

Material Safety Data Sheet

RENCAST® 178-88 US

1. Product and company identification

Product name : RENCAST® 178-88 US
Material uses : Isocyanate component for tooling systems
(M)SDS # : 00066617
Validation date : 11/28/2012.
Print date : 11/28/2012.



Supplier/Manufacturer : Huntsman Advanced Materials Americas LLC
P.O. Box 4980
The Woodlands, TX 77387

Non-Emergency phone: (800) 257-5547

E-Mail: MSDS@huntsman.com

In case of emergency : Chemtrec: (800) 424-9300 or (703) 527-3887

2. Hazards identification

Physical state : Liquid.
Color : Red.
OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview : WARNING!
CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY AND SKIN REACTION. MAY BE HARMFUL IF SWALLOWED.
Do not breathe vapor or mist. Do not ingest. Do not get on skin or clothing. Avoid contact with eyes. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

See toxicological information (Section 11)

GENERAL INFORMATION : Read the entire MSDS for a more thorough evaluation of the hazards.

3. Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>%</u>
cycloaliphatic diisocyanate prepolymer	119185-07-8	60 - 100
Dicyclohexylmethane-4,4'-diisocyanate	5124-30-1	13 - 30
3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate	4098-71-9	1 - 3

4 . First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Notes to physician** : No specific treatment. Treat symptomatically. Call medical doctor or poison control center immediately if large quantities have been ingested.

5 . Fire-fighting measures

- Flash point** : Closed cup: >150°C (>302°F) [Estimated]
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
halogenated compounds
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and storage

Handling

- : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage

- : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Ingredient	Exposure limits
Dicyclohexylmethane-4,4'-diisocyanate	ACGIH TLV (United States, 2/2010). TWA: 0.01 ppm 8 hour(s). TWA: 0.05 mg/m ³ 8 hour(s).
3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate	ACGIH TLV (United States, 2/2010). TWA: 0.005 ppm 8 hour(s).

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures

- : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures

- : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory

- : In case of inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eyes

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

8 . Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

General information

Appearance

Physical state : Liquid.

Color : Red.

Odor : Not available.

Important health, safety and environmental information

pH : Not available.

Boiling/condensation point : Not available.

Melting/freezing point : Not available.

Flash point : Closed cup: >150°C (>302°F) [Estimated]

Flammable limits : Not available.

Auto-ignition temperature : Not available.

Vapor pressure : Not available.

Specific gravity : 1.04 to 1.06

Water solubility : Reacts with water

Partition coefficient: n-octanol/water (log Kow) : Not available.

Density : Not available.

Vapor density : >1 [Air = 1]

Evaporation rate (butyl acetate = 1) : Not available.

10 . Stability and reactivity

Chemical stability : The product is stable.
Under normal conditions of storage and use, hazardous reactions will not occur.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Conditions to avoid : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Endpoint	Species	Result	Exposure

11 . Toxicological information

Dicyclohexylmethane-4,4'-diisocyanate	LC50 Inhalation Dusts and mists	Rat - Male, Female	0.33 to 0.434 mg/L	4 hours
	LD50 Dermal	Rat - Male, Female	>7000 mg/kg	-
	LD50 Oral	Rat - Male, Female	18200 mg/kg	-
3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate	LC50 Inhalation Dusts and mists	Rat - Male, Female	0.031 to 0.04 mg/L	4 hours
	LD50 Oral	Rat	4814 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Test	Species	Result
Dicyclohexylmethane-4,4'-diisocyanate	-	Rabbit	Eyes - Irritant
cycloaliphatic diisocyanate prepolymer	-	Rabbit Not known	Skin - Irritant Skin - Irritant
3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate	-	Not known Rabbit	Eyes - Irritant Eyes - Irritant

Conclusion/Summary

- Skin** : 4,4'-methylenedi(cyclohexyl isocyanate): Severely irritating to the skin.
- Eyes** : 4,4'-methylenedi(cyclohexyl isocyanate): Irritating to eyes.
3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate: Irritating to eyes.

Sensitizer

Product/ingredient name	Test	Route of exposure	Species	Result
Dicyclohexylmethane-4,4'-diisocyanate	-	Respiratory	Guinea pig	Sensitizing
3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate	-	skin skin	Guinea pig Guinea pig	Sensitizing Sensitizing
		Respiratory	Human	Sensitizing

Mutagenicity

Product/ingredient name	Test	Result
Dicyclohexylmethane-4,4'-diisocyanate	Experiment: In vitro Subject: Bacteria Metabolic activation: +/- Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/- Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative Negative Negative

- Conclusion/Summary** : 4,4'-methylenedi(cyclohexyl isocyanate): Not mutagenic in a standard battery of genetic toxicological tests.

11 . Toxicological information

Reproductive toxicity

Product/ingredient name	Test	Species	Result/Result type	Maternal toxicity	Fertility	Developmental effects
Dicyclohexylmethane-4,4'-diisocyanate	-	Rat - Male, Female	Inhalation: 1 mg/m3 NOAEL	-	-	-

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type
Dicyclohexylmethane-4,4'-diisocyanate	-	Rat - Female	Negative - Inhalation

Potential acute health effects

- Inhalation** : Irritating to respiratory system. May cause sensitization by inhalation.
Ingestion : Harmful if swallowed.
Skin contact : Irritating to skin. May cause sensitization by skin contact.
Eye contact : Irritating to eyes.

Potential chronic health effects

Product/ingredient name	Endpoint	Species	Result	Exposure
Dicyclohexylmethane-4,4'-diisocyanate	Sub-chronic NOEC Inhalation Dusts and mists	Rat - Male, Female	3 mg/m3	13 weeks; 6 hours per day

- General** : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Target organs : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Medical conditions aggravated by over-exposure

Pre-existing respiratory and skin disorders may be aggravated by over-exposure to this product.

12 . Ecological information

- Environmental effects** : No known significant effects or critical hazards.

Aquatic ecotoxicity

12 . Ecological information

Product/ingredient name	Test	Endpoint	Exposure	Species	Result
Dicyclohexylmethane-4,4'-diisocyanate 3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate	EU EC C.2 Acute Toxicity for Daphnia	Acute	EC50	48 hours Static	Daphnia >8.3 mg/L
	EU EC C.3 Algal Inhibition Test	Acute	EgC50	72 hours Static	Algae >5 mg/L
	EU EC C.1 Acute Toxicity for Fish	Acute	LC50	96 hours Static	Fish >8.1 mg/L
	EU EC C.3 Algal Inhibition Test	Chronic	NOECr	72 hours Static	Algae 0.31 mg/L
	-	Acute	EC50	72 hours	Algae 118.7 mg/L
	EU EC 88/302/EC	Acute	EC50	3 hours	Bacteria 263 mg/L
	DIN 38412 (Lumistox test)	Acute	EC50	24 hours	Daphnia 83.7 mg/L
	DIN 38412 (Lumistox test)	Acute	LC50	48 hours	Fish 1.8 mg/L
	OECD	Chronic	NOEC	21 days	Daphnia 3 mg/L

Persistence and degradability

Product/ingredient name	Test	Period	Result
Dicyclohexylmethane-4,4'-diisocyanate	EU	28 days	0 %
3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate	EU Tested according to Directive 92/69/EEC	28 days	0 %
Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Dicyclohexylmethane-4,4'-diisocyanate	-	-	Not readily
3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate	-	-	Not readily

Other adverse effects : No known significant effects or critical hazards.

Other ecological information

BOD5 : Not determined.

COD : Not determined.

TOC : Not determined.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

14 . Transport information

Proper shipping name

DOT : Not regulated.

TDG : Not regulated.

IMDG : Not regulated.

IATA : Not regulated.

Regulatory information	UN number	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-		-
TDG Classification	Not regulated.	-	-		-
IMDG Class	Not regulated.	-	-		-
IATA-DGR Class	Not regulated.	-	-		-

PG* : Packing group

15 . Regulatory information

United States

HCS Classification : Also harmful by inhalation and if swallowed.
Sensitizing material
Irritating material

U.S. Federal regulations

TSCA 8(b) inventory : **United States inventory (TSCA 8b)**: All components are listed or exempted.

TSCA 5(a)2 final : No ingredients listed.

significant new use rule (SNUR)

TSCA 5(e) substance consent order : No ingredients listed.

TSCA 12(b) export notification : No ingredients listed.

SARA 302/304/311/312 : **SARA 302/304/311/312 extremely hazardous substances**: 3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate
SARA 302/304 emergency planning and notification: 3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate
SARA 302/304/311/312 hazardous chemicals: No products were found.
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Immediate (acute) health hazard;

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : No ingredients listed.

15 . Regulatory information

Clean Air Act - Ozone Depleting Substances (ODS) : EPCRA Section 313 (40 CFR 372) CERCLA (Comprehensive Environmental Response, Compensation and Liability Act): 4,4-Methylene diphenyl diisocyanate (CAS 101-68-8) has a 5,000 lb. RQ (reportable quantity). Any spill or release above the RQ must be reported to the National Response Center (800-424-8802).

This product does not contain nor is it manufactured with ozone depleting substances.

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration %</u>
SARA 313 Form R - Reporting requirements	: Dicyclohexylmethane-4,4'-diisocyanate	5124-30-1	13 - 30
	: 3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate	4098-71-9	1 - 3

CERCLA Hazardous substances : No ingredients listed.

State regulations

PENNSYLVANIA - RTK : Dicyclohexylmethane-4,4'-diisocyanate, 3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate

California Prop. 65 : This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

International regulations

Canada

WHMIS (Canada) : Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

CEPA DSL : At least one component is not listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

International lists

: **Australia inventory (AICS)**: All components are listed or exempted.
: **China inventory (IECSC)**: At least one component is not listed.
: **Japan inventory**: At least one component is not listed.
: **Korea inventory**: At least one component is not listed.
: **New Zealand Inventory of Chemicals (NZIoC)**: At least one component is not listed.
: **Philippines inventory (PICCS)**: At least one component is not listed.

16 . Other information

Label requirements : CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY AND SKIN REACTION. MAY BE HARMFUL IF SWALLOWED.

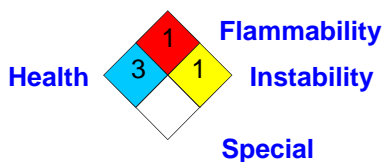
Hazardous Material Information System (U.S.A.) :

Health	3
Flammability	1
Physical hazards	1
Personal protection	

The customer is responsible for determining the PPE code for this material.

16 . Other information

National Fire Protection :
Association (U.S.A.)



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Date of previous issue : No previous validation.
Version : 2

Indicates information that has changed from previously issued version.

Notice to reader

While 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.

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. NO PART OF THIS DATA SHEET MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM, OR BY ANY MEANS, WITHOUT PERMISSION IN WRITING FROM HUNTSMAN. ALL REQUESTS FOR PERMISSION TO REPRODUCE MATERIAL FROM THIS DATA SHEET SHOULD BE DIRECTED TO HUNTSMAN, MANAGER, PRODUCT SAFETY AT THE ABOVE ADDRESS.

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

SECTION 1. IDENTIFICATION

Product name : REN® 6444 US

Manufacturer or supplier's details

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

Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

Recommended use of the chemical and restrictions on use

Recommended use : Component of a Polyurethane System.

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

Acute toxicity (Oral) : Category 4
Acute toxicity (Inhalation) : Category 4
Skin sensitisation : Category 1
Germ cell mutagenicity : Category 2
Carcinogenicity : Category 2
Reproductive toxicity : Category 1B
Specific target organ toxicity - single exposure (Oral) : Category 2 (Liver)
Specific target organ toxicity - repeated exposure (Oral) : Category 1 (Liver)
Specific target organ toxicity - repeated exposure (Oral) : Category 2 (Kidney)
Acute aquatic toxicity : Category 1
Chronic aquatic toxicity : Category 1

GHS label elements

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

Hazard pictograms



Signal word

: Danger

Hazard statements

: H302 + H332 Harmful if swallowed or if inhaled.
 H317 May cause an allergic skin reaction.
 H341 Suspected of causing genetic defects.
 H351 Suspected of causing cancer.
 H360 May damage fertility or the unborn child.
 H371 May cause damage to organs (Liver) if swallowed.
 H372 Causes damage to organs (Liver) through prolonged or repeated exposure if swallowed.
 H373 May cause damage to organs (Kidney) through prolonged or repeated exposure if swallowed.
 H410 Very toxic 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.
 P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
 P264 Wash skin thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P271 Use only outdoors or in a well-ventilated area.
 P272 Contaminated work clothing 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 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
 P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
 P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
 P308 + P311 IF exposed or concerned: 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.
 P391 Collect spillage.

Storage:
 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

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
dibutyl phthalate	84-74-2	50 - 70
4,4'-methylenebis(2-ethylaniline)	19900-65-3	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. 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	: Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	: Induce vomiting immediately and call a physician. Keep respiratory tract clear. 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.

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

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

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.
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. |

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

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.

Recommended storage temperature : 2 - 40 °C

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
dibutyl phthalate	84-74-2	TWA	5 mg/m3	ACGIH
		TWA	5 mg/m3	OSHA Z-1

Personal protective equipment

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

Hand protection

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

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles

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 : slight, sweet

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.

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

Melting point	No data is available on the product itself.
Boiling point	: > 200 °C
Flash point	: > 182 °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	: No data is available on the product itself.
Density	: 1.03 - 1.07 g/cm ³ (20 °C)
Solubility(ies)	
Water solubility	: slightly soluble (20 °C)
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.
Decomposition temperature	: > 200 °C
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.

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

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 : 890.8 mg/kg
Method: Calculation method

Acute inhalation toxicity - Product : Acute toxicity estimate: 2.67 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Expert judgement
Assessment: The substance/mixture is not toxic on inhalation as defined by dangerous goods regulations.

Acute dermal toxicity - Product : Acute toxicity estimate : 4,123 mg/kg
Method: Calculation method

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

Skin corrosion/irritation**Components:**

dibutyl phthalate:

Species: Rabbit

Assessment: No skin irritation

Method: OECD Test Guideline 404

Result: No skin irritation

4,4'-methylenebis(2-ethylaniline):

Species: Rabbit

Assessment: No skin irritation

Method: OPPTS 870.2500

Result: No skin irritation

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

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

dibutyl phthalate:

Species: Rabbit

Result: Normally reversible injuries

Assessment: No eye irritation

Method: OECD Test Guideline 405

4,4'-methylenebis(2-ethylaniline):

Species: Rabbit

Result: No eye irritation

Assessment: No eye irritation

Method: Acute Eye Irritation

Respiratory or skin sensitisation**Components:**

dibutyl phthalate:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: Does not cause skin sensitisation.

4,4'-methylenebis(2-ethylaniline):

Exposure routes: Skin

Species: Humans

Result: The product is a skin sensitizer, sub-category 1A.

Assessment: No data available

Germ cell mutagenicity**Components:**

dibutyl phthalate:

Genotoxicity in vitro : Concentration: 100 - 2000 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

4,4'-methylenebis(2-ethylaniline):

Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
Result: positive

Components:

dibutyl phthalate:

Genotoxicity in vivo : Exposure time: 13 Weeks
Dose: 163 - 4278 mg/kg
Result: negative

4,4'-methylenebis(2-ethylaniline):

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse
Cell type: Somatic
Application Route: Intraperitoneal injection
Exposure time: 72 h
Dose: 56 - 140 mg/kg
Method: OECD Test Guideline 474
Result: Not classified due to inconclusive data.

Test Type: In vivo micronucleus test
Species: Mouse
Cell type: Somatic
Application Route: Intraperitoneal injection
Dose: 9.3 - 37 mg/kg
Method: OECD Test Guideline 474
Result: positive

Components:

4,4'-methylenebis(2-ethylaniline):

Germ cell mutagenicity- : Positive result(s) from in vivo somatic cell mutagenicity tests
Assessment supported by positive results from in vitro mutagenicity assays
or chemical structure activity relationship to known germ cell
mutagens

Germ cell mutagenicity- : No data available
Assessment

Carcinogenicity**Components:**

4,4'-methylenebis(2-ethylaniline):

Species: Rat, (male and female)
Application Route: Oral
Exposure time: 103 weeks
Dose: 9 - 10 mg/kg
Frequency of Treatment: 24 hour
Method: OECD Test Guideline 451
Result: positive

Components:

4,4'-methylenebis(2-ethylaniline):

Carcinogenicity - : Limited evidence of carcinogenicity in animal studies
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.



REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

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:**

dibutyl phthalate:

Effects on fertility

: Species: Rat, male and female

Application Route: Oral

General Toxicity - Parent: No observed adverse effect level:

385 mg/kg body weight

Target Organs: Reproductive organs

Components:

dibutyl phthalate:

Effects on foetal

development

: Species: Rat, male and female

Application Route: Oral

General Toxicity Maternal: Lowest observed adverse effect

level: 10,000 ppm

Result: Teratogenic effects

Species: Mouse

Application Route: Oral

General Toxicity Maternal: No observed adverse effect level:

100 mg/kg body weight

Result: Teratogenic effects

Components:

dibutyl phthalate:

Reproductive toxicity -

Assessment

: Clear evidence of adverse effects on sexual function and

fertility, and/or on development, based on animal experiments

STOT - single exposure**Components:**

4,4'-methylenebis(2-ethylaniline):

Exposure routes: Ingestion

Target Organs: Liver

Assessment: May cause damage to organs.

STOT - repeated exposure**Components:**

4,4'-methylenebis(2-ethylaniline):

Exposure routes: Ingestion

Target Organs: Liver

Assessment: Causes damage to organs through prolonged or repeated exposure.

Exposure routes: Ingestion

Target Organs: Kidney

Assessment: May cause damage to organs through prolonged or repeated exposure.

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

Repeated dose toxicity**Components:**

dibutyl phthalate:

Species: Rat, male and female

NOEC: 509 mg/m³

Application Route: Ingestion

Test atmosphere: dust/mist

Exposure time: 4 Weeks

Number of exposures: 6 h

Method: OECD Test Guideline 412

4,4'-methylenebis(2-ethylaniline):

Species: Rat, male and female

LOAEL: 7.5 - 8 mg/kg/d

Application Route: Ingestion

Exposure time: 2,160 h

Number of exposures: 7 d

Method: Subchronic toxicity

Species: Rat, male and female

NOAEL: 90 mg/kg/d

Application Route: Skin contact

Exposure time: 2,160 h

Number of exposures: 5 d

Method: Subchronic toxicity

Repeated dose toxicity - : No data available
Assessment

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

Neurological effects

No data available

Further information

Ingestion: No data available

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

dibutyl phthalate:

Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.48 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

4,4'-methylenebis(2-ethylaniline):

Toxicity to fish : LC50 (Oryzias latipes (Orange-red killifish)): 20.6 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 203

Components:

dibutyl phthalate:

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 2.99 mg/l
aquatic invertebrates
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: Gammarid Acute Toxicity Test

LC50 (Gammarus salinus (seawater shrimp)): 0.5 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Marine water
Method: Mysid Acute Toxicity Test

4,4'-methylenebis(2-ethylaniline):

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 0.35 mg/l
aquatic invertebrates
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202

Components:

dibutyl phthalate:

Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 0.75 mg/l
Exposure time: 240 h

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

Test Type: static test
Test substance: Fresh water

Components:

dibutyl phthalate:
M-Factor (Acute aquatic toxicity) : 1
4,4'-methylenebis(2-ethylaniline):
M-Factor (Acute aquatic toxicity) : 1

Components:

dibutyl phthalate:
Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 0.1 mg/l
Exposure time: 99 d

Components:

dibutyl phthalate:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia pulex (Water flea)): 0.1 mg/l
Exposure time: 10 d
4,4'-methylenebis(2-ethylaniline):
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.00525 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

Components:

4,4'-methylenebis(2-ethylaniline):
M-Factor (Chronic aquatic toxicity) :
10

Components:

dibutyl phthalate:
Toxicity to microorganisms : EC50 (Bacteria): 2.2 mg/l
Exposure time: 24 h

Components:

dibutyl phthalate:
Toxicity to soil dwelling organisms : LC50: 10 mg/kg
Exposure time: 504 h

NOEC: 0.5 mg/kg
Exposure time: 504 h

Components:

dibutyl phthalate:
Plant toxicity : NOEC: 200 mg/l
Exposure time: 3 Weeks
Test substance: Natural

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

EC50: 387 mg/kg
Exposure time: 168 h
Method: Terrestrial Plants Test: Seedling Emergence and
Seedling Growth Test

Components:

dibutyl phthalate:

Sediment toxicity

: (Gammarus pulex (Amphipod)): 826 mg/kg sediment dw
Study: Acute
Test Type: Other guidelines
Water: Fresh water
Exposure duration: 10 d

100 mg/kg sediment dw
Study: Chronic
Water: Marine water
Exposure duration: 8 Weeks

Components:

dibutyl phthalate:

Toxicity to terrestrial
organisms

: NOEC: 0.472 mg/kg
Exposure time: 360 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:**

dibutyl phthalate:

Biodegradability

: Inoculum: activated sludge
Concentration: 21.7 mg/l
Result: Readily biodegradable.
Biodegradation: 81 %
Exposure time: 28 d
Method: Directive 67/548/EEC Annex V, C.4.C.

Inoculum: activated sludge
Result: Readily biodegradable.
Biodegradation: > 97 %
Exposure time: 21 d

Biochemical Oxygen
Demand (BOD)

: No data available



REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

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:

dibutyl phthalate:
Photodegradation : Test Type: Air
Rate constant: < .00001

Impact on Sewage Treatment : No data available

Bioaccumulative potential**Components:**

dibutyl phthalate:
Bioaccumulation : Bioconcentration factor (BCF): 0.81
Test substance: Marine water

Bioconcentration factor (BCF): < 1

Components:

dibutyl phthalate:
Partition coefficient: n-octanol/water : log Pow: 4.46 (30 °C)
pH: 5 - 8
Method: Partition coefficient

Mobility in soil

Mobility : No data available

Components:

dibutyl phthalate:
Distribution among environmental compartments : Koc: 1.4
Stability in soil : No data available

Other adverse effects

Environmental fate and pathways : No data available



REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

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.
Very toxic to aquatic life with long lasting effects.

Global warming potential (GWP) : No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

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

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

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

UN/ID No.	: UN 3082
Proper shipping name	: Environmentally hazardous substance, liquid, n.o.s. (DIETHYL METHYLENE DIANILINE, DIBUTYL PHTHALATE)
Class	: 9

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

Packing group : III
 Labels : Miscellaneous
 Packing instruction (cargo aircraft) : 964
 Packing instruction (passenger aircraft) : 964

IMDG

UN number : UN 3082
 Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
 (DIETHYL METHYLENE DIANILINE, DIBUTYL PHTHALATE)
 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.
 (DIETHYL METHYLENE DIANILINE, DIBUTYL PHTHALATE)
 Class : 9
 Packing group : III
 Labels : CLASS 9
 ERG Code : 171
 Marine pollutant : yes(DIETHYL METHYLENE DIANILINE, DIBUTYL PHTHALATE)
 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).

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)
dibutyl phthalate	84-74-2	10	19

SARA 311/312 Hazards : Acute toxicity (any route of exposure)
 Respiratory or skin sensitisation
 Germ cell mutagenicity
 Carcinogenicity



REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

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:

dibutyl phthalate	84-74-2	>= 50 - < 70 %
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The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

dibutyl phthalate	84-74-2
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California Prop. 65

WARNING: This product can expose you to chemicals including dibutyl phthalate, 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	: 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	: 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

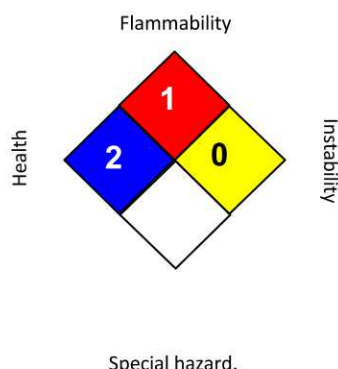
No substances are subject to a Significant New Use Rule.

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.

REN® 6444 US

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

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.

Revision Date : 11/16/2017

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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Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11/16/2017	400001010265	Date of first issue: 11/16/2017

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