

Material Safety Data Sheet

EPIBOND® 420 A US

1. Product and company identification

Product name : EPIBOND® 420 A US
Material uses : Resin for adhesive systems
MSDS # : 00052601
Validation date : 1/25/2012.
Print date : 1/25/2012.

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. [Paste.]
Odor : Odorless.
Color : Yellow.

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>
Reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	25068-38-6	60 - 100

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.

4 . First aid measures

- 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** : No specific data.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

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

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store between the following temperatures: 2 to 40°C (35.6 to 104°F). 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.
- Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Respiratory** : In case of inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. >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.
- 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. [Paste.]
Color : Yellow.
Odor : Odorless.

Important health, safety and environmental information

- 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.
Decomposition temperature : >150°C (>302°F)

Vapor pressure : >0.13 kPa (>0.975 mm Hg) [20°C]
Specific gravity : 1.1
Water solubility : practically insoluble
Partition coefficient: n-octanol/water (log Kow) : Not available.
Viscosity : Dynamic: 180000 mPa·s (180000 cP)
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.
- 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

Potential acute health effects

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

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
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11 . Toxicological information

Reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
	LD50 Oral	Rat - Female	>2000 mg/kg	-
	LC0 Inhalation Vapor	Rat - Male	0.00001 ppm	5 hours

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	Sub-chronic NOAEL Oral	Rat - Male, Female	50 mg/kg	14 weeks; 7 days per week
	Sub-chronic NOEL : Dermal	Rat - Male, Female	10 mg/kg	13 weeks; 5 days per week
	Sub-chronic NOAEL Dermal	Mouse - Male	100 mg/kg	13 weeks; 3 days per week

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	Skin - Mild irritant	Rabbit	-	-	-
	Eyes - Mild irritant	Rabbit	-	-	-

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

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

Sensitizer

Product/ingredient name	Route of exposure	Species	Result
Reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	skin	Mouse	Sensitizing

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	Negative - Oral - NOAEL	Rat - Male, Female	15 mg/kg	2 years; 7 days per week
	Negative - Dermal - NOEL :	Rat - Female	1 mg/kg	2 years; 5 days per week
	Negative - Dermal - NOEL :	Mouse - Male	0.1 mg/kg	2 years; 3 days per week

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Positive
	OECD 476 <i>In vitro</i> Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic Metabolic activation: +/-	Positive
	OECD 478 Genetic Toxicology: Rodent Dominant Lethal Test	Experiment: In vivo Subject: Mammalian-Animal	Negative

11 . Toxicological information

EPA OPPTS	Cell: Germ Experiment: In vivo Subject: Mammalian- Animal Cell: Somatic	Negative
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Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Reaction product: bisphenol A- (epichlorhydrin); epoxy resin (number average molecular weight < 700)	Negative - Oral	Rat - Female	>540 mg/kg NOEL :	10 days
	Negative - Dermal	Rabbit - Female	>300 mg/kg NOEL :	13 days; 6 hours per day
	Negative - Oral	Rabbit - Female	180 mg/kg NOAEL	13 days

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Development toxin	Species	Dose	Exposure
Reaction product: bisphenol A- (epichlorhydrin); epoxy resin (number average molecular weight < 700)	Negative	Negative	Negative	Rat - Male, Female	Oral: 540 mg/kg NOEL :	238 days; 7 days per week

Potential chronic health effects

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

Medical conditions aggravated by over-exposure

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

12 . Ecological information

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

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
Reaction product: bisphenol A- (epichlorhydrin); epoxy resin (number average molecular weight < 700)	-	Acute EC50 9.4 mg/L Fresh water	Algae	72 hours Static
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50 1.7 mg/L Fresh water	Daphnia	48 hours Static
		Acute IC50 >100		

12 . Ecological information

-	mg/L Fresh water	Bacteria	3 hours	Static
OECD 203 Fish, Acute Toxicity Test	Acute LC50 1.5 mg/L Fresh water	Fish	96 hours	Static
OECD 211 <i>Daphnia Magna</i> Reproduction Test	Chronic NOEC 0.3 mg/L Fresh water	Daphnia	21 days	Semi-static

Biodegradability

Product/ingredient name

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

Test

OECD Derived from OECD 301F (Biodegradation Test)

Result

5 % - Not readily - 28 days

Dose

20 mg/L Oxygen consumption

Inoculum

-

Other ecological information

Biological Oxygen Demand (BOD 5 DAY) : Not Determined

Chemical Oxygen Demand (COD) : Not Determined

Product/ingredient name

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

Aquatic half-life

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

Photolysis

-

Biodegradability

Not readily

Bioaccumulative potential

Product/ingredient name

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

LogP_{ow}

3.242

BCF

31

Potential

low

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

PBT : Not applicable.

Other information

13 . Disposal considerations

Waste disposal









- : The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. 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) 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	 	-
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** : Irritating material
Sensitizing material
- U.S. Federal regulations** : **United States inventory (TSCA 8b)**: All components are listed or exempted.
- TSCA 5(a)2 final significant new use rule (SNUR)** : None.
- TSCA 5(e) substance consent order** : None.
- TSCA 12(b) one-time export notification:** : None.
- TSCA 12(b) annual export notification** : None.
- SARA 302/304/311/312 extremely hazardous substances** : **SARA 302/304/311/312 extremely hazardous substances**: No Ingredient Listed
- SARA 311/312 hazard identification** : **SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: No Ingredient Listed
- Clean Air Act Section 111 - Volatile Organic Compounds (VOC)**
- Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)** : Product name CAS number Concentration
No Ingredients Listed.
- Clean Air Act - Ozone Depleting Substances (ODS)** : This product does not contain nor is it manufactured with ozone depleting substances.
- SARA 313** : No ingredients listed.

CERCLA: Hazardous substances: No ingredients listed.

STATE REGULATIONS:

PENNSYLVANIA - RTK: None of the components are 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.

Canada

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

CEPA DSL : All components are listed or exempted.

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

15 . Regulatory information

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

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
Personal protection	

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

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



- Date of printing** : 1/25/2012.
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Version : 1

✔ Indicates information that has changed from previously issued version.

Notice to reader

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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.

16 . Other information

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