

# Material Safety Data Sheet

## REN®CAST 4037 US

### 1. Product and company identification

**REN®CAST 4037 US**

**Material uses** : Adhesive.  
**MSDS #** : 00071154  
**Validation date** : 12/6/2011.  
**Print date** : 12/6/2011.

**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** : Slight  
**Color** : Gray.

**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 ABSORBED THROUGH SKIN OR IF SWALLOWED.  
Do not breathe vapor or mist. Do not ingest. Do not get in eyes or on skin or clothing.  
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>
Aluminium	7429-90-5	30 - 60
Bisphenol A epoxy resin	25068-38-6	13 - 30
Limestone	1317-65-3	13 - 30
epoxy phenol novolac resin	28064-14-4	7 - 13
butanedioldiglycidyl ether	2425-79-8	3 - 7

## 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: >149°C (>300.2°F)
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
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. 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. 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). 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. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. 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
aluminium	<b>OSHA PEL (United States, 6/2010).</b> TWA: 5 mg/m <sup>3</sup> , (as Al) 8 hour(s). Form: Respirable fraction TWA: 15 mg/m <sup>3</sup> , (as Al) 8 hour(s). Form: Total dust <b>ACGIH TLV (United States, 2/2010).</b> TWA: 1 mg/m <sup>3</sup> 8 hour(s). Form: Respirable fraction
Limestone	<b>OSHA PEL (United States, 6/2010).</b> TWA: 5 mg/m <sup>3</sup> 8 hour(s). Form: Respirable fraction TWA: 15 mg/m <sup>3</sup> 8 hour(s). Form: Total dust

- 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** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure 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** : Gray.  
**Odor** : Slight

### Important health, safety and environmental information

**pH** : Not available.  
**Boiling/condensation point** : >177°C (>350.6°F)  
**Melting/freezing point** : Not available.  
**Flash point** : Closed cup: >149°C (>300.2°F)  
**Flammable limits** : Not available.  
**Auto-ignition temperature** : Not available.  
**Vapor pressure** : Not available.  
**Specific gravity** : 1.73 to 1.78  
**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** : No known significant effects or critical hazards.  
**Ingestion** : Harmful if swallowed.  
**Skin** : Harmful in contact with skin. Irritating to skin. May cause sensitization by skin contact.  
**Eyes** : Irritating to eyes.

### Acute toxicity

## 11 . Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
Limestone butanedioldiglycidyl ether	LD50 Oral	Rat	>2000 mg/kg	-
	LD50 Dermal	Rat - Male, Female	>2150 mg/kg	-
	LD50 Oral	Rat - Male, Female	1163 mg/kg	-
epoxy phenol novolac 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
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
butanedioldiglycidyl ether	Sub-chronic NOAEL Oral	Rat - Male, Female	200 mg/kg	28 days; 7 days per week
epoxy phenol novolac 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
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
butanedioldiglycidyl ether	Skin - Non-irritant.	Rabbit	-	-	-
	Eyes - Severe irritant	Rabbit	-	-	-
epoxy phenol novolac resin	Eyes - Mild irritant	Rabbit	-	-	-
Bisphenol A epoxy resin	Skin - Mild irritant	Rabbit	-	-	-
	Skin - Mild irritant Eyes - Mild irritant	Rabbit Rabbit	- -	- -	- -

#### Skin

- : Reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700): Slightly irritating to the skin.
- epoxy phenol novolac resin: Slightly irritating to the skin.
- butanedioldiglycidyl ether: Non-irritating to the skin.

#### Eyes

- : Reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700): Slightly irritating to the eyes.
- epoxy phenol novolac resin: Slightly irritating to the eyes.
- butanedioldiglycidyl ether: Severely irritating to eyes.

### Sensitizer

Product/ingredient name	Route of exposure	Species	Result
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## 11 . Toxicological information

Limestone	skin	Guinea pig	Not sensitizing
butanedioldiglycidyl ether	skin	Guinea pig	Sensitizing
Bisphenol A epoxy resin	skin	Mouse	Sensitizing

### Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
epoxy phenol novolac 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
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
Aluminium	A4	-	-	-	-	-

### Mutagenicity

Product/ingredient name	Test	Experiment	Result
butanedioldiglycidyl ether	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Positive
	OECD 473 <i>In vitro</i> Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Positive
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic	Negative
	-	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Positive
	-	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic Metabolic activation: +/-	Positive
	-	Experiment: In vivo Subject: Mammalian-Animal Cell: Germ	Negative
epoxy phenol novolac resin	-	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Positive
	-	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic Metabolic activation: +/-	Positive
	-	Experiment: In vivo Subject: Mammalian-Animal Cell: Germ	Negative
	-	Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic	Negative
	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	Positive
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	Positive

## 11 . Toxicological information

OECD 478 Genetic Toxicology: Rodent Dominant Lethal Test	Metabolic activation: +/- 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
epoxy phenol novolac 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
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
epoxy phenol novolac resin	Negative	Negative	-	Rat - Male, Female	Oral: 540 mg/kg NOEL :	238 days; 7 days per week
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** : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
- Target organs** : Not available.
- Carcinogenicity** : No known significant effects or critical hazards.
- 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 may be aggravated by over-exposure to this product.

## 12 . Ecological information

**Environmental effects** : 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	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
epoxy phenol novolac 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
butanedioldiglycidyl ether	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50 75 mg/L Fresh water	Daphnia	24 hours Static
	OECD 201 Alga, Growth Inhibition Test	Acute EL50 >160 mg/L Fresh water	Algae - <i>Selenastrum capricornutum</i> (Pseudokirchneriella subcapitata)	72 hours Static
	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute IC50 >100 mg/L Fresh water	Bacteria	3 hours Static
	OECD 203 Fish, Acute Toxicity Test	Acute LC50 24 mg/L Fresh water	Fish	96 hours Static

### Biodegradability



## 12 . Ecological information

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	-
epoxy phenol novolac resin	OECD Derived from OECD 301F (Biodegradation Test)	5 % - Not readily - 28 days	20 mg/L Oxygen consumption	-
butanedioldiglycidyl ether	OECD 301F Ready Biodegradability - Manometric Respirometry Test	43 % - Not readily - 28 days	20 mg/L Oxygen consumption	Activated sludge

### Other ecological information

**Biological Oxygen Demand (BOD 5 DAY)** : Not Determined

**Chemical Oxygen Demand (COD)** : 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  
Fresh water 4.83 days  
Fresh water 3.58 days  
Fresh water 7.1 days

### Photolysis

-

### Biodegradability

Not readily

epoxy phenol novolac resin

Not readily

butanedioldiglycidyl ether

Not readily

### Bioaccumulative potential

### Product/ingredient name

Bisphenol A epoxy resin  
epoxy phenol novolac resin  
butanedioldiglycidyl ether

### LogP<sub>ow</sub>

3.242  
3.242  
-0.269

### BCF

31  
31  
-

### Potential

low  
low  
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. 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, EPOXYPHENOL NOVOLAC RESIN) Marine pollutant
- TDG** : Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A EPOXY RESIN, EPOXYPHENOL NOVOLAC RESIN) Marine pollutant
- IMDG** : Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A EPOXY RESIN, EPOXYPHENOL NOVOLAC RESIN) Marine pollutant
- IATA** : Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A EPOXY RESIN, EPOXYPHENOL NOVOLAC RESIN) Marine pollutant

Regulatory information	UN number	Classes	PG*	Label	Additional information
<b>DOT Classification</b>	UN3082	9	III	 	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.
<b>TDG Classification</b>	UN3082	9	III	 	-
<b>IMDG Class</b>	UN3082	9	III	 	<b>Emergency schedules (EmS)</b> F-A, S-F
<b>IATA-DGR Class</b>	UN3082	9	III	 	<b>Passenger and Cargo Aircraft</b> Quantity limitation: 450 L Packaging instructions: 964 <b>Cargo Aircraft Only</b> Quantity limitation: 450 L Packaging instructions: 964

## 14 . Transport information

PG\* : Packing group

## 15 . Regulatory information

### U.S. Federal regulations

**HCS Classification** : Irritating material  
Sensitizing material

**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** : Immediate (acute) health hazard; Delayed (chronic) 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:** No ingredients listed.

### **STATE REGULATIONS:**

**PENNSYLVANIA - RTK:** The following components are listed: ALUMINUM; LIMESTONE; ALUMINUM SOLUBLE SALTS

**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.

### Canada

**WHMIS (Canada)** : 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.**

## 15 . Regulatory information

- International lists** :
- Australia inventory (AICS):** All components are listed or exempted.
  - China inventory (IECSC):** All components are listed or exempted.
  - Japan inventory:** Not determined.
  - Korea inventory:** All components are listed or exempted.
  - New Zealand Inventory of Chemicals (NZIoC):** Not determined.
  - Philippines inventory (PICCS):** All components are listed or exempted.

## 16 . Other information

- Label requirements** : CAUSES EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED.

- 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** : 12/6/2011.  
**Date of issue** : 12/6/2011.  
**Date of previous issue** : No previous validation.  
**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*

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## 16 . Other information

*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.**

P.O. Box 4980  
The Woodlands, TX 77387-4980

8 am to 5 pm Phone: (800) 257-5547  
24-Hour Emergency Phone: (800) 328-8501  
International Emergency Phone: (409) 727-0831  
Asia Pacific Emergency Phone: (65) 6336-6011

**Effective Date:** 4/23/08

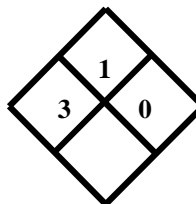
**Material Safety Data Sheet**

MSDS No: 11254

**1. PRODUCT IDENTIFICATION**

**Trade Name:** Ren 4037

**Chemical Family:** Amine



NFPA RATING

<b>Health:</b>	<b>3*</b>
<b>Flammability:</b>	<b>1</b>
<b>Reactivity:</b>	<b>0</b>
<b>Personal Protection:</b>	

HMS RATING

**Synonyms:**

DT 177-147 Hardener  
RP 4037 Hardener

**Intended Use or Product Type:**

High heat casting system hardener

**2. COMPOSITION / INFORMATION ON INGREDIENTS**

O S H A	CAS No.	CHEMICAL IDENTITY	EXPOSURE LIMITS				CARCINOGEN STATUS			
			ACGIH		OSHA		MFR.	IARC	NTP	OSHA
			TWA	STEL	PEL	STEL				
*	111-40-0	1,2-Ethanediamine, N-(2-aminoethyl)- Diethylenetriamine Common Name: Concentration: 1.00 - 5.00 % by wt	1 ppm	NE	NE	NE	NE	NR	NR	NR
*	1477-55-0	1,3-Benzenedimethanamine m-Xylenediamine Common Name: Concentration: 3.00 - 7.00 % by wt	NE	0.1 mg/m3	NE	NE	NE	NR	NR	NR
*	2855-13-2	Cyclohexanemethanamine, 5-Amino-1,3,3-Trimethyl- Isophorone diamine Common Name: Concentration: 10.00 - 30.00 % by wt	NE	NE	NE	NE	NE	NR	NR	NR
*	68479-98-1	Benzenediamine, ar,ar-diethyl-ar-methyl- Diethyltoluenediamine Common Name: Concentration: 30.00 - 60.00 % by wt	NE	NE	NE	NE	NE	NR	NR	NR
*	80-05-7	Phenol, 4,4'-(1-methylethylidene)bis-	NE	NE	NE	NE	TLV 5 mg/m3	NR	NR	NR

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Common Name:	Bisphenol A								
Concentration	1.00 - 5.00 % by wt								

\* = OSHA Hazardous Ingredient

**3. HAZARDS IDENTIFICATION**

**Emergency Overview:** Corrosive - Causes skin and eye burns. Harmful if swallowed or if absorbed through skin. May cause allergic skin and respiratory reactions.

**Primary Route(s) of Entry:** Dermal; heated product may produce inhalable vapors.

**Acute Exposure:** Corrosive. Causes skin and eye burns.

**Chronic:** Overexposure may have effects on developing fetus.

**4. FIRST AID MEASURES**

**Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Seek immediate medical attention.

**Skin:** Immediately wash with soap and water. Remove contaminated clothing and launder before reuse. Destroy contaminated shoes. Seek immediate medical attention.

**Inhalation:** Remove to fresh air. Seek immediate medical attention.

**Eyes:** Immediately flush eyes with water for at least 15 minutes. Seek immediate medical attention.

**Overexposure Effects:** Corrosive - causes skin and eye burns. Harmful if swallowed or if absorbed through skin. May cause allergic skin and respiratory reactions.

**Medical Conditions Aggravated by Exposure:** Skin, eye and pulmonary conditions.

**Additional Information:** Referral to a physician is recommended if there is any question about the seriousness of any injury.

**5. FIRE FIGHTING MEASURES**

**Flash Point:** > 200°F (> 93 °C)

**Flash Point Method Used:** Estimated

**Flammable Limits in Air (Lower - % by volume):** Not established

**Flammable Limits in Air (Upper - % by volume):** Not established

**Fire Fighting Extinguishing Media:** Carbon dioxide, dry chemical, foam, water.

**Fire Fighting Equipment:** Use self-contained breathing apparatus.

**Fire and Explosion Hazards:** Decomposition and combustion products may be toxic.

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## 6. ACCIDENTAL RELEASE MEASURES

**Accidental Release Measures:** Remove spillage by absorbing in absorbent material.

## 7. HANDLING AND STORAGE

**Signal Word:** Danger!

**Precautions:** Corrosive. Causes skin and eye burns. Harmful if swallowed or if absorbed through skin. May cause allergic skin and respiratory reactions. Do not get in eyes, on skin, on clothing. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. Notice! Overexposure may have effects on developing fetus.

**Other Handling Information:** Nuisance dust may be generated when sanding or sawing cured material.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Skin Protection:** Wear impermeable gloves.

**Respiratory Protection:** Use NIOSH approved organic vapor cartridge respirator when vapor/mist exposure is likely.

**Eye Protection:** Wear splash-proof chemical goggles.

**Engineering Controls:** General mechanical and local exhaust in accordance with ACGIH recommendations.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Color:</b>	Dark Amber
<b>Odor:</b>	Amine
<b>Physical State:</b>	Liquid
<b>Solubility in Water:</b>	Slight
<b>Vapor Pressure:</b>	< 0.1 mm Hg at 25°C (77 °F)
<b>Specific Gravity:</b>	1.01 (water = 1)
<b>Boiling Point:</b>	Not Determined
<b>Melting Point:</b>	Not Determined
<b>Evaporation Rate:</b>	Not Determined
<b>Density:</b>	Not Determined
<b>Vapor Density:</b>	Not Determined
<b>pH:</b>	Not Determined
<b>Coefficient of water/oil:</b>	Not Determined

**Percent Volatile:** Not determined.

## 10. STABILITY AND REACTIVITY

**Conditions to Avoid:** Excessive heat for prolonged periods of time.

**Stability:** Stable.



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**Incompatibility:** Strong oxidizers, acids and bases.**Hazardous Decomposition Products:** Combustion may form toxic materials, such as carbon dioxide, carbon monoxide.**Hazardous Polymerization:** Will not occur.**11. TOXICOLOGICAL INFORMATION****Acute Oral Effects (LD50):** Component(s) are toxic, 50 - 500 mg/kg (rat).

Diethyltoluenediamine= 485 mg/kg (rat)

1,3-Benzenedimethanamine= 930 mg/kg (rat)

Isophorone diamine= 1030 mg/kg (rat)

Diethylenetriamine= 1080 - 2330 mg/kg (rat)

**Acute Dermal Toxicity (LD50):** Component(s) are toxic, 200 - 1000 mg/kg (rabbit).

Diethylenetriamine= 672 - 1240 mg/kg (rabbit)

Diethyltoluenediamine= 700 mg/kg (rabbit)

**Sensitization:** May cause allergic skin reaction and respiratory sensitivity in some people.**Skin Irritation:** Corrosive. Causes burns.**Eye Irritation:** Corrosive. Causes burns.**12. ECOLOGICAL INFORMATION****13. DISPOSAL CONSIDERATIONS****Waste Disposal Method:** Consult qualified local or corporate personnel for method that will comply with local, state and federal health and environmental regulations.**14. TRANSPORT INFORMATION****DOT: Non-Bulk****Proper Shipping Name:**

Polyamines, liquid, corrosive, N.O.S.

**Technical Shipping Name (If n.o.s.):**

Metaxylenediamine, Diethylene triamine

**Hazard Class:**

8

**ID Number:**

UN 2735

**Packing Group:**

PG II

**Label:**

Corrosive

**IATA: Non-Bulk****Proper Shipping Name:**

Polyamines, liquid, corrosive, N.O.S.

**Technical Shipping Name (If n.o.s.):**

Metaxylenediamine, Diethylene triamine

**Hazard Class:**

8

**ID Number:**

UN 2735

**Packing Group:**

PG II

**Label:**

Corrosive

**IMDG: Non-Bulk****Proper Shipping Name:**

Polyamines, liquid, corrosive, N.O.S.

**Technical Shipping Name (If n.o.s.):**

Metaxylenediamine, Diethylene triamine

<b>Hazard Class:</b>	8
<b>ID Number:</b>	UN 2735
<b>Packing Group:</b>	PG II
<b>Label:</b>	Corrosive
<b>TDG: Non-Bulk</b>	
<b>Proper Shipping Name:</b>	Polyamines, liquid, corrosive, N.O.S.
<b>Technical Shipping Name (If n.o.s.):</b>	Metaxylenediamine, Diethylene triamine
<b>Hazard Class:</b>	8
<b>ID Number:</b>	UN 2735
<b>Packing Group:</b>	PG II
<b>Label:</b>	Corrosive

## 15. REGULATORY INFORMATION

### US Federal Regulations:

**Occupational Safety and Health Act (OSHA):** This Material Safety Data Sheet (MSDS) has been prepared in compliance with the federal OSHA Hazard Communication Standard 29 CFR 1910.1200. This product is considered to be a hazardous chemical under that standard.

**Resource Conservation and Recovery Act (RCRA):** Not a hazardous waste under RCRA (40 CFR 261) but handle with care due to corrosive effect on skin and eyes.

**SARA Title III: Section 313 Toxic Chemical List (TCL):** This product contains a toxic chemical(s) for routine annual toxic chemical release reporting under section 313 (40 CFR 372). This information must be included in all MSDS's copied or distributed for this material.

Chemical Name: Phenol, 4,4'-(1-methylethylidene)bis-

Common Name: Bisphenol A

Percent in Composition: 1 - 5 % by wt

Comment:

**TSCA Section 8(b) - Inventory Status:** All chemical components of this product are in compliance with TSCA inventory requirements.

**TSCA Section 12(b) - Export Notification:** This product does not contain any chemical(s) that are subject to a Section 12(b) export notification.

### International Regulations:

**Canadian Inventory Status:** This product contains one or more chemicals currently not on the Canadian Domestic Substance List.

**Canadian WHMIS:** 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. D1B D2A D2B E

### State Regulations:

**California Proposition 65:** This product does not contain any chemicals currently on the California list of Known Carcinogens and Reproductive Toxins.

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**Pennsylvania Right-to-Know:** The following is required composition information:

Chemical Name: Benzenediamine, ar,ar-diethyl-ar-methyl-

Common Name: Diethyltoluenediamine

CAS Number: 68479-98-1

Comment: Not on Pennsylvania Hazardous Substance List

Chemical Name: Cyclohexanemethanamine, 5-Amino-1,3,3-Trimethyl-

Common Name: Isophorone diamine

CAS Number: 2855-13-2

Comment: Not on Pennsylvania Hazardous Substance List

Chemical Name: Polymer of Benzenediamine, AR,AR-Diethyl-AR-Methyl and Phenol, Polymer with Formaldehyde, Glycidyl Ether

Common Name: Amine adduct

CAS Number: 63548

Comment: Not on Pennsylvania Hazardous Substance List

Chemical Name: 1,3-Benzenedimethanamine

Common Name: m-Xylenediamine

CAS Number: 1477-55-0

Comment: Hazardous Substance

Chemical Name: 1,2-Ethanediamine, N-(2-aminoethyl)-

Common Name: Diethylenetriamine

CAS Number: 111-40-0

Comment: Hazardous Substance

Chemical Name: Phenol, 4,4'-(1-methylethylidene)bis-

Common Name: Bisphenol A

CAS Number: 80-05-7

Comment: Environmental Hazardous Substance

**16. OTHER INFORMATION****MSDS No:** 11254**Approved By:** Product EHS

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