

Material Safety Data Sheet

REN@CAST 3253-3

1. Product and company identification

REN@CAST 3253-3
Material uses : Surface casting resin
MSDS # : 00066530
Validation date : 9/6/2011.
Print date : 9/6/2011.

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.
Odor : mild
Color : Black.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : WARNING!
CAUSES EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. MAY BE HARMFUL IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.

Avoid exposure - obtain special instructions before use. 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

Name	CAS number	%
iron powder	7439-89-6	30 - 60
Bisphenol A epoxy resin	25068-38-6	13 - 30
Limestone	1317-65-3	13 - 30
Molybdenum Sulfide (MoS ₂)	1317-33-5	3 - 7
2-ethylhexyl-glycidylether	2461-15-6	3 - 7
quartz (SiO ₂)	14808-60-7	0.1 - 1

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: >93.3°C (>199.9°F) [Estimated.]
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
sulfur oxides
metal oxide/oxides
- 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 should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. 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
Limestone quartz (SiO ₂)	<p>OSHA PEL (United States, 6/2010). TWA: 5 mg/m³ 8 hour(s). Form: Respirable fraction TWA: 15 mg/m³ 8 hour(s). Form: Total dust</p> <p>OSHA PEL Z3 (United States, 9/2005). TWA: 250 mppcf 8 hour(s). Form: Respirable TWA: 10 mg/m³ 8 hour(s). Form: Respirable TWA: 30 mg/m³ 8 hour(s). Form: Total dust.</p> <p>ACGIH TLV (United States, 2/2010). TWA: 0.025 mg/m³ 8 hour(s). Form: Respirable fraction</p>

- 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.

8 . Exposure controls/personal protection

- 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.
- 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** : Black.
- Odor** : mild

Important health, safety and environmental information

- pH** : Not available.
- Boiling/condensation point** : Not available.
- Melting/freezing point** : Not available.
- Flash point** : Closed cup: >93.3°C (>199.9°F) [Estimated.]
- Flammable limits** : Not available.
- Auto-ignition temperature** : Not available.
- Vapor pressure** : Not available.
- Specific gravity** : 2.7
- Water solubility** : negligible
- Partition coefficient: n-octanol/water (log Kow)** : Not available.
- Density** : Not available.
- Vapor density** : Not available.
- Evaporation rate (butyl acetate = 1)** : Not available.
- VOC** : 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

Potential acute health effects

Inhalation	: Slightly irritating to the respiratory system.
Ingestion	: Harmful if swallowed.
Skin	: Irritating to skin. May cause sensitization by skin contact.
Eyes	: Irritating to eyes.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Limestone	LD50 Oral	Rat	>2000 mg/kg	-
iron powder	LD50 Oral	Rat	30000 mg/kg	-
Bisphenol A epoxy resin	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
	LD50 Oral	Rat - Female	>2000 mg/kg	-
	LC0 Inhalation Vapor	Rat - Male	0.00001 ppm	5 hours

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Bisphenol A epoxy resin	Sub-chronic NOAEL Oral	Rat - Male, Female	50 mg/kg	14 weeks; 7 days per week
	Sub-chronic NOEL : Dermal	Rat - Male, Female	10 mg/kg	13 weeks; 5 days per week
	Sub-chronic NOAEL Dermal	Mouse - Male	100 mg/kg	13 weeks; 3 days per week

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Bisphenol A epoxy resin	Skin - Mild irritant	Rabbit	-	-	-
	Eyes - Mild irritant	Rabbit	-	-	-

Sensitizer

Product/ingredient name	Route of exposure	Species	Result
Limestone	skin	Guinea pig	Not sensitizing
Bisphenol A epoxy resin	skin	Mouse	Sensitizing

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Bisphenol A epoxy resin	Negative - Oral - NOAEL	Rat - Male, Female	15 mg/kg	2 years; 7 days per week
	Negative - Dermal - NOEL :	Rat - Female	1 mg/kg	2 years; 5 days per week
	Negative - Dermal - NOEL :	Mouse - Male	0.1 mg/kg	2 years; 3 days per week

Carcinogenic class

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
quartz (SiO2)	A2	1	-	+	-	-

Mutagenicity

Product/ingredient name	Test	Experiment	Result
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11 . Toxicological information

Bisphenol A epoxy resin	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Positive
	OECD 476 <i>In vitro</i> Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic Metabolic activation: +/-	Positive
	OECD 478 Genetic Toxicology: Rodent Dominant Lethal Test	Experiment: In vivo Subject: Mammalian-Animal Cell: Germ	Negative
	EPA OPPTS	Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic	Negative

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Bisphenol A epoxy resin	Negative - Oral	Rat - Female	>540 mg/kg NOEL :	10 days
	Negative - Dermal	Rabbit - Female	>300 mg/kg NOEL :	13 days; 6 hours per day
	Negative - Oral	Rabbit - Female	180 mg/kg NOAEL	13 days

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Development toxin	Species	Dose	Exposure
Bisphenol A epoxy resin	Negative	Negative	Negative	Rat - Male, Female	Oral: 540 mg/kg NOEL :	238 days; 7 days per week

Potential chronic health effects

- Chronic effects** : Contains material that may cause target organ damage, based on animal data. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
- Target organs** : Contains material which causes damage to the following organs: lungs.
- Carcinogenicity** : Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.

Medical conditions aggravated by over-exposure

Pre-existing skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

12 . Ecological information

Environmental effects : Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
Bisphenol A epoxy resin	-	Acute EC50 9.4 mg/L Fresh water	Algae	72 hours Static
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50 1.7 mg/L Fresh water	Daphnia	48 hours Static
	-	Acute IC50 >100 mg/L Fresh water	Bacteria	3 hours Static
	OECD 203 Fish, Acute Toxicity Test	Acute LC50 1.5 mg/L Fresh water	Fish	96 hours Static
	OECD 211 <i>Daphnia Magna</i> Reproduction Test	Chronic NOEC 0.3 mg/L Fresh water	Daphnia	21 days Semi-static

Biodegradability

Product/ingredient name	Test	Result	Dose	Inoculum
Bisphenol A epoxy resin	OECD Derived from OECD 301F (Biodegradation Test)	5 % - Not readily - 28 days	20 mg/L Oxygen consumption	-

Other ecological information

Not Determined
Not Determined

Product/ingredient name

Bisphenol A epoxy resin

Aquatic half-life

Fresh water 4.83 days
Fresh water 3.58 days
Fresh water 7.1 days

Photolysis

-

Biodegradability

Not readily

Bioaccumulative potential

Product/ingredient name

Reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)

LogP_{ow}

3.242

BCF

31

Potential

low

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

PBT : Not applicable.

Other information

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.

13 . Disposal considerations

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 : Environmentally hazardous substance, liquid, n.o.s. (Bisphenol A epoxy resin) Marine pollutant

TDG : Environmentally hazardous substance, liquid, n.o.s. (Bisphenol A epoxy resin) Marine pollutant

IMDG : Environmentally hazardous substance, liquid, n.o.s. (Bisphenol A epoxy resin) Marine pollutant

IATA : Environmentally hazardous substance, liquid, n.o.s. (Bisphenol A epoxy resin)

Regulatory information	UN number	Classes	PG*	Label	Additional information
DOT Classification	UN3082	9	III	 	-
TDG Classification	UN3082	9	III	 	-
IMDG Class	3082	9	III	 	-
IATA-DGR Class	3082	9	III	 	-

PG* : Packing group

15 . Regulatory information

U.S. Federal regulations

- HCS Classification** : Irritating material
Sensitizing material
Carcinogen
Target organ effects
- U.S. Federal regulations** : **United States inventory (TSCA 8b)**: All components are listed or exempted.
- TSCA 5(a)2 final significant new use rule (SNUR)** : None.
- TSCA 5(e) substance consent order** : None.
- TSCA 12(b) one-time export notification:** : None.
- TSCA 12(b) annual export notification** : None.
- SARA 302/304/311/312 extremely hazardous substances** : **SARA 302/304/311/312 extremely hazardous substances**: No Ingredient Listed
- SARA 311/312 hazard identification** : **SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: iron powder: Fire hazard; Limestone: Immediate (acute) health hazard
- Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)** : Product name CAS number Concentration
No Ingredients Listed.
- Clean Air Act - Ozone Depleting Substances (ODS)** : This product does not contain nor is it manufactured with ozone depleting substances.
- SARA 313** : No ingredients listed.

CERCLA: Hazardous substances.

Components	Concentration %	Section 304 CERCLA Hazardous Substance	CERCLA Reportable Quantity (Lbs)	Product Reportable Quantity (Lbs)
xylene	0.064	Listed	100	156250
ethylbenzene	0.012	Listed	1000	8333333
1-chloro-2,3-epoxypropane	0.0002298	Listed	100	43516101
lead	0.0000345	Listed	10	28985507
arsenic	0.00001725	Listed	1	5797101

STATE REGULATIONS:

PENNSYLVANIA - RTK: The following components are listed: LIMESTONE; QUARTZ (SIO2)

California Prop 65 :

WARNING: This product contains a chemical known to the State of California to cause cancer.

WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

15 . Regulatory information

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
quartz (SiO ₂)	Yes.	No.	No.	No.
Carbon black	Yes.	No.	No.	No.
ethylbenzene	Yes.	No.	No.	No.
1-chloro-2,3-epoxypropane	Yes.	Yes.	Yes.	No.
lead	Yes.	Yes.	No.	No.
arsenic	Yes.	No.	No.	No.

Canada

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

CEPA DSL : All components are listed or exempted.

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)**: At least one component is not listed.
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): Not determined.
Philippines inventory (PICCS): At least one component is not listed.

16 . Other information

Label requirements : CAUSES EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. MAY BE HARMFUL IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.

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

Health	*	2
Flammability		1
Physical hazards		0
Personal protection		

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

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



Date of printing : 9/6/2011.

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Date of previous issue : 8/24/2010

16 . Other information

Version : 1

▣ 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.

Material Safety Data Sheet

REN 3269 US

1. Product and company identification

Product name : REN 3269 US
Material uses : Casting hardener
(M)SDS # : 00078937
Validation date : 11/21/2013.
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. [liquid]
Odor : Amine.
Color : Clear, light amber
OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview : DANGER!
MAY BE FATAL IF INHALED. CAUSES EYE AND SKIN BURNS. HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CAUSES RESPIRATORY TRACT IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist. Do not ingest. Do not get in eyes or on skin or clothing. 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>
Diethylenetriamine	111-40-0	30 - 60
1-(2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE)	27136-73-8	13 - 30
polyoxypropylene diamine (R52/53)	9046-10-0	13 - 30
4-nonyl-phenol	25154-52-3	13 - 30

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** : Call medical doctor or poison control center immediately. 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** : Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.

5 . Fire-fighting measures

- Flash point** : Closed cup: 116°C (240.8°F)
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
- 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. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- 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. Do not breathe 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). Water polluting material. May be harmful to the environment if released in large quantities.
- 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 should not be employed in any process in which this product is used. Avoid exposure during pregnancy. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. 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
Diethylenetriamine	ACGIH TLV (United States, 2/2010). Absorbed through skin. TWA: 1 ppm 8 hour(s). TWA: 4.2 mg/m ³ 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. 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

Appearance

Physical state : Liquid. [liquid]
Color : Clear, light amber
Odor : Amine.
pH : Not available.
Boiling/condensation point : Not available.
Melting/freezing point : Not available.
Flash point : Closed cup: 116°C (240.8°F)
Flammable limits : Not available.
Auto-ignition temperature : Not available.
Vapor pressure : Not available.
Specific gravity : 0.97
Water solubility : moderate
Partition coefficient: n-octanol/water (log Kow) : Not available.
Density : 0.97 g/cm³
Vapor density : Not available.
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	Test	Endpoint	Species	Result
Diethylenetriamine	OECD 403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat - Male, Female	0.07 to 0.3 mg/L
4-nonyl-phenol	-	LD50 Dermal	Rabbit	1090 mg/kg
	-	LD50 Oral	Rat	1500 to 2000 mg/kg
	-	LD50 Dermal	Rabbit - Male	2031 mg/kg
1-	Unknown guidelines	LD50 Oral	Rat - Male, Female	1412 mg/kg
		EPA CFR	Rat	710 mg/kg

11 . Toxicological information

(2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE)

Irritation/Corrosion

Product/ingredient name	Test	Species	Result
Diethylenetriamine	-	Rabbit	Skin - Corrosive
4-nonyl-phenol	-	Rabbit	Eyes - Corrosive
	-	Rabbit	Skin - Corrosive
	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Corrosive
1- (2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE)	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin - Corrosive

Conclusion/ Summary

Skin	:	Diethylenetriamine	Corrosive to the skin.
		1- (2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE)	Corrosive to the skin.
		polyoxypropylene diamine (R52/53)	No known significant effects or critical hazards.
		4-nonyl-phenol	Corrosive to the skin.
Eyes	:	Diethylenetriamine	Corrosive to eyes.
		1- (2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE)	No known significant effects or critical hazards.
		polyoxypropylene diamine (R52/53)	No known significant effects or critical hazards.
		4-nonyl-phenol	Corrosive to eyes.
Respiratory	:	Diethylenetriamine	No known significant effects or critical hazards.
		1- (2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE)	No known significant effects or critical hazards.
		polyoxypropylene diamine (R52/53)	No known significant effects or critical hazards.
		4-nonyl-phenol	No known significant effects or critical hazards.

Sensitizer

Product/ingredient name	Test	Route of exposure	Species	Result
Diethylenetriamine	-	skin	Guinea pig	Sensitizing
4-nonyl-phenol	OECD 406 Skin Sensitization	skin	Guinea pig	Not sensitizing

Mutagenicity

Product/ingredient name	Test	Result
Diethylenetriamine	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: bacteria/yeast Metabolic activation: +/-	Negative
	Experiment: In vivo Subject: Insect Cell: Germ	Negative
	Experiment: In vivo	Negative



11 . Toxicological information

Subject: Mammalian-Animal
Cell: Somatic

Conclusion/ Summary : 4-nonyl-phenol The weight of the scientific evidence indicates that this material is non-genotoxic.

Carcinogenicity

Product/ingredient name	Test	Species	Dose	Exposure	Result/Result type
Diethylenetriamine	-	Mouse - Male	56.3 mg/kg	3 days per week	Negative - Dermal - NOEL

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type
4-nonyl-phenol	OECD 414 Prenatal Developmental Toxicity Study	Rat - Female	Negative - Oral

Potential acute health effects

- Inhalation** : Very toxic by inhalation. Irritating to respiratory system.
- Ingestion** : Toxic if swallowed. May cause burns to mouth, throat and stomach.
- Skin contact** : Corrosive to the skin. Causes burns. Toxic in contact with skin. May cause sensitization by skin contact.
- Eye contact** : Corrosive to eyes. Causes burns.

Potential chronic health effects

Product/ingredient name	Test	Endpoint	Species	Result
Diethylenetriamine	-	Sub-chronic NOEL Oral	Rat - Male, Female	70 to 80 mg/kg/d
	-	Chronic NOAEL Dermal	Rat - Male, Female	114 mg/kg/d
	-	Sub-acute NOEC Inhalation Vapor	Rat - Male, Female	550 mg/m3
4-nonyl-phenol	EPA OPPTS	Sub-chronic NOAEL Oral	Rat - Male, Female	50 mg/kg

- General** : Contains material that may cause target organ damage, based on animal data. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
- Target organs** : Contains material which may cause damage to the following organs: kidneys, upper respiratory tract.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : Contains material which may cause birth defects, based on animal data.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.
- Medical conditions aggravated by over-exposure**

11 . Toxicological information

Pre-existing skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

12 . Ecological information

Environmental effects : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Water polluting material. May be harmful to the environment if released in large quantities.

Aquatic ecotoxicity

Product/ingredient name	Test	Endpoint	Exposure	Species	Result
Diethylenetriamine	-	Acute	EC50 48 hours	Daphnia	17 mg/L
	-	Acute	LC50 96 hours	Fish	332 mg/L
	-	Chronic	NOEC 21 days	Daphnia	5.6 mg/L
1-(2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE	OECD 203 Fish, Acute Toxicity Test	Acute	LC50 96 hours	Fish	0.33 mg/L
4-nonyl-phenol	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute	EC50 3 hours	Bacteria	950 mg/L
	ASTM	Acute	EC50 48 hours	Daphnia	0.085 mg/L
	Unknown guidelines	Acute	EbC50 (biomass) 72 hours	Algae	1.3 mg/L
	ASTM	Acute	LC50 96 hours	Fish	0.128 mg/L
	OECD OECD 202: Part II (Daphnia sp., Reproduction Test)	Chronic	NOEC 21 days	Daphnia	0.024 mg/L
ASTM	Chronic	NOEC 91 days	Fish	0.006 mg/L	

Persistence and degradability

Product/ingredient name	Test	Period	Result
Diethylenetriamine	-	28 days	<60 %
1-(2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE	OECD 301F Ready Biodegradability - Manometric Respirometry Test	28 days	<20 %
4-nonyl-phenol	OECD 301B Ready Biodegradability - CO ₂ Evolution Test	35 days	48.2 %

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Diethylenetriamine	-	-	Not readily
1-(2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Diethylenetriamine	-1.3	-	low
4-nonyl-phenol	5.4	740	high



12 . Ecological information

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** : Polyamines, liquid, corrosive, n.o.s. (DIETHYLENETRIAMINE, 1-(2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE). Marine pollutant
- TDG** : Polyamines, liquid, corrosive, n.o.s. (DIETHYLENETRIAMINE, 1-(2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE). Marine pollutant
- IMDG** : Polyamines, liquid, corrosive, n.o.s. (DIETHYLENETRIAMINE, 1-(2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE). Marine pollutant
- IATA** : Polyamines, liquid, corrosive, n.o.s. (DIETHYLENETRIAMINE, 1-(2-HYDROXYETHYL)-2-HEPTADECENYLIMIDAZOLINE)

Regulatory information	UN number	Classes	PG*	Label	Additional information
DOT Classification	UN2735	8	II	 	marine pollutant only regulated for bulk and vessel shipments, per 49CFR171.4 (c) Exceptions. Except when all or part of the transportation is by vessel, the requirements of this subchapter specific to marine pollutants do not apply to non-bulk packagings transported by motor vehicle, rail car or aircraft.

14 . Transport information

TDG Classification	UN2735	8	II	 	-
IMDG Class	UN2735	8	II	 	Emergency schedules (EmS) F-A, S-B
IATA-DGR Class	UN2735	8	II		Passenger and Cargo Aircraft Quantity limitation: 1 L Packaging instructions: 851 Cargo Aircraft Only Quantity limitation: 30 L Packaging instructions: 855

PG* : Packing group

15 . Regulatory information

United States

HCS Classification : Highly toxic material
Corrosive material
Sensitizing material
Target organ effects

U.S. Federal regulations

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

TSCA 5(a)2 final significant new use rule (SNUR) : No ingredients listed.

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

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

SARA 311/312 : Not classified.

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

Clean Air Act - Ozone Depleting Substances (ODS) : This product does not contain nor is it manufactured with ozone depleting substances.

15 . Regulatory information

SARA 313 : No ingredients listed.

CERCLA Hazardous substances : No ingredients listed.

State regulations

PENNSYLVANIA - RTK : Diethylenetriamine, 4-nonyl-phenol

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).
Class E: Corrosive material

CEPA DSL : All components are listed or exempted.

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): All components are listed or exempted.
Japan inventory: At least one component is not listed.
Korea inventory: All components are listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.
Taiwan inventory (CSNN): Not determined.

16 . Other information

Label requirements : MAY BE FATAL IF INHALED. CAUSES EYE AND SKIN BURNS. HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CAUSES RESPIRATORY TRACT IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

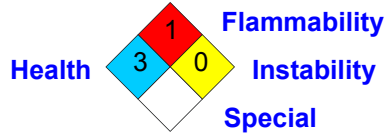
Hazardous Material Information System (U.S.A.) :

Health	3
Flammability	1
Physical hazards	0
Personal protection	

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

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

16 . Other information



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☑ Indicates information that has changed from previously issued version.

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