MATERIAL SAFETY DATA SHEET

SECTION 1 – IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY /UNDERTAKING

ISSUED BY: JEEN INTERNATIONAL CORPORATION
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PRODUCT: CETYL STEARYL ALCOHOL NF
INCI: Cetearyl Alcohol NF

PRODUCT USES: This product may be used for the production of alkyl amines, aluminum rolling lubricants, tertiary amines, cosmetics, ethoxylates, halides/mercaptans, polymerization stabilizers, and sulfation.

SECTION 2 – COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>CAS No:</th>
<th>WEIGHT %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-HEXADECANOL</td>
<td>36653-82-4</td>
<td>54.0 – 64.0</td>
</tr>
<tr>
<td>1-OCTADECANOL</td>
<td>112-92-5</td>
<td>31.0 – 41.0</td>
</tr>
</tbody>
</table>

SECTION 3 – HAZARDS IDENTIFICATION

Emergency Overview: Potential combustible dust if flaked or powdered. Dust generated from flaked product will be combustible at sufficient concentration.

Potential Health Effects:
- **Eye:** Accidental exposure to the eyes may produce a mild but transient irritation.
- **Skin:** Prolonged exposures may cause slight transient irritation. Heated product may cause thermal burns if contacted.
- **Inhalation:** No harmful effects expected with normal use. Dusting may result in slight irritation.
- **Ingestion:** May cause gastrointestinal irritation.

Physical/Chemical Hazards: Potential combustible dust if flaked or powdered. Dust generated from flaked product will be combustible at sufficient concentration.

Environmental Hazards: No available.

SECTION 4 – FIRST AID MEASURES

Eye: Immediately flush eyes with plenty of water for at least 15 minutes. Obtain medical attention if irritation persists.

Skin: Wash skin with soap and water. Remove contaminated clothing and clean before reuse.

Inhalation: Avoid breathing dust. If inhaled, remove to fresh air. Get medical attention.

Ingestion: If large quantities of this material are swallowed, obtain medical attention.

SECTION 5 – FIRE FIGHTING MEASURES

Extinguishing Media: Small fires: CO2 or dry chemical
Large fires: Foam

Unsuitable extinguishing media: Not available

Flash Point and method: 163 °C

Explosive limits in air: Upper: Not available Lower: Not available

Auto-ignition temperature: 247 °C

Sensitivity to mechanical impact/static discharge: Not available

Special Protective Equipment: Wear self-contained breathing apparatus and full protective clothing.

Other Fire Fight Considerations: Potential combustible dust if flaked or powdered. Dust generated from flaked product will be combustible at sufficient concentration.

Exposure hazards: Does not decompose up to 400 deg. F. Complete combustion forms carbon dioxide and water vapor. Partial combustion forms also carbon monoxide, soot, aldehydes and ketones.
SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions:
An appropriate NIOSH/MSHA approved respirator is recommended if dust is generated.

Environmental Precautions:  
Minimize contamination of drains, surface and ground waters.

Procedures for Spill/Leak Clean-up:  
Ventilate area and eliminate all ignition sources. Contain spill. Neutralization not required. Soak up with absorbent material such as papers, rags, or sawdust; or sweep up. Dispose of as any grease or oily material.

Refer to Section 8 for additional personal protection information.
Refer to section 13 for disposal considerations.

SECTION 7 – HANDLING AND STORAGE

Handling:  
Handle in accordance with good hygiene and safety procedures. Avoid contact with eyes, skin, and clothing Wash thoroughly after handling. Since empty containers contain product residue and can be dangerous, follow all hazard warnings and precautions even after container is emptied. Keep away from sources of ignition.

Storage:  
Keep away from heat, sparks or open flames. Keep away from possible contact with incompatible substances. Store in a cool dry place. Store in accordance with NFPA 30. Suitable for storing in most common vessels including stainless steel, zinc-type spray on linings, flaked polyester lining.

Refer to Section 6 for clean up of spillages
Refer to Section 13 for disposal considerations.

STORAGE/TRANSPORT PRESSURE: AMBIENT
LOAD/UNLOAD TEMPERATURE: 60 – 70 °C (140-160 °F)

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

General Precautions:  
Good industrial hygiene should be followed. Avoid breathing (heated) vapors. Avoid eye and skin contact.

Exposure Limit Values:  
Not established

Exposure Controls:
Engineering Controls:  
Ventilation: Local exhaust – preferred Mechanical – may be necessary if working at elevated temperatures or in enclosed areas

Personal Protection Equipment:
Eye:  
None required, although eye protection is recommended as part of good industrial hygiene

Skin:  
Protective gloves should be worn when handling heated molten product.

Inhalation:  
None required for normal usage, although an appropriate NIOSH/MSHA approved respirator is recommended if dust is generated.

Other Controls:  
Boots, eye wash fountain, safety shower, apron, protective clothing.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical State at 72 deg. F (22deg. C):  
Solid, flake or powder

Appearance:  
White

Odor:  
Mild Soapy

Odor Threshold:  
Not available

Important health, safety and environmental information:

pH:  
Not available

Boiling point/Boiling range:  
>480 deg. F (248.9deg.C) @ 760 mm Hg (101.3kPa)

Flash Point & Method:  
310 deg. F (154.4 deg. C) PMCC

Flammability (solid, gas):  
Not available

Explosive properties:  
Not available

Oxidising properties:  
Not available

Vapor pressure:  
< 0.01 mmHg @ 38 °C

Relative density:  
0.81 @ 65/25 deg. C

Melting Point:  
45 – 53 °C (113 – 127 °F)

Solubility:  
Water solubility: Negligible @ 72 deg. F (22 deg. C)

Fat solubility (solvent-oil to be specified):  
Not available

Partition coefficient:  
n-octanol/water: Not available

Viscosity:  
15 cSt @ 50 °C

Vapor density:  
8.3 – 9.3

Evaporation Rate (t=1):  
Not available

Explosive Limits:  
Not available

Auto ignition temperature:  
Not available

Coefficient of water/oil distribution:  
Not available

Specific Gravity:  
0.813 g/cm3 @ 52 °C
SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable under normal operational conditions
Conditions to Avoid: Not available
Materials to Avoid: Strong oxidizing agents
Hazardous Decomposition Products: Does not decompose up to 400 deg. F. Complete combustion forms carbon dioxide and water vapor. Partial combustion forms also carbon monoxide, soot, aldehydes and ketones.
Hazardous Polymerization: Will not occur.

SECTION 11 – TOXICOLOGICAL INFORMATION

Rat Acute Oral LD50: Greater than 5 gm per kilogram of body weight.
Eye: No eye irritation occurred from instillation of the undiluted product into rabbit’s eyes.
Skin: Undiluted product produced mild primary irritation in a 24 hour closed patch study with rabbits.

SECTION 12 – ECOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Duration</th>
<th>Endpoint</th>
<th>Species</th>
<th>Effect Concentration (mg/L)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>96th</td>
<td>LC50</td>
<td>Bluegill sunfish (Lepomis Macrochirus)</td>
<td>&gt;1000 mg/L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No observed effect level</td>
<td>Bluegill sunfish (Lepomis Macrochirus)</td>
<td>520.0 mg/L</td>
<td></td>
</tr>
</tbody>
</table>

TA-1618 does not show any microbial inhibition up to 10,000 mg/L

Hexadecanol (36653-82-4):

Ecotoxicity

<table>
<thead>
<tr>
<th>Duration</th>
<th>Endpoint</th>
<th>Species</th>
<th>Effect Concentration (mg/L)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>5d</td>
<td>No mortality</td>
<td>Fathead minnow (Pimephales promelas)</td>
<td>&gt;500 mg/L</td>
<td>Berger, 1958</td>
</tr>
</tbody>
</table>

Mobility

Mass Distribution by Environmental Compartment via Fugacity Level III Model
Air: 0.762%
Water: 8.75%
Soil: 29.9%
Sediment: 60.6%

Hexadecanol (36653-82-4) continued:
Bioaccumulative potential
LogKow 6.65 Burkhard, et al., 1985
LogKow 6.73 SRC
BCF 56 Freitag et al., 1982

Octadecanol (112-92-5):

Mobility

Mass Distribution by Environmental Compartment via Fugacity Level III Model
Air: 0.63%
Water: 7.35%
Soil: 28.7%
Sediment: 63.3%

Bioaccumulative Potential
LogKow 7.19 Burkhard et al., 1985
LogKow 7.72 SRC
BCF 100,000 OECD SIDS

SECTION 13 – DISPOSAL CONSIDERATIONS

DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE/PROVINCIAL AND LOCAL REGULATIONS.
Do not dispose of via sinks, drains or into the immediate environment.

SECTION 14 – TRANSPORT INFORMATION

Not restricted for transport.
SECTION 15 – ADDITIONAL REGULATORY INFORMATION

Inventory Status: TSCA, EINECS, DSL, Australia, Korea, Philippines, China, ENCS (Japan)

Canada
HAZARDOUS INGREDIENTS – WHMIS(Canadian Workplace Hazardous Material Information System)
This product when tested as a whole is not a controlled substance within the meaning of the Hazardous Products Act.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

SECTION 16 – OTHER INFORMATION

References:


Syracuse Research Corporation (SRC) Online Database.


The following sections contain revisions or new statements: 1

The submission of the MSDS may be required by law, but this is not an assertion that the substance is hazardous when used in accordance with proper safety practices and normal handling procedures. Data supplied are for use only in connection with occupational safety and health.

The information contained herein has been compiled from sources considered by Jeen International to be dependable and is accurate to the best of the Company’s knowledge. The information relates to the specific product designated herein, and does not relate to use in combination with any other material or any other process. Jeen International assumes no responsibility for injury to the recipient or third person(s), or for any damage to any property resulting from misuse of the controlled product.
SPECIFICATION AND (TYPICAL) PROPERTIES

Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroxyl Value</td>
<td>204 – 216 (211)</td>
</tr>
<tr>
<td>Acid Value</td>
<td>1.0 max (0.0)</td>
</tr>
<tr>
<td>Saponification Value</td>
<td>3.0 max (1.0)</td>
</tr>
<tr>
<td>Iodine Value</td>
<td>1.0 max (0.3)</td>
</tr>
<tr>
<td>Moisture, (% KF)</td>
<td>0.10 max (0.03)</td>
</tr>
</tbody>
</table>

Physical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color-AHPA</td>
<td>25 max (11)</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>65 C (0.810) 25 C</td>
</tr>
<tr>
<td>Melting Point, (C)</td>
<td>(50)</td>
</tr>
<tr>
<td>Appearance</td>
<td>Waxy white solid</td>
</tr>
</tbody>
</table>

Composition (GC%)

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C12</td>
<td>0.5 max (0.1)</td>
</tr>
<tr>
<td>C14</td>
<td>4.0 max (1.8)</td>
</tr>
<tr>
<td>C16</td>
<td>23.0 min (30)</td>
</tr>
<tr>
<td>C18</td>
<td>60.0 min (64)</td>
</tr>
<tr>
<td>C20</td>
<td>1.5 max (0.4)</td>
</tr>
<tr>
<td>Hydrocarbon</td>
<td>1.5 max (1.1)</td>
</tr>
<tr>
<td>CAS NO.</td>
<td>67762-27-0</td>
</tr>
</tbody>
</table>