

Material Safety Data Sheet

RENPASTE® 177-62 US

1 . Product and company identification

Product name : RENPASTE® 177-62 US
Material uses : Resin for adhesive systems
(M)SDS # : 00066608
Validation date : 11/23/2013.
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. [Paste.]
Color : White.
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.
Do not breathe vapor or mist. Do not get on skin or clothing. Avoid contact with eyes.
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>
Bisphenol A epoxy resin	25068-38-6	30 - 60
Glycidylether of C12-C14 alcohols	68609-97-2	7 - 13
Butylphenyl glycidyl ether	3101-60-8	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.

4 . First aid measures

- 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: >93.33°C (>200°F) [Estimated]
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
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 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. 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.

7 . Handling and storage

- 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

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. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

- Engineering measures** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

- 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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

- 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. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

- 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

Appearance

- Physical state** : Liquid. [Paste.]
Color : White.
Odor : Not available.
pH : Not available.

9 . Physical and chemical properties

Boiling/condensation point	: Not available.
Melting/freezing point	: Not available.
Flash point	: Closed cup: >93.33°C (>200°F) [Estimated]
Flammable limits	: Not available.
Auto-ignition temperature	: Not available.
Vapor pressure	: Not available.
Specific gravity	: Not available.
Water solubility	: Insoluble
Partition coefficient: n-octanol/water (log Kow)	: Not available.
Density	: 0.34 to 0.42 g/cm ³
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
Bisphenol A epoxy resin	-	LC0 Inhalation Vapor	Rat - Male	0.00001 ppm
	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rat - Male, Female	>2000 mg/kg
Butylphenyl glycidyl ether	OECD 420 Acute Oral Toxicity - Fixed Dose Method	LD50 Oral	Rat - Female	>2000 mg/kg
	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rat - Male, Female	>2000 mg/kg
Glycidylether of C12-C14 alcohols	OECD 425 Acute Oral Toxicity: Up-and-Down Procedure	LD50 Oral	Rat - Female	>2000 mg/kg
	-	LC0 Inhalation Vapor	Rat	>0.15 mg/l
	-	LD50 Oral	Rat - Male	30.1 ml/kg

Irritation/Corrosion

11 . Toxicological information

Product/ingredient name	Test	Species	Result
Bisphenol A epoxy resin	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin - Mild irritant
Butylphenyl glycidyl ether	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Mild irritant
	OECD 402 Acute Dermal Toxicity	Rat	Skin - Non-irritant.
	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Non-irritant.
Glycidylether of C12-C14 alcohols	-	Rabbit	Skin - Moderate irritant
	-	Rabbit	Eyes - Mild irritant

Conclusion/ Summary

Skin	:	Bisphenol A epoxy resin	Irritating to skin.
		Glycidylether of C12-C14 alcohols	Irritating to skin.
		Butylphenyl glycidyl ether	Non-irritating to the skin.
Eyes	:	Bisphenol A epoxy resin	Irritating to eyes.
		Glycidylether of C12-C14 alcohols	Slightly irritating to the eyes.
		Butylphenyl glycidyl ether	Non-irritating to the eyes.
Respiratory	:	Bisphenol A epoxy resin	No additional information.
		Glycidylether of C12-C14 alcohols	No additional information.
		Butylphenyl glycidyl ether	No additional information.

Sensitizer

Product/ingredient name	Test	Route of exposure	Species	Result
Bisphenol A epoxy resin	OECD 429 Skin Sensitization: Local Lymph Node Assay	skin	Mouse	Sensitizing
Butylphenyl glycidyl ether	OECD 429 Skin Sensitization: Local Lymph Node Assay	skin	Mouse	Sensitizing
Glycidylether of C12-C14 alcohols	EPA OPPTS	skin	Guinea pig	Sensitizing

Mutagenicity

Product/ingredient name	Test	Result
Bisphenol A epoxy 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

11 . Toxicological information

Butylphenyl glycidyl ether	Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic	Negative
	Experiment: In vitro Subject: Bacteria	Positive
	Experiment: In vitro Subject: Mammalian-Animal	Positive
Glycidylether of C12-C14 alcohols	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic Metabolic activation: +/-	Negative

Carcinogenicity

Product/ingredient name	Test	Species	Dose	Exposure	Result/Result type
Bisphenol A epoxy resin	OECD 453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat - Male, Female	15 mg/kg	2 years; 7 days per week	Negative - Oral - NOAEL
	OECD 453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat - Female	1 mg/kg	2 years; 5 days per week	Negative - Dermal - NOEL
	OECD 453 Combined Chronic Toxicity/ Carcinogenicity Studies	Mouse - Male	0.1 mg/kg	2 years; 3 days per week	Negative - Dermal - NOEL

Reproductive toxicity

Product/ingredient name	Test	Species	Maternal toxicity	Fertility	Developmental effects
Bisphenol A epoxy resin	OECD 416 Two- Generation Reproduction Toxicity Study	Rat - Male, Female	Negative	Negative	Negative

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type
Bisphenol A epoxy resin	OECD 414 Prenatal Developmental Toxicity Study	Rat - Female	Negative - Oral
	EPA CFR OECD 414 Prenatal Developmental Toxicity Study	Rabbit - Female Rabbit - Female	Negative - Dermal Negative - Oral
	OECD 414 Prenatal Developmental Toxicity Study	Rat - Female	Negative - Dermal
Glycidylether of C12-C14 alcohols	OECD 414 Prenatal Developmental Toxicity Study	Rat - Female	Negative - Dermal

11 . Toxicological information

Potential acute health effects

- Inhalation** : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.
Skin contact : Irritating to skin. May cause sensitization by skin contact.
Eye contact : Irritating to eyes.

Potential chronic health effects

Product/ingredient name	Test	Endpoint	Species	Result
Bisphenol A epoxy resin	OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Sub-chronic NOAEL Oral	Rat - Male, Female	50 mg/kg
	OECD 411 Subchronic Dermal Toxicity: 90-day Study	Sub-chronic NOEL Dermal	Rat - Male, Female	10 mg/kg
	OECD 411 Subchronic Dermal Toxicity: 90-day Study	Sub-chronic NOAEL Dermal	Mouse - Male	100 mg/kg
Glycidylether of C12-C14 alcohols	OECD 411 Subchronic Dermal Toxicity: 90-day Study	Sub-chronic NOEL Dermal	Rat - Male, Female	1 mg/kg/d

- 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 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.

Aquatic ecotoxicity

12 . Ecological information

Product/ingredient name	Test	Endpoint	Exposure	Species	Result	
Bisphenol A epoxy resin	-	Acute	EC50	72 hours Static	Algae	9.4 mg/l
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute	EC50	48 hours Static	Daphnia	1.7 mg/l
	-	Acute	IC50	3 hours Static	Bacteria	>100 mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute	LC50	96 hours Static	Fish	1.5 mg/l
	OECD 211 <i>Daphnia Magna</i> Reproduction Test	Chronic	NOEC	21 days Semi- static	Daphnia	0.3 mg/l
Glycidylether of C12-C14 alcohols	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute	EL50	48 hours Static	Daphnia	7.2 mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute	IC50	72 hours Static	Algae	843.75 mg/l
	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute	IC50	3 hours	Bacteria	>100 mg/l
Butylphenyl glycidyl ether	OECD 203 Fish, Acute Toxicity Test	Acute	LC50	96 hours Static	Fish	5000 mg/l
	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute	EC50	3 hours Static	Bacteria	>1000 mg/l
	OECD 202: Part I (<i>Daphnia</i> sp., Acute Immobilisation test)	Acute	EC50	48 hours Static	Daphnia	67.9 mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute	EbC50 (biomass)	72 hours Static	Algae	9 mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute	LC50	96 hours Static	Fish	7.5 mg/l

Persistence and degradability

Product/ingredient name	Test	Period	Result
Bisphenol A epoxy resin	OECD Derived from OECD 301F (Biodegradation Test)	28 days	5 %
Glycidylether of C12-C14 alcohols	OECD 301F Ready Biodegradability - Manometric Respirometry Test	28 days	87 %
Butylphenyl glycidyl ether	OECD 301D Ready Biodegradability - Closed Bottle Test	28 days	1.1 %

Conclusion/Summary : Bisphenol A epoxy resin Not readily biodegradable.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Bisphenol A epoxy resin	Fresh water 4.83 days Fresh water 3.58 days Fresh water 7.1 days	-	Not readily
Glycidylether of C12-C14 alcohols	-	-	Readily
Butylphenyl glycidyl ether	Fresh water 17 days	-	Not readily

Bioaccumulative potential

12 . Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
Bisphenol A epoxy resin	3.242	31	low
Glycidylether of C12-C14 alcohols	3.77	-	high
Butylphenyl glycidyl ether	3.59	-	high

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. 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. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. 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). 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

14 . Transport information

DOT Classification	UN3082	9	III	 	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.
TDG Classification	UN3082	9	III	 	-
IMDG Class	UN3082	9	III	 	Emergency schedules (EmS) F-A, S-F
IATA-DGR Class	UN3082	9	III	 	Passenger and Cargo Aircraft Quantity limitation: 450 L Packaging instructions: 964 Cargo Aircraft Only Quantity limitation: 450 L Packaging instructions: 964

PG* : Packing group

15 . Regulatory information

United States

HCS Classification : Irritating material
Sensitizing 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 significant new use rule (SNUR) : No ingredients listed.

15 . Regulatory information

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

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

SARA 311/312 : Immediate (acute) health hazard

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration %</u>
Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)	Glass oxide	65997-17-3	32.068

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 : No ingredients listed.

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-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)**: All components are listed or exempted.
- Japan inventory**: At least one component is not listed.
- Korea inventory**: At least one component is not listed.
- 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 : CAUSES EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION.

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

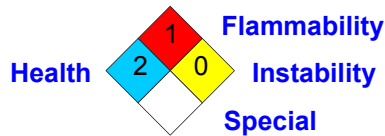
Health	2
Flammability	1
Physical hazards	0

16 . Other information

Personal protection

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

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



Date of printing : 11/23/2013.

Date of issue : 11/23/2013.

Date of previous issue : 11/23/2013.

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.

Material Safety Data Sheet

REN 177-62 US

1. Product and company identification

REN 177-62 US

Material uses : Hardener.
MSDS # : 00066609
Validation date : 4/16/2012.
Print date : 4/16/2012.

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 : Pale yellow.

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

Emergency overview : DANGER!

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

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>
Glass oxide	65997-17-3	13 - 30
triethylenetetramine, propoxylated	26950-63-0	13 - 30
Polyamide resin	68410-23-1	13 - 30
triethylenetetramine	112-24-3	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** : 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** : Not available.
- 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.
- 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).
- 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 breathe vapor or mist. Do not ingest. 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
glass,-oxide,-chemicals-	ACGIH TLV (United States, 2/2010). TWA: 1 f/cc 8 hour(s). Form: Continuous filament glass fibers TWA: 5 mg/m ³ 8 hour(s). Form: Inhalable fraction

- 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.
- 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 : Pale yellow.
Odor : Not available.

Important health, safety and environmental information

pH : Not available.
Boiling/condensation point : Not available.
Melting/freezing point : Not available.
Flash point : Not available.
Flammable limits : Not available.
Auto-ignition temperature : Not available.
Vapor pressure : Not available.
Specific gravity : 0.35 to 0.45
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 : Irritating to respiratory system.

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Skin : Harmful in contact with skin. Irritating to skin. May cause sensitization by skin contact.

Eyes : Corrosive to eyes. Causes burns.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Polyamide resin	LD50 Dermal	Rabbit	6.5 g/kg	-
	LD50 Oral	Rat	>16 g/kg	-
triethylenetetramine	LD50 Dermal	Rabbit - Male, Female	1465 mg/kg	-
	LD50 Oral	Rat - Male, Female	1716 mg/kg	-

Chronic toxicity

11 . Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
triethylenetetramine	Sub-chronic NOAEL Oral	Rat - Male, Female	50 mg/kg/d	26 weeks

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
triethylenetetramine	Skin - Corrosive	Rabbit	-	-	-

Skin : triethylenetetramine: Corrosive to the skin.

Sensitizer

Product/ingredient name	Route of exposure	Species	Result
Glass oxide	skin	Guinea pig	Sensitizing
triethylenetetramine	skin	Guinea pig	Sensitizing

Carcinogenic class

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Glass oxide	A4	3	-	-	-	-

Mutagenicity

Product/ingredient name	Test	Experiment	Result
triethylenetetramine	-	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Positive
	-	Experiment: In vivo Subject: Mammalian- Animal Cell: Somatic	Negative

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 may cause damage to the following organs: kidneys, lungs, liver.
- 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 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.

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
triethylenetetramine	-	Acute EC50 800 mg/L Fresh water	Bacteria	30 minutes Static
	-	Acute EC50 31.1 mg/L Fresh water	Daphnia	48 hours Static
	OECD 201 Alga, Growth Inhibition Test	Acute ErC50 (growth rate) 20 mg/L Fresh water	Algae	72 hours Semi-static
	-	Acute LC50 330 mg/L Fresh water	Fish	96 hours Static
	OECD OECD 202: Part II (Daphnia sp., Reproduction Test	Chronic EC50 10 mg/L Fresh water	Daphnia	21 days Semi-static

Biodegradability

Product/ingredient name	Test	Result	Dose	Inoculum
triethylenetetramine	OECD 302A Inherent Biodegradability: Modified SCAS Test	20 % - 84 days	DOC	Activated sludge
	OECD 301D Ready Biodegradability - Closed Bottle Test	0 % - Not readily - 28 days	Oxygen consumption	Activated sludge

Other ecological information

Biological Oxygen Demand (BOD 5 DAY) : Not Determined

Chemical Oxygen Demand (COD) : Not Determined

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
triethylenetetramine	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
triethylenetetramine	-1.4 to 2.9	99	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. (POLYAMIDE RESIN). Marine pollutant

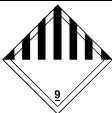



TDG : Environmentally hazardous substance, liquid, n.o.s. (POLYAMIDE RESIN). Marine pollutant

IMDG : Environmentally hazardous substance, liquid, n.o.s. (POLYAMIDE RESIN) Marine pollutant

IATA : Environmentally hazardous substance, liquid, n.o.s. (POLYAMIDE RESIN) Marine pollutant

Regulatory information	UN number	Classes	PG*	Label	Additional information
DOT Classification	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.
TDG Classification	UN3082	9	III	 	-

14 . Transport information

IMDG Class	UN3082	9	III	 	Emergency schedules (EmS) F-A, S-F
IATA-DGR Class	UN3082	9	III	 	Passenger and Cargo Aircraft Quantity limitation: 450 L Packaging instructions: 964 Cargo Aircraft Only Quantity limitation: 450 L Packaging instructions: 964

PG* : Packing group

15 . Regulatory information

U.S. Federal regulations

HCS Classification

: Corrosive material
 Sensitizing material
 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: Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Air Act Section 111 - Volatile Organic Compounds (VOC)

Not available.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)

: <u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
Glass oxide	65997-17-3	13 - 30

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.

Components	Concentration %	Section 304 CERCLA Hazardous Substance	CERCLA Reportable Quantity (Lbs)	Product Reportable Quantity (Lbs)
glass,-oxide,-chemicals-	26.75163	Listed		

STATE REGULATIONS:

PENNSYLVANIA - RTK: The following components are listed: 1,2-ETHANEDIAMINE, N,N'-BIS(2-AMINOETHYL)-

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-1B: Material causing immediate and serious toxic effects (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:** All components are listed or exempted.
- 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 EYE BURNS. CAUSES RESPIRATORY TRACT AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

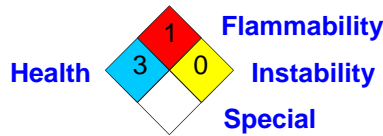
Hazardous Material Information System (U.S.A.) :

Health	3
Flammability	1
Physical hazards	0
Personal protection	

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

16 . Other information

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



Date of printing : 4/16/2012.
Date of issue : 4/16/2012.
Date of previous issue : No previous validation.
Version : 1

✔ Indicates information that has changed from previously issued version.

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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.

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