**Material Safety Data Sheet**

**Section 1. Chemical Product and Company Identification**

<table>
<thead>
<tr>
<th>Product name</th>
<th>JACAAB-ETHODUOMEEN T/13</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Material Uses</strong></td>
<td>: Surfactant.</td>
</tr>
</tbody>
</table>
| **Supplier/ Repackager** | JACAAB LLC  
4155 Manchester Ave  
St. Louis, MO 63110 |
| **In Case of Emergency** | CHEMTREC: 800-424-9300  
Product/Technical: 314-652-5400 |

**Section 2. Composition, Information on Ingredients**

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amines, n-tallow alkyltrimethylene-, ethoxylated</td>
<td>61790-85-0</td>
<td>90-94</td>
</tr>
<tr>
<td>Ethanol, 2,2'-iminobis, n-tallow alkyl derivs.</td>
<td>61791-44-4</td>
<td>5-10</td>
</tr>
<tr>
<td>Amines, n-tallow alkyl trimethylene-</td>
<td>61791-55-7</td>
<td>0.001-5</td>
</tr>
<tr>
<td>Poly(oxy-1,2-ethanediyl), a-hydroxy-w-hydroxy-</td>
<td>25322-68-3</td>
<td>0.001-1</td>
</tr>
</tbody>
</table>

**Section 3. Hazards Identification**

| Physical State | Liquid. |
| Color | Yellow. (Dark.) |
| Odor | Amine like. |
| Emergency Overview | DANGER!  
CAUSES EYE AND SKIN BURNS.  
MAY BE HARMFUL IF SWALLOWED.  
MAY CAUSE ALLERGIC SKIN REACTION.  
Do not get in eyes, on skin or on clothing. Do not ingest. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. |
| Possible Carcinogenic Effects | Amines, N-tallow alkyltrimethylene-, ethoxylated: IARC, NTP, OSHA, ACGIH: Not listed.  
Ethanol, 2,2'-iminobis, N-tallow alkyl derivs.: IARC, NTP, OSHA, ACGIH: Not listed.  
Amines, n-tallow alkyl trimethylene-: IARC, NTP, OSHA, ACGIH: Not listed.  
Poly(oxy-1,2-ethanediyl), a-hydroxy-w-hydroxy-: IARC, NTP, OSHA, ACGIH: Not listed. |
| Routes of Entry | Absorbed through skin. Eye contact.  
See Toxicological Information (section 11) |

**Continued on Next Page**
Section 4. First Aid Measures

Eye Contact: Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. 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. Thoroughly clean shoes before reuse. Get medical attention immediately.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Medical Conditions Aggravated by Overexposure: Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

Section 5. Fire Fighting Measures

Flammability of the Product: May be combustible at high temperature.

Flash Points: Closed cup: >200°C (392°F). (Pensky-Martens.)

Products of Combustion: These products are carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...).

Fire Fighting Media and Instructions: SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Protective Clothing (Fire): Be sure to use an approved/certified respirator or equivalent.

Section 6. Accidental Release Measures

Small Spill and Leak: Absorb with an inert material and put the spilled material in an appropriate waste disposal. If necessary: Use suitable protective equipment (Section 8).

Large Spill and Leak: Stop leak if without risk. If the product is in its solid form: Use a shovel to put the material into a convenient waste disposal container. If the product is in its liquid form: Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Absorb with an inert material and put the spilled material in an appropriate waste disposal. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Use suitable protective equipment (Section 8).

Section 7. Handling and Storage

Handling: Do not ingest. Avoid breathing vapors or spray mists. Avoid prolonged or repeated contact with skin. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Continued on Next Page
Section 8. Exposure Controls, Personal Protection

**Engineering Controls**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection**

- **Eyes**: Face shield.
- **Body**: Full suit.
- **Respiratory**: Wear appropriate respirator when ventilation is inadequate.
- **Hands**: Gloves.
- **Feet**: Boots.

**Protective Clothing (Pictograms)**

- Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Ingredient Name**

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>Exposure Limits</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amines, n-tallow alkyltrimethylene-di-ethoxylated</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Ethanol, 2,2'-iminobis, n-tallow alkyl derivs.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Amines, n-tallow alkyl trimethylene-di-</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Poly(oxy-1,2-ethanediyl), a-hydroxy-w-hydroxy-</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

Section 9. Physical and Chemical Properties

**Physical State**

Liquid.

**Color**

Yellow. (Dark.)

**Odor**

Amine like.

**Molecular Weight**

Not applicable.

**Molecular Formula**

Not applicable.

**pH**

Basic.

**Boiling/Condensation Point**

>300°C (572°F)

**Melting/Freezing Point**

20°C (68°F)

**Cloud Point**

22°C

**Pour Point**

21°

**Density**

0.937 g/cm³ (25°C / 77°F)

**Vapor Pressure**

<0.01 kPa (<0.1 mmHg) (at 20°C)

**Evaporation Rate**

Weighted average: 0.9 compared to Butyl acetate.

**Solubility**

Very slightly soluble in cold water.

**Dispersion Properties**

**Physical Chemical Comments**

Viscosity = 105(SSU) @ 38°C; 12.8(SSU) @ 99°C.
Section 10. Stability and Reactivity

Stability and Reactivity
The product is stable.

Incompatibility with Various Substances
Reactive with oxidizing agents, acids.

Hazardous Polymerization
Will not occur.

Section 11. Toxicological Information

Toxicity to Animals

<table>
<thead>
<tr>
<th>Ingredient Name or Product name</th>
<th>Test</th>
<th>Result</th>
<th>Route</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amines, n-tallow alkyltrimethylene-diol, ethoxylated</td>
<td>LD50</td>
<td>&gt;500 mg/kg</td>
<td>Oral</td>
<td>Rat based on data for: (similar material)</td>
</tr>
<tr>
<td>Ethanol, 2,2'-iminobis, n-tallow alkyl derivs.</td>
<td>LD50</td>
<td>1200 to 1500 mg/kg</td>
<td>Oral</td>
<td>Rat</td>
</tr>
<tr>
<td>Amines, n-tallow alkyl trimethylene-diol</td>
<td>LD50</td>
<td>945 mg/kg</td>
<td>Oral</td>
<td>Rat</td>
</tr>
<tr>
<td>Poly(oxy-1,2-ethanediyl), a-hydroxy-w-hydroxy-</td>
<td>LD50</td>
<td>28000 mg/kg</td>
<td>Oral</td>
<td>Rat</td>
</tr>
<tr>
<td></td>
<td>LD50</td>
<td>31000 mg/kg</td>
<td>Oral</td>
<td>Mouse</td>
</tr>
<tr>
<td></td>
<td>LD50</td>
<td>14000 mg/kg</td>
<td>Oral</td>
<td>Rabbit</td>
</tr>
<tr>
<td></td>
<td>LD50</td>
<td>&gt;20000 mg/kg</td>
<td>Dermal</td>
<td>Rabbit</td>
</tr>
</tbody>
</table>

Special Remarks on Toxicity to Animals

Amines, N-tallow alkyltrimethylene-diol, ethoxylated: Slight to moderate dermal irritation @ 7.72 mg/kg/day for 28 days. based on data for: (similar material)

Ethanol, 2,2'-iminobis, N-tallow alkyl derivs.: INHALATION LC50 = 220 ppm @1 hour, rat based on data for: (similar material)

Amines, n-tallow alkyl trimethylene-diol: Sub-chronic, NOEL (rat) = 670 ppm.

Special Remarks on Chronic Effects on Humans

Amines, N-tallow alkyltrimethylene-diol, ethoxylated: Embryotoxic at maternally toxic doses but not teratogenic @ >45 mg/kg (based on a similar substance).

Acute Effects Skin
Corrosive to the skin. May cause sensitization by skin contact.

Acute Effects Eyes
Corrosive to the eyes.

Section 12. Ecological Information

Ecotoxicity

<table>
<thead>
<tr>
<th>Ingredient Name or Product name</th>
<th>Species</th>
<th>Period</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amines, n-tallow alkyltrimethylene-diol</td>
<td>Fish (LC50)</td>
<td>96 hours</td>
<td>0.1 to 0.15 mg/l</td>
</tr>
<tr>
<td>Poly(oxy-1,2-ethanediyl), a-hydroxy-w-hydroxy-</td>
<td>Daphnia (EC50)</td>
<td>48 hours</td>
<td>&gt;10000 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fish (LC50)</td>
<td>24 hours</td>
<td>&gt;5000 mg/l</td>
</tr>
</tbody>
</table>

Biodegradability and Ecotoxicity Remarks

Amines, N-tallow alkyltrimethylene-diol, ethoxylated: 14% @ 28 day(s) CBT; 40% @ 241 day(s) CBT based on data for: (similar material)

Ethanol, 2,2'-iminobis, N-tallow alkyl derivs.: 52% @ 28 day(s) CBT; 62% @ 35 day(s) CBT based on data for: (similar material)

Amines, n-tallow alkyl trimethylene-diol: 62% @ 28 day(s) CBT based on data for: (similar material)

Poly(oxy-1,2-ethanediyl), a-hydroxy-w-hydroxy-: 5% @ 5 day(s) CBT 38% @ 10 day(s) CBT 70% @ 20 day(s) CBT

Products of Degradation
These products are carbon oxides (CO, CO₂) and water, nitrogen oxides (NO, NO₂...).

Continued on Next Page
Section 13. Disposal Considerations

Waste Information
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Consult your local or regional authorities.

Section 14. Transport Information

<table>
<thead>
<tr>
<th>Regulatory Information</th>
<th>UN number</th>
<th>Proper shipping name</th>
<th>Class</th>
<th>Packing Group</th>
<th>Label</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT Classification</td>
<td>UN2735</td>
<td>Amines, liquid, corrosive, n.o.s. (Alkoxylated fatty amines)</td>
<td>8</td>
<td>III</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TDG Classification</td>
<td>UN2735</td>
<td>AMINES, LIQUID, CORROSIVE, N.O.S. (Alkoxylated fatty amines)</td>
<td>8</td>
<td>III</td>
<td>Special Provisions Classified in Accordance with UN Recommendations</td>
<td></td>
</tr>
<tr>
<td>IMDG Class</td>
<td>UN2735</td>
<td>AMINES, LIQUID, CORROSIVE, N.O.S. (Alkoxylated fatty amines)</td>
<td>8</td>
<td>III</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>IATA-DGR Class</td>
<td>UN2735</td>
<td>Amines, liquid, corrosive, n.o.s. (Alkoxylated fatty amines)</td>
<td>8</td>
<td>III</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Section 15. Regulatory Information

HCS Classification
Corrosive material

U.S. Federal Regulations
TSCA: All intentionally present components are listed on the TSCA inventory.

DSL: All intentionally present components are listed on the DSL.

CERCLA: Hazardous substances: No products were found.

SARA 302/304/311/312 extremely hazardous substances: No products were found.

SARA 302/304 emergency planning and notification: No products were found.

SARA 302/304/311/312 hazardous chemicals: ETHODUOMEEN® T/13


SARA 313 Form R Reporting Requirements
No products were found.

SARA 313 Supplier Notification
No products were found.

State Regulations
No products were found.

California prop. 65: No products were found.

WHMIS (Canada)
Class E: Corrosive liquid.

Continued on Next Page
CEPA DSL: Amines, N-tallow alkyltrimethylenedi-, ethoxylated; Ethanol, 2,2’-iminobis, N-tallow alkyl derivs.; Amines, n-tallow alkyl trimethylenedi-; Poly(oxy-1,2-ethanediyl), a-hydroxy-w-hydroxy-

<table>
<thead>
<tr>
<th>European Union</th>
<th>Component</th>
<th>EC Number</th>
<th>EC Status</th>
<th>EC Annex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amines, n-tallow alkyltrimethylenedi-, ethoxylated</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td></td>
<td>Ethanol, 2,2’-iminobis, n-tallow alkyl derivs.</td>
<td>263-177-5</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td></td>
<td>Amines, n-tallow alkyl trimethylenedi-; Poly(oxy-1,2-ethanediyl), a-hydroxy-w-hydroxy-</td>
<td>263-189-0</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

| Other International Lists | Australia (NICNAS): Amines, N-tallow alkyltrimethylenedi-, ethoxylated; Ethanol, 2,2’-iminobis, N-tallow alkyl derivs.; Amines, n-tallow alkyl trimethylenedi-; Poly(oxy-1,2-ethanediyl), a-hydroxy-w-hydroxy- |
|--------------------------| Japan (MITI): Amines, N-tallow alkyltrimethylenedi-, ethoxylated; Poly(oxy-1,2-ethanediyl), a-hydroxy-w-hydroxy- |
|                          | Korea (TCCL): Amines, N-tallow alkyltrimethylenedi-, ethoxylated; Ethanol, 2,2’-iminobis, N-tallow alkyl derivs.; Amines, n-tallow alkyl trimethylenedi-; Poly(oxy-1,2-ethanediyl), a-hydroxy-w-hydroxy- |
|                          | Philippines (RA6969): Amines, N-tallow alkyltrimethylenedi-, ethoxylated; Ethanol, 2,2’-iminobis, N-tallow alkyl derivs.; Amines, n-tallow alkyl trimethylenedi-; Poly(oxy-1,2-ethanediyl), a-hydroxy-w-hydroxy- |

Section 16. Other Information

<table>
<thead>
<tr>
<th>Hazardous Material Information System (U.S.A.)</th>
<th>National Fire Protection Association (U.S.A.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>Fire Hazard</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>3</td>
</tr>
<tr>
<td>Reactivity</td>
<td>1</td>
</tr>
<tr>
<td>Personal Protection</td>
<td>0</td>
</tr>
</tbody>
</table>

Validation Date 5/25/2005.

Notice to Reader

The information in the material safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. All information concerning this product and/or suggestions for handling and use contained herein are offered in good faith and are believed to be reliable as of the date of publication. However, no warranty is made as to the accuracy of and/or sufficiency of such information and/or suggestions or as to the product’s merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. Nothing contained herein shall be construed as granting or extending any license under any patent. Buyer must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date on this document is more than three years old, call to make certain that this sheet is current.