MATERIAL SAFETY DATA SHEET

ADDOCAT 105  2200T

RHEIN CHEMIE CORPORATION
1014 Whitehead Road Ext.
Trenton, NJ  08638

TRANSPORTATION EMERGENCY
CALL CHEMTREC...........: (800) 424-9300
INTERNATIONAL ...........: (703) 527-3887

NON-TRANSPORTATION
RCC EMERGENCY PHONE : (609) 771-9100
RCC INFORMATION PHONE: (800) 289-2436

Section 1: Product and Company Identification

Product Name: ADDOCAT 105  2200T
Article Number: 2791610
Chemical Name: Triethylenediamine in Dipropylene Glycol

Section 2: Composition/Information on Ingredients

HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient Name/ CAS Number</th>
<th>Exposure Limits</th>
<th>Concentration Min.</th>
<th>Concentration Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triethylenediamine 280-57-9</td>
<td>OSHA (PEL): Not Established</td>
<td>40%</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>ACGIH (TLV): Not Established</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section 3: Hazards Identification

EMERGENCY OVERVIEW

CAUTION! No Physical Hazards  Color: Colorless  Form: Liquid  Odor: Ammonia-like
May cause eye, skin, and respiratory tract irritation. May be harmful if inhaled. May be harmful if absorbed through skin. May cause a temporary fogging of the eyes. May be harmful if swallowed. May cause kidney damage. Ground containers and equipment before transferring to avoid static sparks. Sudden reaction and fire may result when mixed with oxidizing agents. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture. Corrosive gases/fumes are given off during burning or thermal decomposition.
POTENTIAL HEALTH EFFECTS

Route(s) of Entry: Eye Contact, Inhalation, Skin Absorption, Skin Contact, Ingestion

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

Inhalation Hazards

Acute Inhalation Hazards: This product can cause irritation of the upper respiratory tract and mucous membranes. Effects depend on concentration and duration of exposure.

Chronic Inhalation Hazards: Depending on the concentration and duration of exposure to the amine vapors, repeated or prolonged exposure may cause inflammatory and ulcerative changes in the mouth and possibly bronchial and gastrointestinal disturbances. The effects of chronic inhalation depend on the duration and concentration level of exposure.

Skin Hazards

Acute Skin Hazards: Direct contact may cause severe irritation, pain or local discomfort.

Chronic Skin Hazards: Effects of chronic skin exposure are expected to be similar to those listed for acute skin exposure. Effects depend on concentration and duration of exposure.

Eye Hazards

Acute Eye Hazards: Corneal edema may give rise to a perception of "blue haze or halos" or "fog" around lights. The effect is transient and has no known residual effects.

Ingestion Hazards

Acute Ingestion Hazards: Ingestion of large amounts may result in liver and kidney injury, general depressed activity, and muscle weakness based on experimental studies.

Chronic Ingestion Hazards: May cause liver damage. May cause kidney damage.

Carcinogenic Components:

NTP: None

IARC: None

OSHA: None

Medical Conditions

Aggravated by Exposure: May aggravate existing eye, respiratory, kidney and liver conditions., May aggravate skin conditions.

Section 4: First Aid Measures

First Aid for Eye: In case of contact, flush eyes with large quantities of water for at least 15 minutes. The eyelids should be held apart during irrigation to ensure thorough flushing of all eye tissue. Call a physician immediately.
First Aid for Skin: Immediately remove contaminated clothing and shoes.Immediately proceed to an emergency safety shower. In case of skin contact, wash affected areas with soap and water. Call a physician immediately. Wash clothing and clean shoes before reuse. Contaminated leather wear should be discarded.

First Aid for Inhalation: If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician immediately.

First Aid for Ingestion: If material is ingested, do not induce vomiting unless directed to do so by medical personnel. Give victim one or two glasses of water or milk. Never give anything by mouth to an unconscious person. Call a physician immediately. Should vomiting occur, keep patients head below hip level to prevent aspiration of fluid into the lungs.

Note to Physician: Inducing vomiting is contraindicated because of the irritating nature of the product. If burned, treat as thermal burn. Exposure to the vapor of this product may cause minor transient edema of the corneal epithelium. This condition, referred to as "glaucopsia", "blue haze", or "blue-gray haze", produces a blurring of vision against a general bluish haze and the appearance of halos around bright objects. The effect disappears spontaneously within a few hours of the end of an exposure and leaves no sequelae.

Section 5: Fire Fighting Measures

Flash Point: 219 °F (104 °C)

Flammable Limits:
- Upper Explosion Limit (UEL %): Not Established
- Lower Explosion Limit (LEL %): Not Established

Auto-ignition Temperature: Not Established

Extinguishing Media:
- Suitable: Carbon Dioxide, Dry Chemical, Foam, Water spray for large fires.

Special Fire Fighting Procedures: Evacuate non-emergency personnel to a safe area. Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. Ignition will give rise to a Class B fire. Use cold water spray to cool fire exposed containers.

Unusual Fire/Explosion Hazards: Sudden reaction and fire may result if product is mixed with an oxidizing agent.

Section 6: Accidental Release Measures

Spill or Leak Procedures: Keep unnecessary personnel out of spill area. Emergency clean-up
personnel should wear appropriate protection when entering the spill area for clean-up. Extinguish all ignition sources. Do not allow spilled or released material to enter ground water, waste water or soil. Cover the spill with absorbent material such as sand, sweeping compound or diatomaceous earth. Scoop up solid absorbent for waste disposal. Place in properly marked containers for disposal. Remove containers to a safe place.

Other Accidental Release Notes:

Rhein Chemie requires that CHEMTREC be immediately notified (800-424-9300) when this product is unintentionally released from its container during its course of distribution, regardless of the amount released. Distribution includes transportation, storage incidental to transportation, loading and unloading. Such notification must be immediate and made by the person having knowledge of the release.

Section 7: Handling and Storage

Storage Temperature: Not Established - Ambient Recommended

Shelf Life: Not Established

Special Sensitivity: Heat and sources of ignition.

Handling/Storage Precautions: Keep away from heat, sparks and flames. Keep container tightly closed when not in use. Do not get in eyes. Do not get on skin or clothing. Do not breath dust, vapors or mist. Store in original or similar containers. Reseal containers immediately after use. Use with adequate ventilation.

Section 8: Exposure Controls/Personal Protection

Personal Protection Equipment

Eye Protection Requirements: Chemical safety goggles, full-face shield. Vapor resistant goggles should be worn when contact lenses are in use. In a splash hazard environment chemical goggles should be used in combination with a full face-shield.

Skin Protection Requirements: Permeation resistant gloves (neoprene, nitrile, or PVC) and impervious clothing (long sleeve shirts) are recommended. Minimize skin contact. Employees should wash their hands and face before eating, drinking or using tobacco products.

Ventilation Requirements: Explosion proof and general local exhaust ventilation with 12 - 30 changes per hour are recommended when working with this product. Thermal processing equipment should be ventilated to control gases and fumes given off during processing.

Respirator Requirements: Under normal handling conditions, at room temperature using good industrial hygiene practices, a respirator is not required. Observe OSHA regulations for respirator use (29 CFR 1910.134.) Under conditions of frequent use or heavy exposure, A NIOSH/MSHA
respirator is recommended. Air purifying respirator equipped with a dust and mist filter cartridge if fumes or dust are near or exceed the exposure limits listed in Section 2.

Additional Protective Measures: Safety showers and eyewash stations should be accessible to the work area. Employees should wash their hands and face before eating, drinking, or using tobacco products. Educate and train employees on the safe use and handling of this product.

**Section 9: Physical and Chemical Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form:</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color:</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor:</td>
<td>Ammonia-like</td>
</tr>
<tr>
<td>Odor Threshold:</td>
<td>Not Established</td>
</tr>
<tr>
<td>pH:</td>
<td>Approximately 10.2</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>381 - 399 °F (194 - 204 °C)</td>
</tr>
<tr>
<td>Melting/Freezing Point:</td>
<td>-4 °F (-20 °C)</td>
</tr>
<tr>
<td>Viscosity:</td>
<td>Not Established</td>
</tr>
<tr>
<td>Solubility in Water:</td>
<td>Soluble</td>
</tr>
<tr>
<td>Specific Gravity:</td>
<td>1.033</td>
</tr>
<tr>
<td>Bulk Density:</td>
<td>8.62 lb/gal</td>
</tr>
<tr>
<td>Evaporation Rate:</td>
<td>&lt; 0.02</td>
</tr>
<tr>
<td>Vapor Pressure:</td>
<td>1.4 mmHg @ 86 °F (30 °C)</td>
</tr>
<tr>
<td>Vapor Density:</td>
<td>4.37</td>
</tr>
</tbody>
</table>

**Section 10: Stability and Reactivity**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability:</td>
<td>Stable</td>
</tr>
<tr>
<td>Hazardous Polymerization:</td>
<td>Will not occur</td>
</tr>
<tr>
<td>Substances to Avoid:</td>
<td>Strong oxidizing agents, acids, aldehydes, halogenated organic compounds, copper or copper containing metals., Product slowly corrodes copper, aluminum, zinc and galvanized surfaces., Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion.</td>
</tr>
<tr>
<td>Conditions to Avoid:</td>
<td>High Heat</td>
</tr>
<tr>
<td>Decomposition Temperature:</td>
<td>Not Established</td>
</tr>
<tr>
<td>Decomposition Products:</td>
<td>By heat or fire: oxides of carbon, oxides of nitrogen, ammonia gas, and other aliphatic fragments which have not been determined.</td>
</tr>
</tbody>
</table>

**Section 11: Toxicological Information**

**Toxicity Data for ADDOCAT 105 2200T**

**Toxicity Note:** No data available for this product.
Toxicity Data for Triethylenediamine

Acute oral toxicity:  
LD50 = 1,700 mg/kg (Rat)  
LD50 = 1,100 mg/kg (Rabbit)  
LD50 = 2,250 mg/kg (Guinea pig)  
LD50 = 700 mg/kg (Rat)

Acute dermal toxicity:  
LD50 = > 2,000 mg/kg (Rat)

Acute inhalation toxicity:  
> 4,000 mg/L, 1 hrs, (Rat)

Eye Irritation:  
Moderately irritating (Rabbit) Standard Draize Test

Skin Irritation:  
Slightly irritating (Rabbit) Open Draize Test

Section 12: Ecological Information

Ecological Data for ADDOCAT 105  2200T
Ecological Note:  
No data available for this product.

Ecological Data for Triethylenediamine
Ecological Note:  
No data available for this component.

Section 13: Disposal Considerations

Waste Disposal Method:  
Disposal must be in compliance with federal, state and local environmental control regulations. Incineration is the preferred method of disposal. If incinerated, toxic and corrosive combustion gases must be properly handled.

Empty Container Precautions:  
Empty container retains product residue and can be hazardous. Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat, flame, sparks, static electricity, or other sources of ignition. Recondition or dispose of empty container in accordance with government regulations.

Section 14: Transportation Information

Technical shipping name:  
Alkaline Catalyst Mixture

Freight Class

Bulk:  
Chemicals, N.O.I. (NMFC 60000)

Package:  
Chemicals, N.O.I. (NMFC 60000)

Product Label:  
Product Label Established
Domestic Surface Transportation (DOT)
Hazard Class or Division: Non-Regulated

Marine Transportation (IMO / IMDG)
Hazard Class Division Non-Regulated
Number:

Air Transportation (ICAO / IATA)
Hazard Class Division Non-Regulated
Number:

Section 15: Regulatory Information

United States Federal Regulations

OSHA Hazcom Standard Hazardous
Rating:

TSCA Inventory List: On TSCA Inventory

CERCLA Hazardous Substance:
Component(s) None
Reportable Quantity

SARA Title III
SARA Section 302 Extremely Hazardous Substances:
Component(s)/CAS Number None
Concentration Min. Max.

SARA Section 311/312 Hazard Categories: Immediate Health Hazard, Delayed Health Hazard

SARA Section 313 Toxic Chemicals:
Component(s)/CAS Number None
Reporting Threshold Min. Max.
Concentration

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

State Right-to-Know Information

Component(s)/CAS Number State Code Min. Max.
Concentration

Triethylenediamine PA-N, NJ-H 40% 70%
280-57-9

Dipropylene Glycol PA-H, NJ-N 40% 70%
25265-71-8

State Code Translation Table
PA-N = Pennsylvania Non-hazardous
PA-H = Pennsylvania Hazardous Substance List
**Foreign Chemical Inventory List(s)**

<table>
<thead>
<tr>
<th>List</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS (Europe):</td>
<td>Listed</td>
</tr>
<tr>
<td>DSL (Canada):</td>
<td>Listed</td>
</tr>
<tr>
<td>AICS (Australia):</td>
<td>Listed</td>
</tr>
<tr>
<td>MITI (Japan):</td>
<td>Listed</td>
</tr>
<tr>
<td>MOE (Korea):</td>
<td>Listed</td>
</tr>
<tr>
<td>PICCS (Philippines):</td>
<td>Listed</td>
</tr>
</tbody>
</table>

**Section 16: Other Information**

**HMIS Rating**

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>* 2</td>
</tr>
<tr>
<td>Flammability</td>
<td>1</td>
</tr>
<tr>
<td>Reactivity</td>
<td>1</td>
</tr>
</tbody>
</table>

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe  
*=Chronic Health Hazard

RHEIN CHEMIE CORPORATION’s method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. HMIS and NFPA ratings are provided by RHEIN CHEMIE CORPORATION as a customer service.

Contact:  HES Dept.  
Phone:  (609) 771-3522  
MSDS Number: 000000001385  
Version Date: 06/30/2006  
MSDS Version: 2.0

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Indicates Relevant Change Made.