MATERIAL SAFETY DATA SHEET

ADDOVATE TX  440D

RHEIN CHEMIE CORPORATION
145 Parker Court
Chardon, OH  44024

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

NON-TRANSPORTATION
RCC EMERGENCY PHONE   : (440) 285-3547
RCC INFORMATION PHONE: (800) 289-2436

Section 1: Product and Company Identification

Product Name: ADDOVATE TX 440D
Article Number: 1568551
Product Code: 220240, 220241
Chemical Family: Sulphonated Hydrocarbon Preparation
Synonyms:

Section 2: Composition/Information on Ingredients

HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient Name/ CAS Number</th>
<th>Exposure Limits</th>
<th>Concentration</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyglycol Oleate</td>
<td>OSHA (PEL): Not Established</td>
<td>40%</td>
<td></td>
<td>70%</td>
</tr>
<tr>
<td>CAS# is a trade secret</td>
<td>ACGIH (TLV): Not Established</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paraffin Oils 8012-95-1</td>
<td>OSHA (PEL): 5.00 mg/m3 TWA</td>
<td>3%</td>
<td>5.00</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>ACGIH (TLV): 5.00 mg/m3 TWA</td>
<td></td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alkyl Aryl Sulfonate</td>
<td>OSHA (PEL): Not Established</td>
<td>3%</td>
<td></td>
<td>7%</td>
</tr>
<tr>
<td>CAS# is a trade secret</td>
<td>ACGIH (TLV): Not Established</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Alicyclic Amine Catalyst
CAS# is a trade secret

OSHA (PEL): 1% 5%
Not Established
ACGIH (TLV): Not Established

Section 3: Hazards Identification

EMERGENCY OVERVIEW

May cause eye, skin, and respiratory tract irritation. May cause a temporary fogging of the eyes. Contains material which may cause cancer based on animal data. Vapors may spread long distances and ignite. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture. Use water as fog or mist; solid streams may spread fire. Toxic gases/fumes are given off during burning or thermal decomposition.

POTENTIAL HEALTH EFFECTS

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

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

Inhalation Hazards
Acute Inhalation Hazards: The hydrocarbon components of this material, if misted or vapors are generated from processing or heating, may cause irritation of the mucous membranes and the upper respiratory tract and may cause lipoid pneumonia (inflammation of the lungs), headache, dizziness and/or drowsiness if exposure is excessive. This product also contains an alicyclic amine catalyst which is reported to cause irritation, sore throat, coughing, dyspnea, and lung edema if inhaled in high concentrations. The benzenesulfonic acid (C10-16) alkyl derivative is considered a corrosive substance, however complete human health data has not been developed for this component.

Chronic Inhalation Hazards: Repeated and prolonged contact with oils may cause fibrotic nodules, lipid pneumonia and lipid granuloma.

Skin Hazards
Acute Skin Hazards: This product may cause skin irritation. May cause some redness of the affected area, with itching and swelling possible. The usual skin response to oil based materials is an oil folliculitis (inflammation of the hair follicles) and oil acnethat arises as a result of chemical irritation and mechanical plugging of the hair follicles. The alicyclic amine in this product is reported to cause skin irritation and may be absorbed through the skin.

Chronic Skin Hazards: Repeated and/or prolonged contact with this product may cause dermatitis or other allergic skin reactions. Repeated and prolonged contact with mineral oils may cause defatting of the skin which may result in dermatitis.

Eye Hazards
Acute Eye Hazards: Repeated and/or prolonged contact with this product may cause
dermatitis or other allergic skin reactions.

**Chronic Eye Hazards:** None reported for the product as a whole, expected to be similar to those listed for acute eye exposure. The alicyclic amine has been reported to cause blurred vision, with blue haze or fog and halos around lights. However, these symptoms usually cleared within several hours after leaving the area.

**Ingestion Hazards**

**Acute Ingestion Hazards:** However, if ingested this product is expected to cause some gastrointestinal distress with nausea and vomiting. The alicyclic amine may cause sore throat, abdominal pain and nausea.

**Chronic Ingestion Hazards:** None reported for this product as a whole.

**Carcinogenic Components:**
- **NTP:** None
- **IARC:** None
- **OSHA:** None

**Medical Conditions Aggravated by Exposure:** May aggravate existing eye, skin or respiratory conditions.

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**Section 4: First Aid Measures**

**First Aid for Eye:** Get medical attention if irritation develops or persists. 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.

**First Aid for Skin:** In case of skin contact, wash affected areas with soap and water. Get medical attention if irritation develops or persists. Immediately remove contaminated clothing and shoes. Wash clothing and clean shoes before reuse.

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

**First Aid for Ingestion:** Give victim one or two glasses of water or milk. If material is ingested, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**Note to Physician:** Treat symptomatically.

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**Section 5: Fire Fighting Measures**

**Flash Point:** > 212 °F (> 100 °C) DIN 22719

**Flammable Limits:**
<table>
<thead>
<tr>
<th><strong>Upper Explosion Limit</strong></th>
<th>Not Established</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lower Explosion Limit</strong></td>
<td>Not Established</td>
</tr>
<tr>
<td><strong>Auto-ignition Temperature:</strong></td>
<td>680 °F (360 °C) DIN 51794</td>
</tr>
<tr>
<td><strong>Extinguishing Media:</strong></td>
<td>Water, Carbon Dioxide, Dry Chemical, Foam</td>
</tr>
<tr>
<td><strong>Special Fire Fighting Procedures:</strong></td>
<td>A solid stream of water directed into the burning material could spread the fire. 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. Use cold water spray to cool fire exposed containers. During a fire, irritating and toxic gases may be generated by thermal decomposition or combustion.</td>
</tr>
<tr>
<td><strong>Unusual Fire/Explosion Hazards:</strong></td>
<td>None known.</td>
</tr>
</tbody>
</table>

**Section 6: Accidental Release Measures**

**Spill or Leak Procedures:** Do not allow spilled or released material to enter ground water, waste water or soil. Extinguish all ignition sources. Emergency clean-up personnel should wear appropriate protection when entering the spill area for clean-up. Notify local health authorities and other appropriate agencies if such contamination should occur. Cover the spill with absorbent material such as sand, sweeping compound or diatomaceous earth. Scoop up solid absorbent for waste disposal. Spill area can be washed with water. Ventilate area to remove vapors.

**Section 7: Handling and Storage**

**Storage Temperature:**
- **Minimum:** 32 °F (0 °C)

**Shelf Life:** Not Determined

**Handling/Storage Precautions:** Keep away from heat, sparks and flames. Store in a dry place away from excessive heat. Keep container tightly closed when not in use. Avoid contact with skin or clothing. Avoid breathing dusts, vapors or mists. Storage area should be equipped with sprinkler system. Handle in accordance with good industrial hygiene and safety practices.

**Section 8: Exposure Controls/Personal Protection**
Personal Protection Equipment

Eye Protection Requirements: Contact lenses should not be worn. Chemical safety goggles, full-face shield, safety glasses with side shields or goggles are recommended.

Skin Protection Requirements: Permeation resistant gloves (neoprene, nitrile, or PVC) and impervious clothing (long sleeve shirts) are recommended.

Ventilation Requirements: Use local exhaust ventilation if dusting or misting is a problem, to maintain air levels below the recommended exposure limit. A capture velocity of 100-150 fpm is recommended for local ventilation.

Respirator Requirements: The specific respirator selected must be based on contamination levels found in the work place, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA). Air purifying respirator equipped with a full-face organic vapor and dust/mist cartridge if vapors are near or exceeding the exposure limits listed in Section 2. In areas of high concentrations, confined space or other poorly ventilated areas and for large spill clean-up sites, fresh air-line respirators or self-contained breathing apparatus should be used. Observe OSHA regulations for respirator use (29 CFR 1910.134.)

Additional Protective Measures: Emergency showers and eye wash stations should be available. 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

Physical Form: Liquid
Color: Brown
Odor: Slight Odor
Odor Threshold: Not Established
pH: Approximately 6.2
Boiling Point: > 212 °F (> 100 °C)
Melting/Freezing Point: Not Established
Viscosity: Approximately 475 mPa.s @ 68 °F (20 °C) ASTM D1824
Solubility in Water: Miscible
Specific Gravity: 0.99 @ 68 °F (20 °C)
Bulk Density: Not Established
Evaporation Rate: Not Established
Vapor Pressure: 5.25 mmHg @ 68 °F (20 °C)
24 mmHg @ 122 °F (50 °C)
Vapor Density: Not Established
VOC by Weight: Not Established
HOC by Weight: None

Section 10: Stability and Reactivity

Stability: Stable
Hazardous Polymerization: Will not occur
Substances to Avoid: Oxidizing agents
Conditions to Avoid: Avoid heat, flames, sparks and other sources of ignition.
Decomposition Temperature: Not Established
Decomposition Products: By heat or fire: carbon monoxide, carbon dioxide, oxides of nitrogen and sulfur and other undetermined aliphatic fragments.

Section 11: Toxicological Information

Toxicity Data for ADDOVATE TX 440D
Acute oral toxicity: LD50 = > 5,000 mg/kg (Mouse)
Skin Irritation: Non-irritating (Rabbit) OECD Guideline No. 404 (Acute Dermal Irritation/Corrosion)

Toxicity Data for Polyglycol Oleate
Acute oral toxicity: LD50 = 500 mg/kg (Mouse)
Eye Irritation: Slightly irritating (Rabbit) Standard Draize Test
Skin Irritation: Slightly irritating (Rabbit) Standard Draize Test

Toxicity Data for Paraffin Oils
Acute oral toxicity: LD50 = 22 g/kg (Mouse)
Eye Irritation: Moderately irritating (Rabbit)
Skin Irritation: Slightly irritating (Rabbit)

Toxicity Data for Alkyl Aryl Sulfonate
Toxicity Note: No data available for this component.

Toxicity Data for Alicyclic Amine Catalyst
Toxicity Note: No data available for this component.

Section 12: Ecological Information

Ecological Data for ADDOVATE TX 440D
Biological Oxygen Demand (BOD): 951 mg/g
Chemical Oxygen Demand (COD): 2,384 mg/g
Ecological Note: Water Pollution Class WGK 2 - impairment of water quality (German Water Resources Act)
Ecological Data for Polyglycol Oleate
Ecological Note: No data available for this component.

Ecological Data for Paraffin Oils
Plant Toxicity: 10,000 ug/L, 6 Days. Algae

Ecological Data for Alkyl Aryl Sulfonate
Ecological Note: No data available for this component.

Ecological Data for Alicyclic Amine Catalyst
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. 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: Sulphonated Hydrocarbon Preparation

RSPA/DOT Regulated Components:

<table>
<thead>
<tr>
<th>Component(s)/</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS Number</td>
<td>RQ. Min. Max.</td>
</tr>
<tr>
<td>Ethylene Oxide</td>
<td>10 lb 0% 0.1%</td>
</tr>
</tbody>
</table>

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 Rating: Hazardous

TSCA Inventory List: On TSCA Inventory

CERCLA Hazardous Substance:

<table>
<thead>
<tr>
<th>Component(s)</th>
<th>Reportable Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

SARA Title III

SARA Section 302 Extremely Hazardous Substances:

<table>
<thead>
<tr>
<th>Component(s)/CAS Number</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

SARA Section 311/312 Hazard Categories:

Immediate Health Hazard, Delayed Health Hazard

SARA Section 313 Toxic Chemicals:

<table>
<thead>
<tr>
<th>Component(s)/CAS Number</th>
<th>Reporting Threshold</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
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</tbody>
</table>

RCRA Status:

Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product, should be classified as a hazardous waste. (40 CFR 261.20-24)

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

<table>
<thead>
<tr>
<th>Component(s)/CAS Number</th>
<th>State Code</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyglycol Oleate</td>
<td>PA-N, NJ-N</td>
<td>Min. 40%</td>
</tr>
<tr>
<td>Petroleum Hydrocarbon Salt</td>
<td>PA-N, NJ-N</td>
<td>Max. 70%</td>
</tr>
<tr>
<td>Paraffin Oils 8012-95-1</td>
<td>PA-N, NJ-N, MA-H</td>
<td>Min. 3%</td>
</tr>
<tr>
<td>Alkyl Aryl Sulfonate</td>
<td>PA-N, NJ-N</td>
<td>Min. 3%</td>
</tr>
<tr>
<td>Alicyclic Amine Catalyst</td>
<td>PA-H, NJ-H, MA-H</td>
<td>Min. 1%</td>
</tr>
</tbody>
</table>

The following component(s) are listed under Pennsylvania Special Hazards:

<table>
<thead>
<tr>
<th>Component(s)</th>
<th>State Code</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene Oxide</td>
<td>PA-S</td>
<td>Min. 0%</td>
</tr>
<tr>
<td>75-21-8</td>
<td></td>
<td>Max. 0.1%</td>
</tr>
</tbody>
</table>
The following component(s) are listed under New Jersey Special Hazards:
Alicyclic Amine Catalyst  NJ-S  1%  5%
NJTSRN:000000066

The following component(s) are listed under Massachusetts Extra-ordinary Hazards:
Ethylene Oxide  MA-X  0%  0.1%
75-21-8
Cristobalite  MA-X  0%  0.1%
14464-46-1
Crystalline Silica (Quartz)  MA-X  0%  0.01%
14808-60-7

The following component(s) are listed under California Proposition 65:
Ethylene Oxide  CA-B  0%  0.1%
75-21-8
Crystalline Silica (Quartz)  CA-C  0%  0.01%
14808-60-7

State Code Translation Table
PA-N = Pennsylvania Non-hazardous
PA-H = Pennsylvania Hazardous Substance List
PA-S = Pennsylvania Special Substances List
NJ-N = New Jersey Other - includes predominant ingredients
NJ-H = New Jersey Hazardous Substance List
NJ-S = New Jersey Special Health Hazardous Substance List
MA-H = Massachusetts Hazardous Substance List
MA-X = Massachusetts Extra-ordinary Hazardous Substance List
CA-C = Warning! This chemical is known to the State of California to cause cancer.
CA-B = Warning! This chemical is known to the State of California to cause cancer and birth defects or other reproductive harm.

Section 16: Other Information

HMIS Rating

<table>
<thead>
<tr>
<th></th>
<th>*</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flammability</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td></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:  (440) 285-3547
MSDS Number: R34983
Version Date: 02/05/2008
MSDS Version: 1.15

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Indicates Relevant Change Made.