Section 1. Chemical Product and Company Identification

Product name: JACAAB-ARMOHIB 31

Material Uses: Surfactant.

Supplier/Repackager: Jacaab LLC
4155 Manchester Avenue
St. Louis, MO  63110

In Case of Emergency
CHEMTREC: 800-424-9300
Information: 314-533-4662

Section 2. Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>proprietary alkoxylated fatty Amine. salts</td>
<td>proprietary</td>
<td>proprietary</td>
</tr>
<tr>
<td>proprietary alkoxylated Organic acid.</td>
<td>proprietary</td>
<td>proprietary</td>
</tr>
<tr>
<td>Thiourea, N,N'-dibutyl</td>
<td>109-46-6</td>
<td>20-30</td>
</tr>
</tbody>
</table>

Section 3. Hazards Identification

Physical State: Liquid.
Color: Amber.
Odor: Fatty

Emergency Overview
WARNING!
CAUSES EYE IRRITATION.
MAY BE HARMFUL IF SWALLOWED.
MAY CAUSE SKIN IRRITATION.
MAY CAUSE ALLERGIC SKIN REACTION.
HARMFUL TO AQUATIC ORGANISMS.
MAY BE HARMFUL TO ENVIRONMENT IF RELEASED IN LARGE AMOUNTS.

Avoid contact with eyes, skin and clothing. Do not ingest. Wash thoroughly after handling. Avoid contact of spilled material and runoff with soil and surface waterways.

Possible Carcinogenic Effects
proprietary alkoxylated fatty Amine. salts: IARC, NTP, OSHA, ACGIH: Not listed.
proprietary alkoxylated Organic acid.: IARC, NTP, OSHA, ACGIH: Not listed.
Thiourea, N,N'-dibutyl: IARC, NTP, OSHA, ACGIH: Not listed.

Routes of Entry
Absorbed through skin. Eye contact.

See Toxicological Information (section 11)

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. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

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

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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 exposure is not known to aggravate medical condition.

Section 5. Fire Fighting Measures

Flammability of the Product
May be combustible at high temperature.

Flash Points
Closed cup: >150°C (302°F).

Products of Combustion
These products are carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...), sulfur oxides (SO₂, SO₃...), halogenated compounds, hydrogen chloride.

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
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill and Leak
Absorb with an inert material and put the spilled material in an appropriate waste disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7. Handling and Storage

Handling
Avoid contact with eyes, skin and clothing. Do not ingest. Wash thoroughly after handling. Avoid contact of spilled material and runoff with soil and surface waterways.

Storage
Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 48°C (118.4°F).

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
Splash goggles.

Body
Lab coat.

Respiratory
Wear appropriate respirator when ventilation is inadequate.

Hands
Gloves.

Feet
Not applicable.

Protective Clothing (Pictograms)

Continued on Next Page
Personal Protection in Case of a Large Spill
Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Ingredient Name
proprietary alkoxyalted fatty Amine. salts
proprietary alkoxyalted Organic acid.
Thiourea, N,N'-dibutyl

Exposure Limits United States
Not available.
Not available.
Not available.

Section 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Liquid.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Amber.</td>
</tr>
<tr>
<td>Odor</td>
<td>fatty</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>pH</td>
<td>5.5 [Acidic.]</td>
</tr>
<tr>
<td>Melting/Freezing Point</td>
<td>-4°C (24.8°F)</td>
</tr>
<tr>
<td>Pour Point</td>
<td>0°C</td>
</tr>
<tr>
<td>Density</td>
<td>1.042 g/cm³ (25°C / 77°F)</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>&lt;0.1 kPa (&lt;1 mmHg) (at 20°C)</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>The highest known value is 6.5 (Air = 1) (Thiourea, N,N'-dibutyl).</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in cold water.</td>
</tr>
</tbody>
</table>

Dispersion Properties
Viscosity = 1150 (#3 @ 60 RPM cps)
Surface tension = 43.4 dyynes/cm (0.1%), 41.5 dyynes/cm (1.0%)
HLB (Davies scale 0-40) = 30.4 (proprietary alkoxyalted fatty Amine. salts)

Section 10. Stability and Reactivity

Stability and Reactivity
The product is stable.

Incompatibility with Various Substances
Reactive with oxidizing agents, acids.
Slightly reactive to reactive with alkalis.

Hazardous Decomposition Products
These products are halogenated compounds, hydrogen chloride.

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>proprietary alkoxyalted fatty Amine. salts</td>
<td>LD50</td>
<td>&gt;2000 mg/kg</td>
<td>Oral</td>
<td>Rat</td>
</tr>
<tr>
<td>proprietary alkoxyalted Organic acid.</td>
<td>LD50</td>
<td>&gt;5000 mg/kg</td>
<td>Oral</td>
<td>Rat</td>
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<tr>
<td>Thiourea, N,N'-dibutyl</td>
<td>LD50</td>
<td>350 mg/kg</td>
<td>Oral</td>
<td>Rat</td>
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</tbody>
</table>

Acute Effects Skin
Moderately irritating to the skin.

Acute Effects Eyes
Severely irritating to the eyes.

Special Remarks on Other Toxic Effects on Humans
proprietary alkoxyalted fatty Amine. salts: Skin and Eyes based on data for: (similar material)
proprietary alkoxyalted Organic acid.: Skin and Eyes based on data for: (similar material)

Continued on Next Page
Section 12. Ecological Information

Ecotoxicity

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>Product name</th>
<th>Species</th>
<th>Period</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>proprietary</td>
<td>alkoxyalted</td>
<td>Trout (LC50)</td>
<td>96 hours</td>
<td>24 mg/l</td>
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<tr>
<td>fatty Amine.</td>
<td>salts</td>
<td>Algae. (EC50)</td>
<td>96 hours</td>
<td>3.9 mg/l</td>
</tr>
</tbody>
</table>

Biodegradability and Ecotoxicity Remarks
proprietary alkoxyalted fatty Amine. salts: 11% @ 28 day(s) CBT; 26% @ 112 day(s) CBT

Products of Degradation
These products are carbon oxides (CO, CO₂) and water, nitrogen oxides (NO, NO₂...), sulfur oxides (SO₂, SO₃...), halogenated compounds.

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>Not regulated.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>TDG Classification</td>
<td>Not regulated.</td>
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<tr>
<td>IMDG Class</td>
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<tr>
<td>IATA-DGR Class</td>
<td>Not regulated.</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Section 15. Regulatory Information

HCS Classification
Irritating 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: ARMOHIB® 31

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: ARMOHIB® 31: Immediate (Acute) Health Hazard

SARA 313 Form R Reporting Requirements

Continued on Next Page
No products were found.

State Regulations
No products were found.

California prop. 65: No products were found.

WHMIS (Canada)
Class D-2B: Material causing other toxic effects (TOXIC).

CEPA DSL: proprietary alkoxylated fatty Amine. salts; proprietary alkoxylated Organic acid.; Thiourea, N,N'-dibutyl

Other International Lists
Australia (NICNAS): proprietary alkoxylated fatty Amine. salts; proprietary alkoxylated Organic acid.; Thiourea, N,N'-dibutyl

Japan (MITI): Thiourea, N,N'-dibutyl

Korea (TCCL): proprietary alkoxylated fatty Amine. salts; proprietary alkoxylated Organic acid.; Thiourea, N,N'-dibutyl

Philippines (RA6969): proprietary alkoxylated fatty Amine. salts; Thiourea, N,N'-dibutyl

Section 16. Other Information

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.