1. Identification

Product identifier: TUFCHEM EPOXY RESIN (All Colors)
Other means of identification: Not available.
Recommended use: Not available.
Recommended restrictions: None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer: Ergon Armor
Division: Corrosion Engineering
Address: 300 Stevens Drive, Suite 310
        Lester, PA 19113
E-mail: sds@ergon.com
Hours of Operation: 8:00 a.m. - 5:00 p.m. US Central Time
24-hour Customer Service: 1-800-222-7122
CHEMTREC (N. America): 1-800-424-9300
CHEMTREC (International): 1-703-527-3887

2. Hazard(s) identification

Physical hazards: Not classified.
Health hazards: Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 2B
Sensitization, skin Category 1B
Environmental hazards: Not classified.
OSHA defined hazards: Not classified.

Label elements

Signal word: Warning
Hazard statement: Causes skin irritation. Causes serious eye irritation. May cause an allergic skin reaction.
Prevention: Wear protective gloves. Wear eye/face protection. Wash thoroughly after handling. Avoid breathing mist or vapor. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment.
Response: Specific treatment see Section 4 of this SDS. Wash contaminated clothing before reuse. IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If skin irritation or rash occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention.
Storage: Store in accordance with local/regional/national regulations.
Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC): None known.

Supplemental information: Not applicable.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>BISPHENOL A-(EPICHLORHYDRIN)</td>
<td>EPOXY RESIN</td>
<td>25068-38-6</td>
<td>80 - 95</td>
</tr>
<tr>
<td>BUTYL GLYCIDYL ETHER</td>
<td></td>
<td>2426-08-6</td>
<td>20 - &lt; 30</td>
</tr>
</tbody>
</table>
4. First-aid measures

**Inhalation**
If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention, if needed.

**Skin contact**
Remove contaminated clothing immediately and wash skin with soap and water. Call a POISON CENTER or doctor/physician if you feel unwell. In case of eczema or other skin disorders: Seek medical attention and take along these instructions. For minor skin contact, avoid spreading material on unaffected skin. Take off contaminated clothing and wash before reuse.

**Eye contact**
Immediately flush eyes with plenty of water for at least 15 minutes. If a contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Continue rinsing. Get medical attention immediately.

**Ingestion**
Call a physician or poison control center immediately. Rinse mouth thoroughly. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

**Most important symptoms/effects, acute and delayed**
Skin irritation. May cause an allergic skin reaction. Dermatitis. Rash. Irritant effects. May cause redness and pain. Prolonged exposure may cause chronic effects.

**Indication of immediate medical attention and special treatment needed**
Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

**General information**
Take off contaminated clothing and shoes immediately. In case of shortness of breath, give oxygen. IF exposed or concerned: Get medical advice/attention. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

**Suitable extinguishing media**

**Unsuitable extinguishing media**
Water. Do not use water jet as an extinguisher, as this will spread the fire.

**Specific hazards arising from the chemical**
Fire may produce irritating, corrosive and/or toxic gases.

**Special protective equipment and precautions for firefighters**
Wear suitable protective equipment. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

**Fire-fighting equipment/instructions**
Move containers from fire area if you can do so without risk. In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out. Water runoff can cause environmental damage.

**Specific methods**
In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**
Immediately evacuate personnel to safe areas. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Avoid skin contact and inhalation of vapors during disposal of spills. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

**Methods and materials for containment and cleaning up**
Extinguish all flames in the vicinity.

**Large Spills:** Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

**Small Spills:** Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

**Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.
7. Handling and storage

Precautions for safe handling
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Do not breathe mist or vapor. Do not get this material in contact with eyes. Do not taste or swallow. Avoid contact with skin. Avoid prolonged exposure. Avoid contact with clothing. Do not use in areas without adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash thoroughly after handling. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities
CAUTION Store locked up. Keep away from heat, sparks and open flame. Store in a closed container away from incompatible materials. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children. Store in accordance with local/regional/national/international regulation.

8. Exposure controls/personal protection

Occupational exposure limits

<table>
<thead>
<tr>
<th>US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUTYL GLYCIDYL ETHER (CAS 2426-08-6)</td>
<td>PEL</td>
<td>270 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>US. ACGIH Threshold Limit Values Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUTYL GLYCIDYL ETHER (CAS 2426-08-6)</td>
<td>TWA</td>
<td>3 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>US. NIOSH: Pocket Guide to Chemical Hazards Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUTYL GLYCIDYL ETHER (CAS 2426-08-6)</td>
<td>Ceiling</td>
<td>30 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.6 ppm</td>
</tr>
</tbody>
</table>

Biological limit values
No biological exposure limits noted for the ingredient(s).

Exposure guidelines

US ACGIH Threshold Limit Values: Skin designation
BUTYL GLYCIDYL ETHER (CAS 2426-08-6) Can be absorbed through the skin.

Appropriate engineering controls
Provide adequate ventilation, including appropriate local extraction, to ensure that the defined occupational exposure limit is not exceeded.

Individual protection measures, such as personal protective equipment

Eye/face protection
Safety glasses. If risk of splashing, wear safety goggles or face shield.

Hand protection
Chemical resistant gloves are recommended. If contact with forearms is likely wear gauntlet style gloves.

Other
Wear appropriate clothing to prevent any possibility of skin contact.

Respiratory protection
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

| Physical state | Liquid. |
| Form           | Liquid. |
| Color          | Not available. |
| Odor           | Not available. |
| Odor threshold | Not available. |
| pH             | 7 estimated |
| Melting point/freezing point | Not available. |
Initial boiling point and boiling range  
> 392 °F (> 200 °C)

Flash point  
> 302.0 °F (> 150.0 °C)

Evaporation rate  
Not available.

Flammability (solid, gas)  
Not available.

Upper/lower flammability or explosive limits  
Flammability limit - lower (%)  
Not available.

Flammability limit - upper (%)  
Not available.

Explosive limit - lower (%)  
Not available.

Explosive limit - upper (%)  
Not available.

Vapor pressure  
82 Pa at 20°C

Vapor density  
Not available.

Relative density  
Not available.

Solubility(ies)  
Solubility (water)  
Not available.

Partition coefficient (n-octanol/water)  
> 3

Auto-ignition temperature  
572 °F (300 °C)

Decomposition temperature  
Not available.

Viscosity  
Not available.

Other information  
Density  
1170.00 kg/m3 at 25°C

10. Stability and reactivity

Reactivity  
The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability  
Stable.

Possibility of hazardous reactions  
No dangerous reaction known under conditions of normal use.

Conditions to avoid  
Heat, flames and sparks. Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Incompatible materials  
Peroxides. Chlorine. Strong acids, alkalies and oxidizing agents.

Hazardous decomposition products  
If product is burned hazardous gases such as oxides of carbon and nitrogen and various hydrocarbons may be produced.

11. Toxicological information

Information on likely routes of exposure

Ingestion  
Suspected of causing cancer by ingestion. However, ingestion is not likely to be a primary route of occupational exposure.

Inhalation  
Prolonged inhalation may be harmful.

Skin contact  
Causes skin irritation.

Eye contact  
Causes eye irritation.

Symptoms related to the physical, chemical and toxicological characteristics

Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>TUFCHEM EPOXY RESIN (All Colors) (CAS Mixture)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>Rabbit</td>
<td>3.94 g/kg estimated</td>
</tr>
<tr>
<td>LD50</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Mouse</td>
<td>17500 mg/l, 4 Hours estimated</td>
</tr>
<tr>
<td>Product</td>
<td>Species</td>
<td>Test Results</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Rat</td>
<td></td>
<td>3350 mg/l, 8 Hours estimated</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>7.65 g/kg estimated</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>10.25 g/kg estimated</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>3.5 g/kg estimated</td>
</tr>
<tr>
<td></td>
<td>Rabbit</td>
<td>24.65 g/kg estimated</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>5.7 g/kg estimated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BUTYL GLYCIDYL ETHER (CAS 2426-08-6)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dermal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rabbit</td>
<td>0.788 g/kg</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Mouse</td>
<td>&gt; 3500 mg/l, 4 Hours</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>&gt; 670 mg/l, 8 Hours</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>1.53 g/kg</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>2.05 g/kg</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>0.7 g/kg</td>
</tr>
<tr>
<td></td>
<td>Rabbit</td>
<td>4.93 g/kg</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>1.14 g/kg</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

**Skin corrosion/irritation**
- Corrosive to skin and eyes.

**Serious eye damage/eye irritation**
- Direct contact with eyes may cause temporary irritation.

**Respiratory or skin sensitization**
- **Respiratory sensitization**: Not available.
- **Skin sensitization**: May cause sensitization by skin contact.
- **Germ cell mutagenicity**: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
- **Carcinogenicity**: Possible cancer hazard based on tests with laboratory animals. This product contains crystalline silica. Silica is a known carcinogen; however in this encapsulated form the normal routes of exposure are unavailable.

- Not listed.

**Reproductive toxicity**
- This product is not expected to cause reproductive or developmental effects.

**Specific target organ toxicity**
- **single exposure**: Not classified.
- **repeated exposure**: Not classified.

**Aspiration hazard**
- Not available.

**Chronic effects**
- Prolonged inhalation may be harmful.

**12. Ecological information**

**Ecotoxicity**
- The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Components Test Results

<table>
<thead>
<tr>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>BISPHENOL A-(EPICHLORHYDRIN) EPOXY RESIN (CAS 25068-38-6)</td>
<td>Crustacea 2.7 mg/l, 48 hours</td>
</tr>
<tr>
<td></td>
<td>Fish 1.5 mg/l, 96 hours</td>
</tr>
<tr>
<td>Daphnia magna</td>
<td>Salmo gairdneri (new name Oncorhynchus mykiss)</td>
</tr>
</tbody>
</table>

Persistence and degradability
No data is available on the degradability of this product.

Bioaccumulative potential
Not available.

Partition coefficient n-octanol / water (log Kow)

| TUFCHEM EPOXY RESIN (All Colors) | > 3 |
| BUTYL GLYCIDYL ETHER | 0.63 |

Mobility in soil
No data available.

Other adverse effects
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions
Dispose in accordance with all applicable regulations. When this product as supplied is to be discarded as waste, it does not meet the definition of a RCRA waste under 40 CFR 261.

Local disposal regulations
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Hazardous waste code
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Waste from residues / unused products
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging
Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

14. Transport information

DOT
Not regulated as dangerous goods.

IATA
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods.

Transport in bulk according to
Annex II of MARPOL 73/78 and the IBC Code
Not available.

15. Regulatory information

US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
Not listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312
Hazardous chemical
Yes

SARA 313 (TRI reporting)
Not regulated.
Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA)
Not regulated.

US state regulations

US. Massachusetts RTK - Substance List
BUTYL GLYCIDYL ETHER (CAS 2426-08-6)

US. New Jersey Worker and Community Right-to-Know Act
Not regulated.

US. Pennsylvania RTK - Hazardous Substances
BUTYL GLYCIDYL ETHER (CAS 2426-08-6)

US. Rhode Island RTK
Not regulated.

US. California Proposition 65
WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin
BUTYL GLYCIDYL ETHER (CAS 2426-08-6) Listed: August 7, 2009

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 04-22-2015
Version # 01

References

EPA: AQUIRE database
US. IARC Monographs on Occupational Exposures to Chemical Agents
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.