measured 4.1 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201

ErC10 (Pseudokirchneriella subcapitata (algae)): Measured 0.11 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201

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

M-Factor (Acute aquatic toxicity)

: No data available

Toxicity to fish (Chronic toxicity)

: No data available

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

M-Factor (Chronic aquatic toxicity)

: No data available

Components:

Triethylenetetramine, propoxylated:

Toxicity to microorganisms : EC10 (activated sludge): 38 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 209

Triethylenetetramine:

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

Toxicity to soil dwelling organisms

: No data available

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Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment
Acute aquatic toxicity : No data available

Chronic aquatic toxicity : No data available

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

Persistence and degradability

Components:

Triethylenetetramine, propoxylated:

Biodegradability : Inoculum: Domestic sewage
Concentration: 100 mg/l
Result: Not readily biodegradable.
Biodegradation: 4 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

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

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 : No data available

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Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

(DOC)

Physico-chemical
removability : No data available

Components:

Triethylenetetramine, propoxylated:

Stability in water : Degradation half life(DT50): > 1 yr (25 °C) pH: 4
Method: OECD Test Guideline 111

Degradation half life(DT50): > 1 yr (25 °C) pH: 7
Method: OECD Test Guideline 111

Degradation half life(DT50): > 1 yr (25 °C) pH: 9
Method: OECD Test Guideline 111

Photodegradation : No data available

Impact on Sewage
Treatment : No data available

Bioaccumulative potential

Bioaccumulation : No data available

Components:

Triethylenetetramine, propoxylated:

Partition coefficient: n-
octanol/water : log Pow: -2.42

Triethylenetetramine:

Partition coefficient: n-
octanol/water : log Pow: -2.65 (20 °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

Stability in soil : No data available

Other adverse effects

Environmental fate and
pathways : No data available

Components:

Triethylenetetramine, propoxylated:

Results of PBT and vPvB
assessment : This substance is not considered to be persistent,
bioaccumulating and toxic (PBT).

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Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

Hazardous to the ozone layer

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

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

Global warming potential (GWP) : No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

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

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

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA

Not regulated as dangerous goods

IMDG

Not regulated as dangerous goods

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

Not applicable for product as supplied.

REN® 956 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

National Regulations**DOT Classification**

Not regulated as dangerous goods

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

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

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

California Prop. 65

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

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

CH INV	: The formulation contains substances listed on the Swiss Inventory, On the inventory, or in compliance with the inventory
DSL	: All components of this product are on the Canadian DSL
AICS	: On the inventory, or in compliance with the inventory
NZIoC	: Not in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: 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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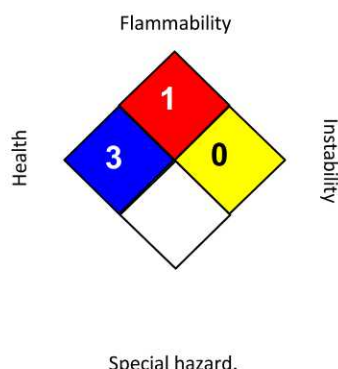
REN® 956 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/27/2017	400001012609	Date of first issue: 11/27/2017

SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS® IV:

HEALTH		3
FLAMMABILITY		1
PHYSICAL HAZARD		0

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

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