MATERIAL SAFETY DATA SHEET

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CHEMTEL 24-HOUR EMERGENCY RESPONSE*:
U.S. / CANADA: (800)-255-3924
*NOTE: Chem-Tel should only be contacted in the event of a chemical emergency.
Please contact the manufacturer or your local distributor for technical or product support questions concerning this Product.

ENTRON-AE®
Non-Flammable Asphalt Extraction Solvent

1. **Product:**
   ENTRON-AE Non-Flammable Asphalt Extraction Solvent

   **Product General Use:**
   Asphalt Extraction and Cold Wipe Cleaning

   **Product Description:**
   Non-flammable, Stabilized, Solvent Mixture

2. **Composition and Ingredient Information**

<table>
<thead>
<tr>
<th>Component</th>
<th>Synonym</th>
<th>CAS Number</th>
<th>Weight Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>n Propyl Bromide (stabilized)</td>
<td>1-Bromopropane</td>
<td>106-94-5</td>
<td>&gt; 90.0%</td>
</tr>
<tr>
<td>1,2 Butylene Oxide</td>
<td>1,2 Epoxidebutane</td>
<td>106-88-7</td>
<td>&lt;2.0%</td>
</tr>
<tr>
<td>Proprietary Components-Trade Secret</td>
<td>N/A</td>
<td>N/A</td>
<td>&lt;8.0%</td>
</tr>
</tbody>
</table>

3. **Hazards Identification**

   **Symptoms and Effects of Overexposure**
   **Inhalation:** High concentrations are irritating to the respiratory tract and may cause headache, dizziness, nausea, vomiting or narcosis (anesthetic like effects). Chronic overexposure may cause adverse effects in the liver, lung, reproductive system and kidney.
   **Ingestion:** Low order of toxicity. May cause mild nausea and abdominal discomfort
   **Skin:** Prolonged exposure may cause skin irritation or rash.
   **Eyes:** Contact with eyes may cause mild irritation.
4. First Aid Measures

**Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a physician.

**Ingestion:** Do not induce vomiting. Seek medical attention.

**Skin:** Remove contaminated clothing. Thoroughly wash affected area with soap and water; use skin cream if irritation is severe.

**Eyes:** Immediately flush eyes with water for 15 minutes. Call a physician if irritation persists.

5. Fire Fighting Measures

**FLASH POINT:**
- NONE by ASTM D-56 TC
- NONE by ASTM D-92 COC
- NONE by ASTM D-93 TCC

**FLAMMABLE LIMITS:** 3.0 to 9.0% by volume in air

**AUTO-IGNITION TEMPERATURE:** 490° C

**Extinguishing Media:** Use dry chemical, chemical foam, or carbon dioxide as dictated by the surrounding circumstances.

**Special Fire Fighting Procedures:** Wear NIOSH approved self-contained breathing apparatus (set on positive pressure mode) and personal protective equipment. Avoid skin and eyes contact in fire situations.

**Unusual Fire and Explosions Hazard:** In fires, toxic and corrosive gases may be released. Vapor will form a flammable mixture in a narrow concentration range of 3.0% to 9.0% by volume in air.

6. Accidental Release Measures

Contain spillage or leakage with dikes or absorbent material to prevent migration into sewer or waterway. Absorb spill with an inert material and place in a chemical waste container for disposal. For large spills, evacuate and ventilate the area. Wear self-contained breathing apparatus and recommended personal protective equipment. Observe government regulations.

7. Handling and Storage

Store in well ventilated, cool, dry area. Store in original container only. Keep container closed when not in use. Minimize introduction of water or moisture into the product.

8. Exposure Controls and Personal Protection

**RESPIRATORY PROTECTION:** Use NIOSH approved organic vapor respirator if ventilation is not sufficient. Of particular concern are when filling, emptying or maintaining your cleaning equipment and at other instances where there is a the likelihood of high emissions of solvent vapor.

**VENTILATION AND PROPER EQUIPMENT CONTROLS:** Exposure to the product can be minimized through use of appropriate ventilation and emission controls and proper equipment maintenance.

**CLOTHING/GLOVES:** Wear safety glasses. Use of gloves is recommended. Viton or Silvershield gloves offer the best extended protection. Nitrile, neoprene, or butyl gloves offer less protection and should be used for splash protection only. DO NOT use natural rubber gloves when handling this product.
EYE PROTECTION: Always wear safety goggles or full face shield.
WORK/HYGIENIC PRACTICES: Do not eat, drink, or smoke while working with this product. Launder soiled clothes. Provide emergency eye bath and safety shower.

EXPOSURE GUIDELINES: Applicable Exposure Limits:
n Propyl Bromide (CAS 106-94-5)
OSHA PEL: Not Established
ACGIH TLV: 10 ppm
M-TWA: 25 ppm*


1,2 Butylene Oxide (CAS 106-88-7)
OSHA – Not Established
ACGIH – Not Established

Proprietar Components – Trade Secret
OSHA – N/A
ACGIH – N/A

9. Physical Properties

BOILING POINT: (760 mm Hg): 160 °F (71 °C)
FLASHPOINT: None (ASTM D-56, D-92 and D-93)
SPECIFIC GRAVITY: (25/25° C, H2O = 1): 1.26 to 1.31
RELATIVE VAPOR DENSITY: (Air =1): 4.3
VAPOR PRESSURE: (mm Hg @ 25° C): 139
EVAPORATION RATE: (n-Butyl Acetate = 1): 4.5
SOLUBILITY IN WATER: Negligible (0.25 g/100ml)
REACTIVITY IN WATER: Not Readily Hydrolyzed

10. Stability and Reactivity

STABILITY: Stable under normal conditions.
CONDITIONS TO AVOID: Avoid open flame, electric arc and other high energy ignition sources. Prolonged contact with free water may result in diminished stabilizer and corrosion.
INCOMPATIBILITY: Incompatible with strong alkalis, oxidizers, bases, reactive metals and natural rubber.
HAZARDOUS DECOMPOSITION: Thermal decomposition produces carbon monoxide, carbon dioxide, and hydrogen bromide.
HAZARDOUS POLYMERIZATION: Will not occur.

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11. Toxicological Information

**n-Propyl bromide**
LD$_{50}$ oral/rat = 4,260 mg/kg
LC$_{50}$ rat = 253,000 mg/m$^3$ 3/0.5 hour
Reproductive:  
   Male: BMDL of reduced sperm motility F0 at 282ppm - rat/inhalation*  
   Female: LOAEL of increased estrous cycle length at 250ppm -rat/inhalation*  
Carcinogenicity:  IARC: Not listed.

**1,2 Butylene Oxide**
LD$_{50}$ oral/rat = 500 mg/kg,  LD$_{50}$ dermal/ rabbit = 2,100 ul/kg  
LC$_{50}$: Inhalation/Rat = 6,300mg/m$^3$ - 4hr.  
Carcinogenicity:  IARC: 2B

12. Ecological Information
The Ozone Depletion Potential of n-propyl bromide has been determined to be in the range of 0.006 to 0.013

13. Disposal Considerations
Follow all Federal, State and Local governmental regulations. DO NOT flush into sanitary sewer or waterway.

14. Transportation Information
CLASSIFICATION: Not regulated for transportation by US DOT or USPS  
PROPER SHIPPING NAMES: Cleaning Solvent Mixture

15. Regulatory Information
TCSA: All of the components of this product are in the EPA TSCA inventory.
NESHAP: N/A  
RCRA: N/A  
HAP: N/A  
SARA: Section 304 (RQ): None of the components have a RQ  
   Section 302 (TPQ): None of the Components have a TPQ  
   Section 313: The following components are subject to the reporting requirements of Section 313  
   of SARA Title III:  1,2 Butylene Oxide (106-88-7).  
CERCLA: RQ of 100lbs. for 1,2, Butylene Oxide (CAS 106-88-7).  
   Note: that an RQ of 100lbs at a the component’s weight % in composition requires approximately 1,500 gallons of ENTRON mixture to reach RQ’s threshold.  
USEPA SNAP PROGRAM:  
   - FINAL USE APPROVAL: USEPA SNAP Program Final Approval was received in May 2007 for use in Metal Cleaning, Electronics Cleaning and Precision Cleaning.  
   - INTERIM USE AUTHORIZATION: USEPA SNAP Program interim authorization for use in the Use Sectors of in Carriers, Adhesive Carriers and Aerosols was issued in 2003 pending a final determination by the SNAP Program for continued use in those Use Sectors.  
EEC (EINECS): Ingredients Listed  
CANADA (DSL): Ingredients Listed
16. Other Information

HMIS Codes:  
*Health: 1  
Flammability: 0  
Reactivity: 0  

*Chronic Hazard (Long-term health effects may result from repeated overexposure.)
0= Minimal Hazard, 1= Slight Hazard, 2= Moderate Hazard, 3 = Serious Hazard, 4= Severe Hazard

Reliance Specialty Products, Inc.’s offers the information and opinions contained in this Material Safety Data Sheet as a guide to the physical characteristics and use of this Product and believe it to be accurate as of the date of this document. However, it is the responsibility of the user to establish the suitability of the Product for their particular application and to establish the conditions for safe use of the product and compliance with all applicable laws and regulations. Reliance Specialty Products, Inc. disclaims all warranties, express or implied, in connection with the opinions and information contained herein and the use of the Product.

END OF MSDS