Material Safety Data Sheet

XB 9721 RESIN

1. Product and company identification

<table>
<thead>
<tr>
<th>Product name</th>
<th>XB 9721 RESIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym</td>
<td>N,N,N',N'-tetraglycidyl-4,4'-diaminodiphenylmethane</td>
</tr>
<tr>
<td>Material uses</td>
<td>Formulated resin for structural composites</td>
</tr>
<tr>
<td>MSDS #</td>
<td>00049466</td>
</tr>
<tr>
<td>Validation date</td>
<td>11/29/2011.</td>
</tr>
<tr>
<td>Print date</td>
<td>11/29/2011.</td>
</tr>
</tbody>
</table>

Supplier/Manufacturer: Huntsman Advanced Materials Americas LLC
P.O. Box 4980
The Woodlands, TX 77387
Non-Emergency phone: (800) 257-5547
E-Mail: MSDS@huntsman.com

In case of emergency: Chemtrec: (800) 424-9300 or (703) 527-3887

2. Hazards identification

Physical state: Liquid.
Odor: Odorless.
Color: Brown., Clear.

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

Emergency overview: WARNING!
MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE EYE AND SKIN IRRITATION.
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

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N,N',N'-tetraglycidyl-4,4'-diaminodiphenylmethane</td>
<td>28768-32-3</td>
<td>60 - 100</td>
</tr>
</tbody>
</table>

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: >200°C (>392°F) [DIN 51758 EN 22719 (Pensky-Martens Closed Cup)]

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. 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 8°C (35.6 to 46.4°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.
Color: Brown., Clear.
Odor: Odorless.

Important health, safety and environmental information
pH: 7.1 to 7.3 [Conc. (% w/w): 0%]
Boiling/condensation point: Not available.
Melting/freezing point: Not available.
Flash point: Closed cup: >200°C (>392°F) [DIN 51758 EN 22719 (Pensky-Martens Closed Cup)]
Flammable limits: Not available.
Auto-ignition temperature: Not available.

Oxidizing properties: None.
Vapor pressure: Not available.
Specific gravity: 1.15
Water solubility: 9.2 g/l
Viscosity: Dynamic: 3000 to 7000 mPa·s (3000 to 7000 cP)
Density: 1.15 to 1.18 g/cm³ [25°C (77°F)]
Water solubility: Insoluble
Partition coefficient: n-octanol/water (log Kow): 2.12

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

Acute toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
</table>
11/29/2011. 00049466
11. Toxicological information

N,N,N',N'-tetraglycidyl-4,4'-diaminodiphenylmethane

LD50 Oral Rat >5000 mg/kg -

LC50 Inhalation Vapor Rat - Male, Female 9110 mg/m3 4 hours

**Sensitizer**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Route of exposure</th>
<th>Species</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N,N',N'-tetraglycidyl-4,4'-diaminodiphenylmethane</td>
<td>skin</td>
<td>Guinea pig</td>
<td>Sensitizing</td>
</tr>
</tbody>
</table>

**Mutagenicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test</th>
<th>Experiment</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N,N',N'-tetraglycidyl-4,4'-diaminodiphenylmethane</td>
<td>-</td>
<td>Experiment: In vitro Subject: Bacteria Metabolic activation: +/-</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic Metabolic activation: +/-</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>OECD 474 Mammalian Erythrocyte Micronucleus Test Subject: Mammalian-Animal Cell: Somatic</td>
<td>Positive</td>
</tr>
</tbody>
</table>

**Potential chronic health effects**

**Chronic effects**: Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

**Target organs**: Not available.

**Carcinogenicity**: No known significant effects or critical hazards.

**Mutagenicity**: No known significant effects or critical hazards.

**Teratogenicity**: No known significant effects or critical hazards.

**Fertility effects**: No known significant effects or critical hazards.

**Developmental effects**: No known significant effects or critical hazards.

**Medical conditions aggravated by over-exposure**

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

12. Ecological information

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

**Aquatic ecotoxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
</table>

12. Ecological information

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test</th>
<th>Result</th>
<th>Dose</th>
<th>Inoculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N,N',N'-tetraglycidyl-4,4'-diaminodiphenylmethane</td>
<td>OECD 301F Biodegradability Ready Biodegradability - Manometric Respirometry Test</td>
<td>100 % - Readily - 60 days</td>
<td>-</td>
<td>Activated sludge</td>
</tr>
</tbody>
</table>

**Biodegradability**

<table>
<thead>
<tr>
<th>Biological Oxygen Demand (BOD 5 DAY)</th>
<th>Not Determined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Oxygen Demand (COD)</td>
<td>Not Determined</td>
</tr>
</tbody>
</table>

**Bioaccumulative potential**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP&lt;sub&gt;ow&lt;/sub&gt;</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N,N',N'-tetraglycidyl-4,4'-diaminodiphenylmethane</td>
<td>2.12</td>
<td>-</td>
<td>low</td>
</tr>
</tbody>
</table>

**Other ecological information**

- No known significant effects or critical hazards.

**Other adverse effects**

- Not applicable.

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. (TETRAGLYCIDYL-METHYLENEDIANILINE) Marine pollutant

**TDG**: Environmentally hazardous substance, liquid, n.o.s. (TETRAGLYCIDYL-METHYLENEDIANILINE) Marine pollutant

**IMDG**: Environmentally hazardous substance, liquid, n.o.s. (TETRAGLYCIDYL-METHYLENEDIANILINE) Marine pollutant

**IATA**: Environmentally hazardous substance, liquid, n.o.s. (TETRAGLYCIDYL-METHYLENEDIANILINE)

<table>
<thead>
<tr>
<th>Regulatory Information</th>
<th>UN number</th>
<th>Classes</th>
<th>PG*</th>
<th>Label</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT Classification</td>
<td>UN3082</td>
<td>9</td>
<td>III</td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>TDG Classification</td>
<td>UN3082</td>
<td>9</td>
<td>III</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>IMDG Class</td>
<td>UN3082</td>
<td>9</td>
<td>III</td>
<td></td>
<td><strong>Emergency schedules (EmS)</strong> F-A, S-F</td>
</tr>
</tbody>
</table>
| 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 |
### 14. Transport information

PG*: Packing group

### 15. Regulatory information

#### U.S. Federal regulations

<table>
<thead>
<tr>
<th>Classification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCS Classification</td>
<td>Sensitizing material</td>
</tr>
<tr>
<td>U.S. Federal regulations</td>
<td><strong>United States inventory (TSCA 8b)</strong>: This material is listed or exempted.</td>
</tr>
<tr>
<td>TSCA 5(a)2 final significant new use rule (SNUR)</td>
<td>None.</td>
</tr>
<tr>
<td>TSCA 5(e) substance consent order</td>
<td>None.</td>
</tr>
<tr>
<td>TSCA 12(b) one-time export notification</td>
<td>None.</td>
</tr>
<tr>
<td>TSCA 12(b) annual export notification</td>
<td>None.</td>
</tr>
<tr>
<td>SARA 302/304/311/312 extremely hazardous substances</td>
<td>SARA 302/304/311/312 extremely hazardous substances: No Ingredient Listed</td>
</tr>
<tr>
<td>SARA 311/312 hazard identification</td>
<td>SARA 311/312 MSDS distribution - chemical inventory - hazard identification: No Ingredient Listed</td>
</tr>
</tbody>
</table>

#### Clean Air Act

<table>
<thead>
<tr>
<th>Section 112(b) Hazardous Air Pollutants (HAPs)</th>
<th>Details</th>
</tr>
</thead>
</table>
| Clean Air Act - Section 112(b) Hazardous Air Pollutants (HAPs) | **Product name**  
|                                               | No Ingredients Listed.                                                   |
| Clean Air Act - Ozone Depleting Substances (ODS) | This product does not contain nor is it manufactured with ozone depleting substances. |

#### CERCLA: Hazardous substances:

No ingredients listed.

#### STATE REGULATIONS:

- **Pennsylvania - RTK:** This material is not 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:** This material is 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): This material is listed or exempted.
- China inventory (IECSC): This material is listed or exempted.
- Japan inventory: This material is listed or exempted.
- Korea inventory: This material is listed or exempted.
- New Zealand Inventory of Chemicals (NZIoC): Not determined.
- Philippines inventory (PICCS): This material is not listed.

16. Other information

Label requirements: MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE EYE AND SKIN IRRITATION.

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2</td>
</tr>
<tr>
<td>Flammability</td>
<td>1</td>
</tr>
<tr>
<td>Physical hazards</td>
<td>1</td>
</tr>
<tr>
<td>Personal protection</td>
<td></td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2</td>
</tr>
<tr>
<td>Instability</td>
<td>1</td>
</tr>
<tr>
<td>Special</td>
<td></td>
</tr>
<tr>
<td>Flammability</td>
<td></td>
</tr>
</tbody>
</table>

Date of printing: 11/29/2011.
Date of issue: 11/29/2011.
Date of previous issue: No previous validation.
Version: 1

Indicates information that has changed from previously issued version.

Notice to reader

While the information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined
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.