

**EPIBOND® 420 A US**

Version 1.0      Revision Date: 02/20/2017      SDS Number: 400001009160      Date of last issue: -  
Date of first issue: 02/20/2017

**SECTION 1. IDENTIFICATION**

Product name : EPIBOND® 420 A US

**Manufacturer or supplier's details**

Company name of supplier : Huntsman Advanced Materials Americas LLC  
Address : P.O. Box 4980  
The Woodlands,  
TX 77387  
United States of America (USA)  
Telephone : Non-Emergency: (800) 257-5547  
E-mail address of person responsible for the SDS : MSDS@huntsman.com  
Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

**Recommended use of the chemical and restrictions on use**

Recommended use : Epoxy constituents

**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the Hazardous Products Regulations**

Skin irritation : Category 2  
Eye irritation : Category 2A  
Skin sensitisation : Category 1  
Acute aquatic toxicity : Category 2  
Chronic aquatic toxicity : Category 2

**GHS label elements**

Hazard pictograms :



Signal word : Warning

Hazard statements : H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**  
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
P264 Wash skin thoroughly after handling.  
P272 Contaminated work clothing should not be allowed out of

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the workplace.

P273 Avoid release to the environment.

P280 Wear protective gloves/ eye protection/ face protection.

**Response:**

P302 + P352 IF ON SKIN: Wash with plenty of water.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P362 + P364 Take off contaminated clothing and wash it before reuse.

P391 Collect spillage.

**Storage:**

Not available

**Disposal:**

P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

**Other hazards**

None known.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture

**Hazardous components**

Chemical name	CAS-No.	Concentration (% w/w)
Bisphenol A epoxy resin	25068-38-6	93 - 95

**SECTION 4. FIRST AID MEASURES**

- General advice : Move out of dangerous area.  
Show this safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.
- If inhaled : If unconscious, place in recovery position and seek medical advice.  
If symptoms persist, call a physician.
- In case of skin contact : If skin irritation persists, call a physician.  
If on skin, rinse well with water.  
If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.



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If swallowed : Keep respiratory tract clear.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed : None known.

**SECTION 5. FIREFIGHTING MEASURES**

Suitable extinguishing media : No data is available on the product itself.

Unsuitable extinguishing media : High volume water jet

Specific hazards during firefighting : No data is available on the product itself.

Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : No hazardous combustion products are known

No data is available on the product itself.

Specific extinguishing methods : No data is available on the product itself.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.

Environmental precautions : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).  
Keep in suitable, closed containers for disposal.



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**SECTION 7. HANDLING AND STORAGE**

- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- Advice on safe handling : Do not breathe vapours/dust.  
Avoid exposure - obtain special instructions before use.  
Avoid contact with skin and eyes.  
For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
Dispose of rinse water in accordance with local and national regulations.  
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Electrical installations / working materials must comply with the technological safety standards.
- Materials to avoid : Strong acids  
  
Strong bases  
  
Strong oxidizing agents

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Contains no substances with occupational exposure limit values.

**Personal protective equipment**

Hand protection

Material : butyl-rubber  
Break through time : > 8 h

Solvent-resistant gloves (butyl-rubber)  
Nitrile rubber  
10 - 480 min

Neoprene gloves

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Eye wash bottle with pure water  
Tightly fitting safety goggles



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Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and at the end of workday.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance : paste

Colour : yellow

Odour : odourless

Odour Threshold : No data is available on the product itself.

pH : No data is available on the product itself.

Freezing point : No data is available on the product itself.

Melting point : No data is available on the product itself.

Boiling point : No data is available on the product itself.

Flash point : 182 °C  
Method: closed cup

Evaporation rate : No data is available on the product itself.

Flammability (solid, gas) : No data is available on the product itself.

Flammability (liquids) : No data is available on the product itself.

Upper explosion limit : No data is available on the product itself.

Lower explosion limit : No data is available on the product itself.

Vapour pressure : > 1.3 hPa (20 °C)

Relative vapour density : No data is available on the product itself.

Relative density : 1.1

Density : No data is available on the product itself.

Solubility(ies)  
Water solubility : practically insoluble (20 °C)

Solubility in other solvents : No data is available on the product itself.

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Partition coefficient: n-octanol/water : No data is available on the product itself.

Auto-ignition temperature : No data is available on the product itself.

Decomposition temperature : > 150 °C  
Method: estimated

Self-Accelerating decomposition temperature (SADT) : No data is available on the product itself.

Viscosity  
Viscosity, dynamic : ca. 180,000 mPa.s (25 °C)

Explosive properties : No data is available on the product itself.

Oxidizing properties : No data is available on the product itself.

Particle size : No data is available on the product itself.

**SECTION 10. STABILITY AND REACTIVITY**

Reactivity : No decomposition if stored and applied as directed.

Chemical stability : No decomposition if stored and applied as directed.

Possibility of hazardous reactions : No decomposition if stored and applied as directed.

Conditions to avoid : No data available

Hazardous decomposition products : Carbon oxides  
Burning produces noxious and toxic fumes.

**SECTION 11. TOXICOLOGICAL INFORMATION**

Information on likely routes of exposure : No data is available on the product itself.

**Acute toxicity****Components:**

Bisphenol A epoxy resin:

Acute oral toxicity Components : LD50 (Rat, female): > 2,000 mg/kg  
Method: OECD Test Guideline 420  
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : No data available

Acute dermal toxicity - Product : Acute toxicity estimate : > 5,000 mg/kg  
Method: Calculation method



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Acute toxicity (other routes of administration) : No data available

**Skin corrosion/irritation****Product:**

Remarks: May cause skin irritation and/or dermatitis.

**Serious eye damage/eye irritation****Product:**

Remarks: May cause irreversible eye damage.

**Respiratory or skin sensitisation****Product:**

Remarks: Causes sensitisation.

Assessment: No data available

**Germ cell mutagenicity****Components:**

Bisphenol A epoxy resin:  
Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: positive

Concentration: 0 - 5000 ug/plate  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: positive

**Components:**

Bisphenol A epoxy resin:  
Genotoxicity in vivo : Cell type: Germ  
Application Route: Oral  
Method: OECD Test Guideline 478  
Result: negative

Cell type: Somatic  
Application Route: Oral  
Dose: 0 - 5000 mg/kg  
Method: OPPTS 870.5395  
Result: negative

**Components:**

Bisphenol A epoxy resin:  
Germ cell mutagenicity-  
Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Germ cell mutagenicity- : No data available



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Assessment

**Carcinogenicity****Components:**

Bisphenol A epoxy resin:  
 Species: Rat, (male and female)  
 Application Route: Oral  
 Exposure time: 24 month(s)  
 Dose: 15 mg/kg  
 Frequency of Treatment: 7 days/week  
 Method: OECD Test Guideline 453  
 Result: negative

Species: Mouse, (male)  
 Application Route: Dermal  
 Exposure time: 24 month(s)  
 Dose: 0.1 mg/kg  
 Frequency of Treatment: 3 days/week  
 Method: OECD Test Guideline 453  
 Result: negative

Species: Rat, (female)  
 Application Route: Dermal  
 Exposure time: 24 month(s)  
 Dose: 1 mg/kg  
 Frequency of Treatment: 5 days/week  
 Method: OECD Test Guideline 453  
 Result: negative

Carcinogenicity - Assessment : No data available

**ACGIH**

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**Reproductive toxicity****Components:**

Bisphenol A epoxy resin:  
 Effects on fertility : Test Type: Two-generation study  
 Species: Rat, male and female  
 Application Route: Oral  
 Dose: >750 milligram per kilogram  
 General Toxicity - Parent: No-observed-effect level: 540 mg/kg body weight  
 General Toxicity F1: No-observed-effect level: 540 mg/kg body weight  
 Symptoms: No adverse effects  
 Method: OECD Test Guideline 416  
 Result: No effects on fertility and early embryonic development were detected.

**Components:**



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Bisphenol A epoxy resin:  
Effects on foetal  
development

: Species: Rabbit, female  
Application Route: Dermal  
General Toxicity Maternal: No observed adverse effect level:  
30 mg/kg body weight  
Method: Other guidelines  
Result: No teratogenic effects

Species: Rabbit, female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
60 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

Species: Rat, female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
180 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

Reproductive toxicity -  
Assessment : No data available

**STOT - single exposure**

No data available

**STOT - repeated exposure**

No data available

**Repeated dose toxicity****Components:**

Bisphenol A epoxy resin:  
Species: Rat, male and female  
NOAEL: 50 mg/kg  
Application Route: Ingestion  
Exposure time: 14 Weeks  
Number of exposures: 7 d  
Method: Subchronic toxicity

Species: Rat, male and female  
NOEL: 10 mg/kg  
Application Route: Skin contact  
Exposure time: 13 Weeks  
Number of exposures: 5 d  
Method: Subchronic toxicity

Species: Mouse, male  
NOAEL: 100 mg/kg  
Application Route: Skin contact  
Exposure time: 13 Weeks  
Number of exposures: 3 d



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Method: Subchronic toxicity

Repeated dose toxicity - Assessment : No data available

**Aspiration toxicity**

No data available

**Experience with human exposure**

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

**Toxicology, Metabolism, Distribution**

No data available

**Neurological effects**

No data available

**Further information****Product:**

Remarks: No data available

**Other health hazards**

No data available

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:**

Bisphenol A epoxy resin:

Toxicity to fish

: LC50 (Oncorhynchus mykiss (rainbow trout)): 1.5 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

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**Components:**

Bisphenol A epoxy resin:  
 Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.7 mg/l  
 Exposure time: 48 h  
 Test Type: static test  
 Test substance: Fresh water

**Components:**

Bisphenol A epoxy resin:  
 Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 9.4 mg/l  
 Exposure time: 72 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: EPA-660/3-75-009

M-Factor (Acute aquatic toxicity) : No data available

Toxicity to fish (Chronic toxicity) : No data available

**Components:**

Bisphenol A epoxy resin:  
 Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.3 mg/l  
 Exposure time: 21 d  
 Test Type: semi-static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 211

M-Factor (Chronic aquatic toxicity) : No data available

**Components:**

Bisphenol A epoxy resin:  
 Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l  
 Exposure time: 3 h  
 Test Type: static test  
 Test substance: Fresh water

Toxicity to soil dwelling organisms : No data available

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment  
 Acute aquatic toxicity : No data available

Chronic aquatic toxicity : No data available



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Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:**

Bisphenol A epoxy resin:

Biodegradability : Inoculum: Sewage (STP effluent)  
Concentration: 20 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 5 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

Biochemical Oxygen Demand (BOD) : No data available

Chemical Oxygen Demand (COD) : No data available

BOD/COD : No data available

ThOD : No data available

BOD/ThOD : No data available

Dissolved organic carbon (DOC) : No data available

Physico-chemical removability : No data available

**Components:**

Bisphenol A epoxy resin:

Stability in water : Degradation half life(DT50): 4.83 d (25 °C) pH: 4  
Method: OECD Test Guideline 111  
Remarks: Fresh water

Degradation half life(DT50): 7.1 d (25 °C) pH: 9  
Method: OECD Test Guideline 111  
Remarks: Fresh water

Degradation half life(DT50): 3.58 d (25 °C) pH: 7  
Method: OECD Test Guideline 111  
Remarks: Fresh water

Photodegradation : No data available

Impact on Sewage Treatment : No data available



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**Bioaccumulative potential****Components:**

Bisphenol A epoxy resin:  
Bioaccumulation : Bioconcentration factor (BCF): 31  
Remarks: Does not bioaccumulate.

**Components:**

Bisphenol A epoxy resin:  
Partition coefficient: n-  
octanol/water : log Pow: 3.242 (25 °C)  
pH: 7.1  
Method: OECD Test Guideline 117

**Mobility in soil**

Mobility : No data available

**Components:**

Bisphenol A epoxy resin:  
Distribution among  
environmental compartments : Koc: 445  
Stability in soil : No data available

**Other adverse effects**

Environmental fate and  
pathways : No data available

Results of PBT and vPvB  
assessment : No data available

Endocrine disrupting  
potential : No data available

Adsorbed organic bound  
halogens (AOX) : No data available

**Hazardous to the ozone layer**

Ozone-Depletion Potential Not applicable

Additional ecological  
information - Product : An environmental hazard cannot be excluded in the event of  
unprofessional handling or disposal.  
Toxic to aquatic life with long lasting effects.

Global warming potential  
(GWP) : No data available

**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : The product should not be allowed to enter drains, water  
courses or the soil.

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Do not contaminate ponds, waterways or ditches with chemical or used container.

Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.

**SECTION 14. TRANSPORT INFORMATION****International Regulations****TDG**

UN number : UN 3082  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
(BISPHENOL A EPOXY RESIN)  
Class : 9  
Packing group : III  
Labels : 9

**IATA**

UN/ID No. : UN 3082  
Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.  
(BISPHENOL A EPOXY RESIN)  
Class : 9  
Packing group : III  
Labels : Miscellaneous  
Packing instruction (cargo aircraft) : 964  
Packing instruction (passenger aircraft) : 964

**IMDG**

UN number : UN 3082  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
(BISPHENOL A EPOXY RESIN)  
Class : 9  
Packing group : III  
Labels : 9  
EmS Code : F-A, S-F  
Marine pollutant : yes

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**National Regulations**

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**TDG**

UN number	: UN 3082
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BISPHENOL A EPOXY RESIN)
Class	: 9
Packing group	: III
Labels	: 9
ERG Code	: 171
Marine pollutant	: yes(BISPHENOL A EPOXY RESIN)

**SECTION 15. REGULATORY INFORMATION****The components of this product are reported in the following inventories:**

CH INV	: The formulation contains substances listed on the Swiss Inventory, On the inventory, or in compliance with the inventory
DSL	: All components of this product are on the Canadian DSL
AICS	: On the inventory, or in compliance with the inventory
NZIoC	: On the inventory, or in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or in compliance with the inventory
TSCA	: On the inventory, or in compliance with the inventory

**Inventories**

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

**Canada. CEPA 1999 Significant New Activity (SNAc) List**

No substances are subject to a Significant New Activity Notification.



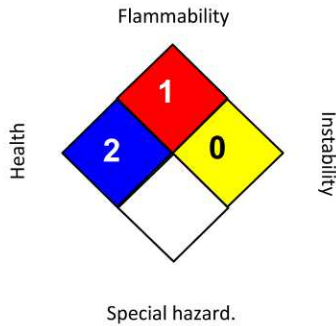
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**SECTION 16. OTHER INFORMATION**

**Further information**

**NFPA:**



**HMIS® IV:**

<b>HEALTH</b>	<b>2</b>
<b>FLAMMABILITY</b>	<b>1</b>
<b>PHYSICAL HAZARD</b>	<b>0</b>

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

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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.

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Version 1.1      Revision Date: 04/27/2017      SDS Number: 400001008535      Date of last issue: 10/20/2015  
Date of first issue: 10/20/2015

**SECTION 1. IDENTIFICATION**

Product name : EPIBOND® 420 B US

**Manufacturer or supplier's details**

Company name of supplier : Huntsman Advanced Materials Americas LLC  
Address : 2795 Slough Avenue  
Mississauga, ON L4T 1G2,  
Canada  
Telephone : +1 905 678 9150  
E-mail address of person responsible for the SDS : MSDS@huntsman.com  
Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

**Recommended use of the chemical and restrictions on use**

Recommended use : Hardener

**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the Hazardous Products Regulations**

Skin corrosion : Category 1B  
Serious eye damage : Category 1  
Skin sensitisation : Category 1

**GHS label elements**

Hazard pictograms :



Signal word : Danger

Hazard statements : H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.

Precautionary statements : **Prevention:**  
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
P264 Wash skin thoroughly after handling.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
**Response:**  
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately

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all contaminated clothing. Rinse skin with water.  
 P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.  
 P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.  
 P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.  
 P362 + P364 Take off contaminated clothing and wash it before reuse.  
**Storage:**  
 P405 Store locked up.  
**Disposal:**  
 P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

**Other hazards**

None known.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture

**Hazardous components**

Chemical name	CAS-No.	Concentration (% w/w)
4,7,10-trioxatridecane-1,13-diamine	4246-51-9	61 - 63

**SECTION 4. FIRST AID MEASURES**

General advice : No hazards which require special first aid measures.  
 Move out of dangerous area.  
 Consult a physician.  
 Show this safety data sheet to the doctor in attendance.  
 Do not leave the victim unattended.

If inhaled : Move to fresh air in case of accidental inhalation of dust or fumes from overheating or combustion.  
 If symptoms persist, call a physician.  
  
 If unconscious, place in recovery position and seek medical advice.  
 If symptoms persist, call a physician.

In case of skin contact : Take off contaminated clothing and shoes immediately.  
 Wash off with soap and plenty of water.  
  
 Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.

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- If on skin, rinse well with water.  
If on clothes, remove clothes.
- In case of eye contact : Flush eyes with water as a precaution.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.
- Small amounts splashed into eyes can cause irreversible tissue damage and blindness.  
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
Continue rinsing eyes during transport to hospital.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Clean mouth with water and drink afterwards plenty of water.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.
- Keep respiratory tract clear.  
Do NOT induce vomiting.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : None known.

**SECTION 5. FIREFIGHTING MEASURES**

- Suitable extinguishing media : No data is available on the product itself.
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : No data is available on the product itself.
- Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : No hazardous combustion products are known
- No data is available on the product itself.
- Specific extinguishing methods : No data is available on the product itself.
- Further information : Collect contaminated fire extinguishing water separately. This

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must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.

Environmental precautions : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).  
Keep in suitable, closed containers for disposal.

**SECTION 7. HANDLING AND STORAGE**

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Normal measures for preventive fire protection.

Advice on safe handling : Do not breathe vapours/dust.  
Avoid exposure - obtain special instructions before use.  
Avoid contact with skin and eyes.  
For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
To avoid spills during handling keep bottle on a metal tray.  
Dispose of rinse water in accordance with local and national regulations.  
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.  
Observe label precautions.  
Electrical installations / working materials must comply with the technological safety standards.

Materials to avoid : No special restrictions on storage with other products.

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**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Contains no substances with occupational exposure limit values.

**Personal protective equipment**

- Respiratory protection : No personal respiratory protective equipment normally required.
- Hand protection
- Material : butyl-rubber
- Break through time : > 8 h
- Material : Solvent-resistant gloves (butyl-rubber)
- Material : Nitrile rubber
- Break through time : 10 - 480 min
- Remarks : For prolonged or repeated contact use protective gloves.  
The suitability for a specific workplace should be discussed with the producers of the protective gloves.
- Eye protection : Safety glasses  
Eye wash bottle with pure water  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.
- Skin and body protection : Protective suit  
Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
- Hygiene measures : General industrial hygiene practice.  
When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and at the end of workday.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

- Appearance : liquid
- Colour : blue
- Odour : ammoniacal
- Odour Threshold : No data is available on the product itself.
- pH : No data is available on the product itself.
- Freezing point : No data is available on the product itself.
- Melting point : No data is available on the product itself.

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Boiling point	No data is available on the product itself.
Flash point	: > 110 °C Method: closed cup
Evaporation rate	: No data is available on the product itself.
Flammability (solid, gas)	: No data is available on the product itself.
Flammability (liquids)	: No data is available on the product itself.
Upper explosion limit	: No data is available on the product itself.
Lower explosion limit	: No data is available on the product itself.
Vapour pressure	: < 1.4 hPa (20 °C)
Relative vapour density	: No data is available on the product itself.
Relative density	: 1
Density	: 1 g/cm <sup>3</sup> (25 °C)
Solubility(ies)	
Water solubility	: slightly soluble (20 °C)
Solubility in other solvents	: No data is available on the product itself.
Partition coefficient: n-octanol/water	: No data is available on the product itself.
Auto-ignition temperature	: No data is available on the product itself.
Decomposition temperature	: > 150 °C Method: estimated
Self-Accelerating decomposition temperature (SADT)	: No data is available on the product itself.
Viscosity	
Viscosity, dynamic	: ca. 18,000 mPa.s (25 °C)
Explosive properties	: No data is available on the product itself.
Oxidizing properties	: No data is available on the product itself.
Particle size	: No data is available on the product itself.

**SECTION 10. STABILITY AND REACTIVITY**

Reactivity	: Stable under recommended storage conditions. No decomposition if stored and applied as directed.
Chemical stability	: No decomposition if stored and applied as directed. No decomposition if stored and applied as directed.

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Possibility of hazardous reactions : No hazards to be specially mentioned.  
No decomposition if stored and applied as directed.

Conditions to avoid : No data available  
No data available

Hazardous decomposition products : Carbon oxides  
Nitrogen oxides (NOx)  
Burning produces noxious and toxic fumes.

**SECTION 11. TOXICOLOGICAL INFORMATION**

Information on likely routes of exposure : No data is available on the product itself.

**Acute toxicity**

Acute oral toxicity - Product : Acute toxicity estimate : 4,031 mg/kg  
Method: Calculation method

Acute inhalation toxicity : No data available

Acute dermal toxicity - Product : Acute toxicity estimate : 4,031 mg/kg  
Method: Calculation method

Acute toxicity (other routes of administration) : No data available

**Skin corrosion/irritation****Product:**

Remarks: The product is not considered as being a skin irritant.

Remarks: Extremely corrosive and destructive to tissue.

**Serious eye damage/eye irritation****Product:**

Remarks: According to the classification criteria of the European Union, the product is not considered as being an eye irritant.

Remarks: May cause irreversible eye damage.

**Respiratory or skin sensitisation****Product:**

Remarks: No data available

Remarks: Causes sensitisation.

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**Components:**

4,7,10-trioxatridecane-1,13-diamine:

Assessment: May be harmful if swallowed or in contact with skin., Causes severe skin burns and eye damage.  
May cause an allergic skin reaction.

**Germ cell mutagenicity****Components:**

4,7,10-trioxatridecane-1,13-diamine:

Genotoxicity in vitro : Test Type: Ames test  
Species: Salmonella typhimurium  
Concentration: 5000 ug/plate  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

Test Type: Micronucleus test  
Species: Chinese hamster fibroblasts  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 487  
Result: negative

Test Type: In vitro mammalian cell gene mutation test  
Species: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative

Genotoxicity in vivo : No data available

**Components:**

4,7,10-trioxatridecane-1,13-diamine:

Germ cell mutagenicity- : In vitro tests did not show mutagenic effects  
Assessment

Germ cell mutagenicity- : No data available  
Assessment

**Carcinogenicity**

No data available

Carcinogenicity - : No data available  
Assessment

**ACGIH**

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**Reproductive toxicity****Components:**



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**4,7,10-trioxatridecane-1,13-diamine:**

Effects on fertility : Species: Rat, male and female  
Application Route: Oral  
Dose: 100,300,1000 (600 day7) mg/kg  
Frequency of Treatment: 7 days/week  
General Toxicity - Parent: No observed adverse effect level:  
600 mg/kg body weight  
Fertility: No observed adverse effect level: 600 mg/kg body  
weight  
Early Embryonic Development: No observed adverse effect  
level: 600 mg/kg body weight  
Method: OECD Test Guideline 422

Effects on foetal development : No data available

**Components:****4,7,10-trioxatridecane-1,13-diamine:**

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility,  
or on development, based on animal experiments.

**STOT - single exposure**

No data available

**STOT - repeated exposure**

No data available

**Repeated dose toxicity****Components:****4,7,10-trioxatridecane-1,13-diamine:**

Species: Rat, male and female  
NOAEL: < 100 mg/kg  
Application Route: oral (gavage)  
Number of exposures: daily  
Dose: 100, 300, 1000(600,day7)mg/kg  
Group: yes  
Method: OECD Test Guideline 422

**Components:****4,7,10-trioxatridecane-1,13-diamine:**

Repeated dose toxicity - Assessment : May be harmful if swallowed or in contact with skin., Causes  
severe skin burns and eye damage.  
No adverse effect has been observed in chronic toxicity tests.

**Aspiration toxicity**

No data available

**Experience with human exposure**

General Information: No data available

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Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

**Toxicology, Metabolism, Distribution**

No data available

**Neurological effects**

No data available

**Further information****Product:**

Remarks: No data available

Remarks: No data available

**Other health hazards**

No data available

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:**

4,7,10-trioxatridecane-1,13-diamine:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): > 1,000 mg/l  
Exposure time: 96 h  
Test Type: static test  
Method: DIN 38412

**Components:**

4,7,10-trioxatridecane-1,13-diamine:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 218.16 mg/l  
Exposure time: 48 h  
Test Type: static test  
Method: Directive 67/548/EEC, Annex V, C.2.

**Components:**

4,7,10-trioxatridecane-1,13-diamine:

Toxicity to algae : EC50 (Desmodesmus subspicatus (Scenedesmus

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subspicatus)): > 500 mg/l  
 Exposure time: 72 h  
 Test Type: static test  
 Method: DIN 38412

M-Factor (Acute aquatic toxicity) : No data available

Toxicity to fish (Chronic toxicity) : No data available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : No data available

M-Factor (Chronic aquatic toxicity) : No data available

**Components:**

4,7,10-trioxatridecane-1,13-diamine:

Toxicity to microorganisms : (Pseudomonas putida): 221.9 mg/l  
 End point: Growth rate  
 Exposure time: 17 h  
 Test Type: static test  
 Method: DIN 38412

Toxicity to soil dwelling organisms : No data available

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment Acute aquatic toxicity : No data available

Chronic aquatic toxicity : No data available

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:**

4,7,10-trioxatridecane-1,13-diamine:

Biodegradability : Inoculum: activated sludge  
 Concentration: 30 mg/l  
 Result: Not readily biodegradable.  
 Biodegradation: < 10 %  
 Exposure time: 60 d



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Method: OECD Test Guideline 301B

Biochemical Oxygen Demand (BOD) : No data available

Chemical Oxygen Demand (COD) : No data available

BOD/COD : No data available

ThOD : No data available

BOD/ThOD : No data available

Dissolved organic carbon (DOC) : No data available

Physico-chemical removability : No data available

Stability in water : No data available

Photodegradation : No data available

Impact on Sewage Treatment : No data available

**Bioaccumulative potential**

Bioaccumulation : No data available

**Components:**

4,7,10-trioxatridecane-1,13-diamine:

Partition coefficient: n-octanol/water : log Pow: -1.25 (25 °C)  
pH: 11.1

Method: OECD Test Guideline 107

**Mobility in soil**

Mobility : No data available

Distribution among environmental compartments : No data available

Stability in soil : No data available

**Other adverse effects**

Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

Endocrine disrupting : No data available



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potential

Adsorbed organic bound halogens (AOX) : No data available

**Hazardous to the ozone layer**

Ozone-Depletion Potential : Not applicable

Additional ecological information - Product : There is no data available for this product.  
No data available

Global warming potential (GWP) : No data available

**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : Offer surplus and non-recyclable solutions to a licensed disposal company.

Do not dispose of waste into sewer.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.  
Empty containers should be taken to an approved waste handling site for recycling or disposal.

Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.

**SECTION 14. TRANSPORT INFORMATION****International Regulations****TDG**

UN number : UN 2735  
Proper shipping name : AMINES, LIQUID, CORROSIVE, N.O.S.  
(TRIOXATRIDEKANEDIAMINE)  
Class : 8  
Packing group : II  
Labels : 8

**IATA**

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UN/ID No. : UN 2735  
 Proper shipping name : Amines, liquid, corrosive, n.o.s.  
 (TRIOXATRIDEKANEDIAMINE)  
 Class : 8  
 Packing group : II  
 Labels : Corrosive  
 Packing instruction (cargo aircraft) : 855  
 Packing instruction (passenger aircraft) : 851

**IMDG**

UN number : UN 2735  
 Proper shipping name : AMINES, LIQUID, CORROSIVE, N.O.S.  
 (TRIOXATRIDEKANEDIAMINE)  
 Class : 8  
 Packing group : II  
 Labels : 8  
 EmS Code : F-A, S-B  
 Marine pollutant : no

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**National Regulations****TDG**

UN number : UN 2735  
 Proper shipping name : AMINES, LIQUID, CORROSIVE, N.O.S.  
 (TRIOXATRIDEKANEDIAMINE)  
 Class : 8  
 Packing group : II  
 Labels : 8  
 ERG Code : 153  
 Marine pollutant : no

**SECTION 15. REGULATORY INFORMATION****The components of this product are reported in the following inventories:**

CH INV : On the inventory, or in compliance with the inventory  
 DSL : This product contains one or several components listed in the Canadian NDSL.  
 AICS : On the inventory, or in compliance with the inventory  
 NZIoC : On the inventory, or in compliance with the inventory  
 ENCS : On the inventory, or in compliance with the inventory  
 KECI : On the inventory, or in compliance with the inventory  
 PICCS : On the inventory, or in compliance with the inventory  
 IECSC : Low volume exemption, On the inventory, or in compliance with the inventory  
 TCSI : On the inventory, or in compliance with the inventory  
 TSCA : On the inventory, or in compliance with the inventory

**Inventories**

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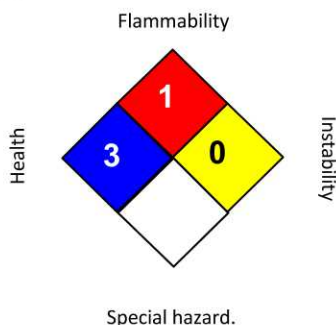
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

**Canada. CEPA 1999 Significant New Activity (SNAc) List**  
No substances are subject to a Significant New Activity Notification.

**SECTION 16. OTHER INFORMATION**

**Further information**

**NFPA:**



**HMIS® IV:**

<b>HEALTH</b>	3
<b>FLAMMABILITY</b>	1
<b>PHYSICAL HAZARD</b>	0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Revision Date : 04/27/2017

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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.

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.

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# SAFETY DATA SHEET

**HUNTSMAN**

Enriching lives through innovation

## EPIBOND® 420 B US

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# Epibond<sup>®</sup> 420 A/B Epoxy Adhesive

## Product Description

Epibond<sup>®</sup> 420 A/B Epoxy Adhesive is a two-component, modified epoxy, room-temperature curing paste with high strength and toughness. It is suitable for a wide variety of metal, honeycomb and fiber-reinforced composite bonding applications requiring high shear strength and good peel strength. Epibond<sup>®</sup> 420 A/B contains 5 mil (125 µm) spacer beads to provide the very uniform bond line required in high stress areas. Epibond<sup>®</sup> 420 A/B structural epoxy adhesive replaces REDUX 410 NA epoxy adhesive and meets the requirements of BMS 5-107.

## Features

- Structural Applications
- Room Temperature Cure Paste
- Extremely Tough and Resilient

## Typical Properties\*

Property	Test Method	Epibond <sup>®</sup> 420 A Resin	Epibond <sup>®</sup> 420 B Hardener	Mixed System
Appearance	Visual	Yellow	Blue	Blue-green
Density g/cm <sup>3</sup>	ASTM D792	1.1	1.0	1.05
Viscosity at 25°C, cP	ASTM D2196	140,000	900	Semi-paste

\*Typical properties are based on Huntsman's test methods. Copies are available upon request.

## Processing

### Mix Ratio

Product	Parts by weight
Epibond <sup>®</sup> 420 A Resin	100
Epibond <sup>®</sup> 420 B Hardener	40

Material temperatures should be above 18°C (65°F) when mixing. Mix the resin and hardener at the above ratio thoroughly for 2-3 minutes to achieve a uniform color. Epibond<sup>®</sup> 420 A/B is available in a 50 mL twin cartridge, and for best results should be dispensed using manual or pneumatic dispensing equipment through a suitable mixing nozzle as shown below:

### Static Mixing Nozzles

Width/Diameter, in	Number of Elements	Nordson EFD Part #	Sulzer Mixpac Part #
0.20	20	7701830	N/A
0.21	21	7701453	MAH 05-21T

For other mixing and application recommendations, please consult your local Huntsman Advanced Materials representative or one of our distributors.

### Processing Data

Parameter	Value
Gel time at 77°F, min	70
Typical Cure Cycles	7 days at 77°F or
	90 min at 175°F or
	Gel at RT + 2 hour at 140°F or
	1 hour at 250°F

### Typical Physical Properties

Unless otherwise stated, the data were determined with typical production batches using standard test methods. They are typical values only, and do not constitute a product specification. Samples were cured for one hour at 250°F. Testing was performed at 77°F (25°C) unless otherwise stated.

Property	Test Method	Value
Tensile lap shear strength, Al-Al, psi (MPa) at 77°F (25°C) at 180°F (82°C) at 250°F (121°C)	ASTM D1002	3,500 (24.1) 500 (3.4) 300 (2.1)
Compressive Strength at 77°F (25°C) at 180°F (82°C)	ASTM D695	6,400 (44.1) 480 (3.3)
Tensile Strength, psi (MPa)	ASTM D638	5,200 (35.9)
Tensile Modulus, ksi (GPa)	ASTM D638	238 (1.6)
% Elongation	ASTM D638	4.2
Flexural Strength, psi (MPa)	ASTM D790	8,400 (57.9)
Flexural Modulus, ksi (GPa)	ASTM D790	277 (1.9)
T-Peel, anodized and primed Aluminum, 77°F (25°C), 11-mil (0.279 mm) bond thickness, pli (N/mm)	ASTM D3167	41 (7.23)
Glass transition temperature, DMA, E' onset, °F (°C)	--	142 (61)
Hardness, Shore D	ASTM D2250	70
Insert shear strength, psi (MPa) As cured As cured + 30 days at 140°F (60°C), 95% R.H.	BMS 5-107	1,500 (10.3) 1,400 (9.6)

## Storage

**Epibond® 420 A/B Epoxy Adhesives** should be stored in a dry place in the original sealed container at temperatures between 2°C and 40°C (36°F and 104°F). Tightly reseal containers after each use. Under these storage conditions, the products have a shelf-life of **1 year** (from date of manufacture). The components should not be exposed to direct sunlight.

## Precautionary Statement

Huntsman Advanced Materials Americas LLC maintains up-to-date Safety Data Sheets (SDS) on all of its products. These sheets contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products. Users should review the latest MSDS to determine possible health hazards and appropriate precautions to implement prior to using this material.

### **First Aid!**

Refer to SDS as mentioned above.

**KEEP OUT OF REACH OF CHILDREN**

**FOR PROFESSIONAL AND INDUSTRIAL USE ONLY**

## Important Legal Notice

Sales of the product described herein ("Product") are subject to the general terms and conditions of sale of either Huntsman Advanced Materials LLC, or its appropriate affiliate including without limitation Huntsman Advanced Materials (Europe) BVBA, Huntsman Advanced Materials Americas Inc., or Huntsman Advanced Materials (Hong Kong) Ltd. ("Huntsman"). The following supercedes Buyer's documents.

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