Material Safety Data Sheet

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EPIBOND® 1544 A US

1 . Product and company identification

Product name : **EPIBOND® 1544 A US**
Material uses : Resin for adhesive systems
(M)SDS # : 00048682
Validation date : 2/14/2014.
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. [soft paste]
Odor : Odorless.
Color : White.

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

Emergency overview : WARNING!

HARMFUL IF INHALED. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA. POSSIBLE DEVELOPMENTAL HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE ADVERSE DEVELOPMENTAL EFFECTS, BASED ON ANIMAL DATA.

Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist. Do not get on skin or clothing. Avoid contact with eyes. Avoid exposure during pregnancy. 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	%
Bisphenol A epoxy resin	25068-38-6	30 - 60
DIBUTYL PHTHALATE (DBP)	84-74-2	7 - 13
antimony trioxide	1309-64-4	7 - 13
Siloxanes and Silicones, di-Me, reaction products with silica	67762-90-7	1 - 3

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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: 182°C (359.6°F)

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
halogenated compounds
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. 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.

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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
DIBUTYL PHTHALATE (DBP)	**ACGIH TLV (United States, 6/2013).** TWA: 5 mg/m³ 8 hours. **OSHA PEL (United States, 2/2013).** TWA: 5 mg/m³ 8 hours.

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 : 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. 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. > 8 hours (breakthrough time): Ethyl Vinyl Alcohol Laminate (EVAL), butyl rubber

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8 . Exposure controls/personal protection

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. [soft paste]

Color : White.

Odor : Odorless.

pH : Not available.

Boiling/condensation point : Not available.

Melting/freezing point : Not available.

Flash point : Closed cup: 182°C (359.6°F)

Flammable limits : Not available.

Auto-ignition temperature : Not available.

Vapor pressure : <0.14 kPa (<1.05 mm Hg) [room temperature]

Specific gravity : Not available.

Water solubility : practically insoluble

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

Density : 1.25 g/cm³ [25°C (77°F)]

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.

Materials to avoid : strong acids, strong bases, strong oxidising agents

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

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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
	OECD 420 Acute Oral Toxicity - Fixed Dose Method	LD50 Oral	Rat - Female	>2000 mg/kg
DIBUTYL PHTHALATE (DBP)	No official guidelines	LC50 Inhalation Dusts and mists	Rat - Male, Female	>15.68 mg/l
	No official guidelines	LD50 Dermal	Rabbit	>20000 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male, Female	6279 mg/kg
Siloxanes and Silicones, di-Me, reaction products with silica	OECD 403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat - Male, Female	>695 mg/m³
	OECD 423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat - Male, Female	>5000 mg/kg
antimony trioxide	OECD 403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat - Male, Female	>5.2 mg/l
	-	LD50 Dermal	Rabbit	8300 mg/kg
	-	LD50 Oral	Rat	>20000 mg/g

Irritation/Corrosion

Product/ingredient name	Test	Species	Result
Bisphenol A epoxy resin	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin - Mild irritant
	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Mild irritant
DIBUTYL PHTHALATE (DBP)	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Non-irritant.
	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin - Non-irritant.
Siloxanes and Silicones, di-Me, reaction products with silica	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin - Non-irritant.
	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Non-irritant.
antimony trioxide	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Non-irritant.
	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin - Non-irritant.

Conclusion/ Summary

Skin :

Bisphenol A epoxy resin	Irritating to skin.
DIBUTYL PHTHALATE (DBP)	Non-irritating to the skin.
antimony trioxide	Non-irritating to the skin.
Siloxanes and Silicones, di-Me, reaction products with silica	Non-irritating to the skin.

Eyes :

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11 . Toxicological information

	Bisphenol A epoxy resin	Irritating to eyes.
	DIBUTYL PHTHALATE (DBP)	Non-irritating to the eyes.
	antimony trioxide	Non-irritating to the eyes.
	Siloxanes and Silicones, di-Me, reaction products with silica	Non-irritating to the eyes.
Respiratory :	Bisphenol A epoxy resin	No additional information.
	DIBUTYL PHTHALATE (DBP)	No additional information.
	antimony trioxide	No additional information.
	Siloxanes and Silicones, di-Me, reaction products with silica	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
DIBUTYL PHTHALATE (DBP)	OECD 406 Skin Sensitization	skin	Guinea pig	Not sensitizing
Siloxanes and Silicones, di-Me, reaction products with silica	OECD 406 Skin Sensitization	skin	Guinea pig	Not sensitizing
antimony trioxide	OECD 406 Skin Sensitization	skin	Guinea pig	Not 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
	Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic	Negative
DIBUTYL PHTHALATE (DBP)	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Yeast Metabolic activation: +/-	Negative
	Experiment: In vitro	Negative

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11 . Toxicological information

Siloxanes and Silicones, di-Me, reaction products with silica	Subject: bacteria/yeast Metabolic activation: +/- Experiment: In vivo Subject: Mammalian-Animal Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative Negative

Conclusion/ Summary : DIBUTYL PHTHALATE (DBP) — Not mutagenic in a standard battery of genetic toxicological tests.

antimony trioxide — Not mutagenic in a standard battery of genetic toxicological tests.

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
Siloxanes and Silicones, di-Me, reaction products with silica	OECD 453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat - Male, Female	1000 mg/kg	24 months; 7 days per week	Negative - Oral - NOEL
antimony trioxide	OECD 451 Carcinogenicity Studies	Rat - Female	45 mg/m³	1 years; 7 hours per day	Positive - Inhalation - LOAEL

Conclusion/Summary : DIBUTYL PHTHALATE (DBP) — In accordance with column 2 of Annex VII - X of Regulation (EC) No 1907/2006, the test for this property of the substance does not need to be conducted.

Carcinogenic class

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
antimony trioxide	A2	2B	-	-	-	-

Reproductive toxicity

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11 . Toxicological information

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
DIBUTYL PHTHALATE (DBP)	No official guidelines	Rat - Male, Female	Positive	Positive	Positive
Siloxanes and Silicones, di-Me, reaction products with silica	OECD 415 One-Generation Reproduction Toxicity Study	Rat - Male, Female	Negative	Negative	Negative
antimony trioxide	OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat - Male, Female	-	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	Rabbit - Female	Negative - Dermal
	OECD 414 Prenatal Developmental Toxicity Study	Rabbit - Female	Negative - Oral
DIBUTYL PHTHALATE (DBP)	No official guidelines	Mouse	Positive - Oral
	No official guidelines	Rat - Male, Female	Positive - Oral
antimony trioxide	OECD 414 Prenatal Developmental Toxicity Study	Rat - Female	Negative - Inhalation

Potential acute health effects

Inhalation : Toxic by inhalation. Slightly irritating to the respiratory system.

Ingestion : No known significant effects or critical hazards.

Skin contact : Slightly irritating to the skin. May cause sensitization by skin contact.

Eye contact : Slightly irritating to the 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	Sub-chronic NOAEL Dermal	Mouse - Male	100 mg/kg

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11 . Toxicological information

DIBUTYL PHTHALATE (DBP)	Study OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Sub-chronic NOAEL Oral	Rat - Male, Female	152 mg/kg/d
	OECD 412 Repeated Dose Inhalation Toxicity: 28-day or 14-day Study	Sub-chronic NOEC Inhalation Dusts and mists	Rat - Male, Female	509 mg/m³
Siloxanes and Silicones, di-Me, reaction products with silica	-	Chronic NOEL Oral	Rat - Male, Female	>=1000 mg/kg/d
antimony trioxide	OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Sub-chronic NOAEL Oral	Rat - Male, Female	1686 to 1879 mg/kg
	OECD 452 Chronic Toxicity Studies	Chronic NOEC Inhalation Dusts and mists	Rat - Male, Female	>0.51 mg/m³

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: the reproductive system.

Carcinogenicity : Contains material which may cause cancer, based on animal data. 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.

Developmental effects : Contains material which may cause developmental abnormalities, based on animal data.

Fertility 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 : 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

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12 . Ecological information

Product/ingredient name	Test	Endpoint		Exposure	Species	Result	
Bisphenol A epoxy resin	EPA CFR	Acute	EC50	72 hours Static	Algae	9.4	mg/l
	OECD 202 *Daphnia* sp. Acute Immobilisation Test	Acute	EC50	48 hours Static	Daphnia	1.7	mg/l
	Unknown guidelines	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 *Daphnia Magna* Reproduction Test	Chronic	NOEC	21 days Semi-static	Daphnia	0.3	mg/l
DIBUTYL PHTHALATE (DBP)	No official guidelines	Acute	EC50	10 days Static	Algae	0.75	mg/l
	No official guidelines	Acute	EC50	24 hours	Bacteria	2.2	mg/l
	EPA OPPTS	Acute	EC50	48 hours Static	Daphnia	2.99	mg/l
	EPA OPPTS	Acute	LC50	96 hours Static	Daphnia	0.5	mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute	LC50	96 hours Static	Fish	0.48	mg/l
	No official guidelines	Chronic	NOEC	10 days Static	Algae	0.39	mg/l
	DIN DIN 38412 Part 27	Chronic	NOEC	30 minutes Static	Bacteria	>10	mg/l
	No official guidelines	Chronic	NOEC	10 days	Daphnia	0.1	mg/l
	No official guidelines	Chronic	NOECr	99 days	Fish	0.1	mg/l
antimony trioxide	OECD 201 Alga, Growth Inhibition Test	Acute	EC50	72 hours Static	Algae	>36.6	mg/l
	Unknown guidelines	Acute	LC50	96 hours Static	Daphnia	1.77	mg/l
	Unknown guidelines	Acute	LC50	96 hours Static	Fish	14.4	mg/l
	OECD 211 *Daphnia Magna* Reproduction Test	Chronic	NOEC	21 days Semi-static	Daphnia	1.74	mg/l
	Unknown guidelines	Chronic	NOEC	28 days Flow-through	Fish	1.13	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 %
DIBUTYL PHTHALATE (DBP)	EPA OPPTS	21 days	>97 %
	EU EC C.4-C Biodegradation: Determination of the "Ready" Biodegradability: Carbon Dioxide Evolution Test	28 days	81 %

Conclusion/Summary :

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12 . Ecological information

Bisphenol A epoxy resin	Not readily biodegradable.
DIBUTYL PHTHALATE (DBP)	Readily biodegradable
Siloxanes and Silicones, di-Me, reaction products with silica	Eliminated by adsorption onto effluent treatment sludge.

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
DIBUTYL PHTHALATE (DBP)	Fresh water 2.7 days	-	Readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Bisphenol A epoxy resin	3.242	31	low
DIBUTYL PHTHALATE (DBP)	4.46	<1	low

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. (DIBUTYL PHTHALATE, BISPHENOL A EPOXY RESIN) Marine pollutant

TDG : Environmentally hazardous substance, liquid, n.o.s. (DIBUTYL PHTHALATE, BISPHENOL A EPOXY RESIN) Marine pollutant

IMDG : Environmentally hazardous substance, liquid, n.o.s. (DIBUTYL PHTHALATE, BISPHENOL A EPOXY RESIN). Marine pollutant

IATA : Environmentally hazardous substance, liquid, n.o.s. (DIBUTYL PHTHALATE, BISPHENOL A EPOXY RESIN)

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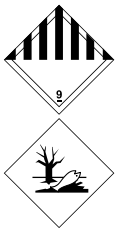
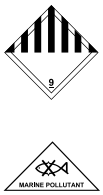
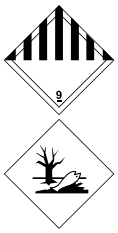
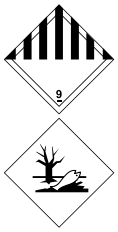
14 . Transport information

Regulatory information	UN number	Classes	PG*	Label	Additional information
DOT Classification	UN3082	9	III		Marine pollutants are 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

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15 . Regulatory information

United States

HCS Classification : Toxic material
Sensitizing material
Carcinogen
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 : Immediate (acute) health hazard
Delayed (chronic) health hazard

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

Product name	CAS number	Concentration %
Dibutyl phthalate	84-74-2	10.8
antimony trioxide	1309-64-4	10.466

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

SARA 313 Form R - Reporting requirements :

Product name	CAS number	Concentration %
DIBUTYL PHTHALATE (DBP)	84-74-2	10.8
antimony trioxide	1309-64-4	10.466

CERCLA Hazardous substances :

Components	Concentration %	Section 304 CERCLA Hazardous Substance	CERCLA Reportable Quantity (Lbs)	Product Reportable Quantity (Lbs)
dibutyl phthalate	7 - 13	Listed	10	108
antimony trioxide	7 - 13	Listed	1000	9555

State regulations

PENNSYLVANIA - RTK : Dibutyl phthalate, antimony trioxide

California Prop 65 : **WARNING:** This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Ingredient name	Cancer	Reproductive
DIBUTYL PHTHALATE (DBP)	No.	Yes.
antimony trioxide	Yes.	No.
Arsenic and compounds	Yes.	No.
lead	Yes.	Yes.

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15 . Regulatory information

International regulations

Canada

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

CEPA DSL : 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: 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 : HARMFUL IF INHALED. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA. POSSIBLE DEVELOPMENTAL HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE ADVERSE DEVELOPMENTAL EFFECTS, BASED ON ANIMAL DATA.

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 : **2/14/2014.**

Date of issue : 2/14/2014.

Date of previous issue : 2/14/2014.

Version : 2

Indicates information that has changed from previously issued version.

Notice to reader

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16 . Other information

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.

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Material Safety Data Sheet

HUNTSMAN
Enriching lives through innovation

EPIBOND® 1544 C US

1 . Product and company identification

Product name : **EPIBOND® 1544 C US**
Material uses : Hardener for adhesive systems
(M)SDS # : 00055235
Validation date : 9/18/2014.
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.]
Odor : Ammoniacal. mild
Color : 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. MAY CAUSE ALLERGIC SKIN REACTION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT IRRITATION. 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

Name	CAS number	%
Diethylenetriamine	111-40-0	30 - 60
Bisphenol A	80-05-7	30 - 60
Ethanolamine	141-43-5	7 - 13

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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: >98°C (>208.4°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.

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.

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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
Diethylenetriamine	**ACGIH TLV (United States, 6/2013). Absorbed through skin.** TWA: 4.2 mg/m³ 8 hours. TWA: 1 ppm 8 hours.
Ethanolamine	**ACGIH TLV (United States, 6/2013).** STEL: 15 mg/m³ 15 minutes. STEL: 6 ppm 15 minutes. TWA: 7.5 mg/m³ 8 hours. TWA: 3 ppm 8 hours. **OSHA PEL (United States, 2/2013).** TWA: 6 mg/m³ 8 hours. TWA: 3 ppm 8 hours.

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 : 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.

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8 . Exposure controls/personal protection

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. > 8 hours (breakthrough time): Ethyl Vinyl Alcohol Laminate (EVAL), butyl rubber

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 and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

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 : Amber.

Odor : Ammoniacal. mild

pH : Not available.

Boiling/condensation point : Not available.

Melting/freezing point : Not available.

Flash point : Closed cup: >98°C (>208.4°F)

Flammable limits : Not available.

Auto-ignition temperature : Not available.

Vapor pressure : <0.14 kPa (<1.05 mm Hg) [room temperature]

Specific gravity : Not available.

Water solubility : partially soluble

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

Density : 1 g/cm³ [25°C (77°F)]

Vapor density : Not available.

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

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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 : Avoid increased storage temperature.

Materials to avoid : strong acids, strong bases, strong oxidising agents

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	0.185 mg/l
	No official guidelines	LD50 Dermal	Rabbit	1045 mg/kg
	No official guidelines	LD50 Oral	Rat - Male	1620 mg/kg
Bisphenol A	Unknown guidelines	LC50 Inhalation Dusts and mists	Rat - Male, Female	>170 mg/m³
	Unknown guidelines	LD50 Dermal	Rabbit - Male	6400 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male, Female	2000 to 5000 mg/kg
Ethanolamine	No official guidelines	LC50 Inhalation Vapor	Rat - Male, Female	>1.3 mg/l
	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rabbit - Male, Female	2504 to 2881 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male, Female	1089 mg/kg

Irritation/Corrosion

Product/ingredient name	Test	Species	Result
Diethylenetriamine	No official guidelines	Rabbit	Skin - Corrosive
	No official guidelines	Rabbit	Eyes - Corrosive
Bisphenol A	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin - Non-irritant.
	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Severe irritant
Ethanolamine	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin - Corrosive
	No official guidelines	Rabbit	Eyes - Corrosive

Conclusion/ Summary

Skin :
Diethylenetriamine — Corrosive to the skin.
Bisphenol A — Non-irritating to the skin.
Ethanolamine — Corrosive to the skin.

Eyes :
Diethylenetriamine — Corrosive to eyes.
Bisphenol A — Severely irritating to eyes.
Ethanolamine — Corrosive to eyes.

Respiratory :

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11 . Toxicological information

Diethylenetriamine	No additional information.
Bisphenol A	No additional information.
Ethanolamine	No additional information.

Sensitizer

Product/ingredient name	Test	Route of exposure	Species	Result
Diethylenetriamine	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitizing
	No official guidelines	Respiratory	Mouse	Not sensitizing
Bisphenol A	OECD 429 Skin Sensitization: Local Lymph Node Assay	skin	Mouse	Not sensitizing
Ethanolamine	No official guidelines	skin	Guinea pig	Not sensitizing

Mutagenicity

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

Conclusion/ Summary	:	Diethylenetriamine	No mutagenic effect.
		Ethanolamine	Not mutagenic in a standard battery of genetic toxicological tests.

Carcinogenicity

Product/ingredient name	Test	Species	Dose	Exposure	Result/Result type
Diethylenetriamine	No official guidelines	Mouse - Male	56.3 mg/kg	3 days per week	Negative - Dermal - NOEL
Bisphenol A	-	Rat - Male, Female	-	103 weeks; 7 days per week	Negative - Oral - NOAEL

Reproductive toxicity

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11 . Toxicological information

Product/ingredient name	Test	Species	Maternal toxicity	Fertility	Developmental effects
Diethylenetriamine	OECD 421 Reproduction/ Developmental Toxicity Screening Test	Rat - Male, Female	Positive	Positive	Negative
Bisphenol A	OECD 416 Two-Generation Reproduction Toxicity Study	Rat - Male, Female	Positive	Negative	Negative
Ethanolamine	OECD 416 Two-Generation Reproduction Toxicity Study	Rat - Male, Female	Negative	Negative	Negative

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type
Bisphenol A	OECD 416 Two-Generation Reproduction Toxicity Study	Rat - Female	Negative - Oral
Ethanolamine	OECD 414 Prenatal Developmental Toxicity Study	Rat	Negative - Oral
	OECD 414 Prenatal Developmental Toxicity Study	Rat	Negative - Dermal

Potential acute health effects

Inhalation : Very toxic by inhalation. Slightly irritating to the respiratory system.

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

Skin contact : Corrosive to the skin. Causes burns. Harmful 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	OECD No official guidelines	Sub-chronic NOEL Oral Chronic NOAEL Dermal	Rat - Male, Female Rat - Male, Female	70 to 80 mg/kg/d 114 mg/kg/d
	No official guidelines	Sub-acute NOEC Inhalation Vapor	Rat - Male, Female	550 mg/m³
Bisphenol A	OECD 407 Repeated Dose 28-day Oral Toxicity Study in Rodents	Sub-chronic LOAEL Oral	Rat - Male, Female	600 mg/kg
	Unknown guidelines	Sub-chronic NOEC Inhalation Dusts and mists	Rat - Male, Female	10 mg/m³
Ethanolamine	OECD 416 Two-Generation Reproduction	Sub-acute NOAEL Oral	Rat - Male, Female	300 mg/kg/d

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11 . Toxicological information

	Toxicity Study OECD 412 Repeated Dose Inhalation Toxicity: 28-day or 14-day Study	Sub-acute NOEC Inhalation Vapor	Rat - Male, Female	10 mg/m³

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, the nervous system, liver, upper respiratory tract, central nervous system (CNS).

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 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.

Aquatic ecotoxicity

Product/ingredient name	Test	Endpoint		Exposure	Species	Result	
Diethylenetriamine	No official guidelines	Acute	EC50	48 hours Static	Daphnia	32	mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute	EbC50 (biomass)	72 hours Static	Algae	1164	mg/l
	EU EC C.1 Acute Toxicity for Fish	Acute	LC50	96 hours Semi-static	Fish	430	mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic	NOEC	72 hours Static	Algae	10	mg/l
	No official guidelines	Chronic	NOEC	3 hours Static	Bacteria	6	mg/l
	EU	Chronic	NOEC	21 days Semi-static	Daphnia	5.6	mg/l
	OECD OECD 210 - Fish, Early-Life Stage Toxicity Test	Chronic	NOEC	28 days Semi-static	Fish	10	mg/l
Bisphenol A	-	Acute	EC50	96 hours	Algae	2.5 to 3.1	mg/l
	-	Acute	EC50	48 hours	Daphnia	3.9 to 10.2	mg/l
	-	Acute	LC50	96 hours	Fish	7.5	mg/l

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12 . Ecological information

	EPA OPPTS	Chronic	NOEC	444 days Flow-through	Fish	0.016	mg/l
Ethanolamine	EU EC C.2 Acute Toxicity for Daphnia	Acute	EC50	48 hours Static	Daphnia	65	mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute	ErC50 (growth rate)	72 hours	Algae	2.5	mg/l
	Unknown guidelines	Acute	LC50	96 hours Semi-static	Fish	349	mg/l
	OECD 209 Activated Sludge, Respiration Inhibition Test	Chronic	EC10	30 minutes Static	Bacteria	>1000	mg/l
	OECD 211 *Daphnia Magna* Reproduction Test	Chronic	NOEC	21 days	Daphnia	0.85	mg/l
	OECD OECD 210 - Fish, Early-Life Stage Toxicity Test	Chronic	NOEC	30 days	Fish	1.2	mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic	NOECr	72 hours	Algae	1	mg/l

Persistence and degradability

Product/ingredient name	Test	Period	Result
Diethylenetriamine	OECD 301D Ready Biodegradability - Closed Bottle Test	21 days	87 %
Bisphenol A	-	28 days	1 to 2 %
Ethanolamine	OECD 301A Ready Biodegradability - DOC Die-Away Test	21 days	>90 %

Conclusion/Summary : Diethylenetriamine — Readily biodegradable
Ethanolamine — Readily biodegradable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Diethylenetriamine	-	50%; 0.11 day(s)	Readily
Bisphenol A	-	-	Not readily
Ethanolamine	-	50%; 0.45 day(s)	Readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Diethylenetriamine	-1.58	0.3 to 6.3	low
Ethanolamine	-1.31	-	low

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

Other ecological information

BOD5 : Not Determined

COD : Not Determined

TOC : Not Determined

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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 : Amines, liquid, corrosive, n.o.s. (Diethylenetriamine, Ethanolamine). Marine pollutant (Bisphenol A)

TDG : Amines, liquid, corrosive, n.o.s.(Diethylenetriamine , Ethanolamine). Marine pollutant (Bisphenol A)

IMDG : Amines, liquid, corrosive, n.o.s. (Diethylenetriamine , Ethanolamine). Marine pollutant (Bisphenol A)

IATA : Amines, liquid, corrosive, n.o.s. (Diethylenetriamine , Ethanolamine)

Regulatory information	UN number	Classes	PG*	Label	Additional information
DOT Classification	UN2735	8	II		Marine pollutants are 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	UN2735	8	II		-
IMDG Class	UN2735	8	II		**Emergency schedules (EmS)** F-A S-B

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14 . Transport information

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 : Immediate (acute) health hazard
Delayed (chronic) health hazard

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

SARA 313 Form R - Reporting requirements

Product name	CAS number	Concentration %
Bisphenol A	80-05-7	37.913

CERCLA Hazardous substances : No ingredients listed.

State regulations

PENNSYLVANIA - RTK : Diethylenetriamine, Bisphenol A, Ethanolamine

California Prop 65 : **WARNING:** This product contains less than 0.1% of a chemical known to the State of California to cause cancer.

Ingredient name	Cancer	Reproductive
Diethanolamine	Yes.	No.

International regulations

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15 . Regulatory information

Canada

WHMIS (Canada) : Class D-1A: Material causing immediate and serious 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.

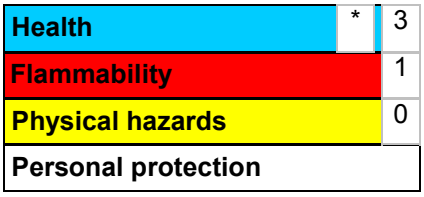
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

International lists : **Australia inventory (AICS)**: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: All components are listed or exempted.
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

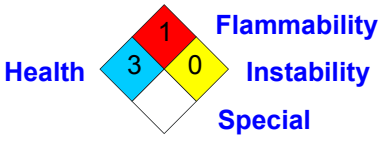
Label requirements : MAY BE FATAL IF INHALED. CAUSES EYE AND SKIN BURNS. MAY CAUSE ALLERGIC SKIN REACTION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

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



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

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



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Notice to reader

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16 . Other information

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