IDENTIFICATION

MSDS Record Number: 5618694
Product Name(s): TRIBUTYLAMINE
Product Identification: MSDS NUMBER: T4667
PRODUCT CODE: W405
C.A.S. NUMBER: 102-82-9
Date of MSDS: 2006-11-10
Currency Note: This MSDS was acquired from the supplier on 2007-09-06.

MANUFACTURER/SUPPLIER INFORMATION

Company: MALLINCKRODT BAKER INC

MATERIAL SAFETY DATA

Effective Date: 11/10/06

==
MSDS MATERIAL SAFETY DATA SHEET
==
From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Emergency Telephone Number: 908-859-2151

All non-emergency questions should be directed to Customer Service
(1-800-582-2537) for assistance.

J. T. BAKER

TRIBUTYLAMINE

1. Product Identification
Synonyms: N,N-Dibutyl-1-butynamine; Tri-n-butylamine;
Tris-n-butylamine
CAS No: 102-82-9
Molecular Weight: 185.36
Chemical Formula: (CH₃CH₂CH₂CH₂)₃N
Product Codes: W405

2. Composition/Information on Ingredients
3. Hazards Identification

Emergency Overview

DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. COMBUSTIBLE LIQUID AND VAPOR. MAY CAUSE SENSITIZATION.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

| Health Rating: | 3 - Severe (Poison) |
| Flammability Rating: | 2 - Moderate |
| Reactivity Rating: | 1 - Slight |
| Contact Rating: | 3 - Severe (Life) |
| Lab Protective Equip: | GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER |
| Storage Color Code: | Red (Flammable) |

Potential Health Effects

Inhalation:
Inhalation of vapors irritates the respiratory tract. May cause distressed breathing, coughing. May cause central nervous system effects. At room temperature the substance has such a low vapor pressure that inhalation of the vapor is unlikely.

Ingestion:
Corrosive. Harmful if swallowed. May cause tissue burns, abdominal pain, nausea.

Skin Contact:
Corrosive to the skin. May cause redness, pain, skin burns. Toxic. Harmful amounts may be absorbed through the skin. Sensitization has been observed.

Eye Contact:
Corrosive to the eyes. May cause redness, pain, blurred vision.

Chronic Exposure:
Repeated exposure may cause symptoms similar to those listed for acute effects.

Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures

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

Ingestion:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately. Call a physician immediately. Aspiration hazard.

Skin Contact:
Remove any contaminated clothing and shoes. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation develops or persists.

Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes,
lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures
Fire:
Flash point: 86°C (187°F) OC
Flammable limits in air % by volume:
Lel: 0.8; Uel: 6.4
Combustible Liquid.
Explosion:
Above the flash point, explosive vapor-air mixtures may be formed.
Fire Extinguishing Media:
Water spray, dry chemical, alcohol foam, or carbon dioxide.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures
Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8.
Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e.g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer.

7. Handling and Storage
Protect against physical damage. Outside or detached storage is preferred. Inside storage should be in a standard flammable liquids storage room or cabinet. Separate from oxidizing materials. Storage and use areas should be No Smoking areas. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection
Airborne Exposure Limits:
None established.
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.
Personal Respirators (NIOSH Approved):
For conditions of use where exposure to the substance is apparent, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.
9. Physical and Chemical Properties

Appearance: Boiling Point:
Pale yellow clear liquid. 216°C (421°F)
Odor: Melting Point:
Amine-like odor. -78°C (-94°F)
Solubility: Vapor Density (Air=1):
Sparingly soluble in water. 6.4
Density: Vapor Pressure (mm Hg):
0.78 0.29 @ 25°C (77°F)
pH: Evaporation Rate (BuAc=1):
No information found. No information found.
% Volatiles by volume @ 21°C (70°F):
100

10. Stability and Reactivity

Stability: Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
Burning may produce carbon monoxide, carbon dioxide, nitrogen oxides.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Acids, metals (such as aluminum and zinc), strong oxidizers.
Conditions to Avoid:
Heat, flame, other sources of ignition. Hygroscopic: when dissolved in
water it is a strong base and reacts violently with acids, and is
corrosive to aluminum and zinc.

11. Toxicological Information

Oral rat LD50: 114 mg/kg; skin rabbit LD50: 250 µl/kg

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>---NTP Carcinogen---</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Butanamine, n,n-dibutyl- (102-82-9)</td>
<td>Known Anticipated TARC Category</td>
</tr>
<tr>
<td></td>
<td>No                None</td>
</tr>
</tbody>
</table>

12. Ecological Information

Environmental Fate:
When released into the air, this material may be moderately degraded by
reaction with photochemically produced hydroxyl radicals. When released
into the air, this material is expected to have a half-life of less than
1 day. This material is not expected to significantly bioaccumulate. This
material has an estimated bioconcentration factor (BCF) of less than 100.
Environmental Toxicity:
No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in
an appropriate and approved waste facility. Although not a listed RCRA
hazardous waste, this material may exhibit one or more characteristics of
a hazardous waste and require appropriate analysis to determine specific
disposal requirements. Processing, use or contamination of this product
may change the waste management options. State and local disposal
regulations may differ from federal disposal regulations.
Dispose of container and unused contents in accordance with federal,
state and local requirements.
14. Transport Information

**Domestic (Land, D.O.T.)**

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>Hazard Class</th>
<th>UN/NA</th>
<th>Packing Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRIBUTYLAMINE</td>
<td>6.1</td>
<td>UN2542</td>
<td>II</td>
</tr>
</tbody>
</table>

Information reported for product/size: 500ML

**International (Water, I.M.O.)**

<table>
<thead>
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**International (Air, I.C.A.O.)**

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Information reported for product/size: 500ML

15. Regulatory Information

**Chemical Inventory Status - Part 1**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>TSCA</th>
<th>EC</th>
<th>Japan</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Butanamine, n,n-dibutyl- (102-82-9)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Chemical Inventory Status - Part 2**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Korea</th>
<th>DSL</th>
<th>NDSL</th>
<th>Phil.</th>
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</thead>
<tbody>
<tr>
<td>1-Butanamine, n,n-dibutyl- (102-82-9)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

**Federal, State & International Regulations - Part 1**

<table>
<thead>
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<th>TSCA</th>
<th>EC</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Butanamine, n,n-dibutyl- (102-82-9)</td>
<td>-SARA 302-</td>
<td>-SARA 313-</td>
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</table>

**Federal, State & International Regulations - Part 2**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CERCLA</th>
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<tr>
<td>1-Butanamine, n,n-dibutyl- (102-82-9)</td>
<td>261.33</td>
</tr>
</tbody>
</table>

**Chemical Weapons Convention**

No

**TSCA 12(b)**

No

**CDTA**

No

**SARA 311/312**

Acute: Yes
Chronic: Yes
Fire: Yes
Pressure: No
Reactivity: No
(Pure / Liquid)

**Australian Hazchem Code**

3X

**Australian Poison Schedule**

None allocated.

**WHMIS**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

<table>
<thead>
<tr>
<th>NFPA Ratings:</th>
<th>Health: 3</th>
<th>Flammability: 2</th>
<th>Reactivity: 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label Hazard Warning:</td>
<td>DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. COMBUSTIBLE LIQUID AND VAPOR. MAY CAUSE SENSITIZATION.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Label Precautions:
Do not breathe vapor.
Do not get in eyes, on skin, or on clothing.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.
Keep away from heat, sparks and flame.
Label First Aid:
In case of contact, immediately flush eyes or skin with plenty of water
for at least 15 minutes while removing contaminated clothing and shoes.
Wash clothing before reuse. Call a physician. If inhaled, remove to fresh
air. If not breathing, give artificial respiration. If breathing is
difficult, give oxygen. If swallowed, call a physician immediately.
Product Use:
Laboratory Reagent.
Revision Information:
No information found.
Disclaimer:
*******************************************************************************
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T4667

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