MATERIAL SAFETY DATA SHEET

ADDODCAT 726B    374.8D

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: ADDOCAT 726B    374.8D
Article Number: 2290005
Chemical Family: Cyclo aliphatic amines
Chemical Name: N,N-dimethylcyclohexanamine
Synonyms: Dimethylcyclohexylamine
CAS Number: 98-94-2

Section 2: Composition/Information on Ingredients

HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient Name/ CAS Number</th>
<th>Exposure Limits</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N-dimethylcyclohexanamine 98-94-2</td>
<td>OSHA (PEL): Not Established</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>ACGIH (TLV): Not Established</td>
<td></td>
</tr>
</tbody>
</table>

Section 3: Hazards Identification

EMERGENCY OVERVIEW

DANGER! Corrosive. Flammable.  Color: Colorless to Yellow  Form: Liquid
Odor: Pungent odor (Amine like)
Harmful if inhaled or ingested. Causes respiratory tract irritation. Causes skin burns.
Causes eye burns. May cause a temporary fogging of the eyes. Harmful if swallowed.
Vapors or mist may be a fire and explosion hazard when exposed to high temperature or ignition. Ground containers and equipment before transferring to avoid static sparks.
Vapors may spread long distances and ignite. Water may cause frothing. Use cold water
spray to cool fire-exposed containers to minimize the risk of rupture. Toxic gases/fumes are given off during burning or thermal decomposition. Closed container may explode under extreme heat.

POTENTIAL HEALTH EFFECTS

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

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

Inhalation Hazards
Acute Inhalation Hazards: This product, based on current information is expected to cause irritation and may also cause burns of the respiratory tract and mucous membranes of the nose, throat, and esophagus.

Chronic Inhalation Hazards: Depending on the concentration and duration of exposure, repeated and/or prolonged exposure may cause inflammatory and ulcerative changes in the mouth and possibly bronchial and gastrointestinal disturbances.

Skin Hazards
Acute Skin Hazards: Product is considered corrosive to the skin and is expected to cause severe skin damage resulting in dermatitis and deep burns.

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

Eye Hazards
Acute Eye Hazards: Exposure to vapor or solution causes severe irritation and possible burns. The amine vapors are irritating and have been reported to cause transient fogging of the eyes or corneal edema. Initial symptoms may be discomfort, tearing and/or blurring of vision, "halo-vision". Permanent eye damage including blindness may result if there is a delay in flushing product from the person's eyes.

Chronic Eye Hazards: Effects are expected to be similar to those listed above for acute eye exposure. In addition to effects listed in acute exposure, repeated or prolonged contact may result in conjunctivitis.

Ingestion Hazards
Acute Ingestion Hazards: This product is considered toxic by ingestion and poses a danger of serious damage to the health if swallowed. If ingested, this product is expected to cause significant irritation and possibly severe burns to the mucous membranes.

Chronic Ingestion Hazards: None reported for this product as a whole, expected to be similar to those listed for acute ingestion.

Carcinogenic Components:
NTP: None
IARC: None
OSHA: None

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

Section 4: First Aid Measures

**First Aid for Eye:**
Call a physician immediately. 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. Call a physician immediately. 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 immediately. 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. Call a physician immediately. 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.

**Note to Physician:**
Inducing vomiting is contraindicated because of the irritating nature of the product.

Section 5: Fire Fighting Measures

**Flash Point:**
106 °F (41 °C) Pensky-Martens Closed Cup (ASTM D-93)

**Flammable Limits:**
- **Upper Explosion Limit (UEL %):** 19
- **Lower Explosion Limit (LEL %):** 0.8

**Auto-ignition Temperature:**
Begins at 392 °F (200 °C)

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

**Special Fire Fighting Procedures:**
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.

Section 6: Accidental Release Measures

**Spill or Leak Procedures:**
Extinguish all ignition sources. Emergency clean-up personnel should wear appropriate protection when entering the spill area for...
clean-up. Do not allow spilled or released material to enter ground water, waste water or soil. Notify local health authorities and other appropriate agencies if such contamination should occur. Place in properly marked containers for disposal. Vermiculite absorbent can be spread over the spill area to absorb as much of the remaining product as possible. Scoop up solid absorbent for waste disposal. Spill area can be washed with water. Ventilate area to remove vapors.

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. Such notification must be immediate and made by the person having knowledge of the release. Distribution includes transportation, storage incidental to transportation, loading and unloading.

Section 7: Handling and Storage

Storage Temperature:
Minimum: 68 °F (20 °C)
Maximum: 81 °F (27 °C)

Shelf Life: 6 Months


Handling/Storage Precautions:
Keep away from heat, sparks and flames. Keep container tightly closed when not in use. Do not reseal container if contamination is suspected. Do not get on skin or clothing. Do not get in eyes. Do not breath dust, vapors or mist. This product may form explosive vapor/air mixtures.

Other Notes: Store away from food and beverages.

Section 8: Exposure Controls/Personal Protection

Personal Protection Equipment
Eye Protection Requirements: Chemical safety goggles, full-face shield., Contact lenses should not be worn.

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.

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: Safety showers and eyewash stations should be accessible to the work area. Employees working with this product should not eat, drink, or use tobacco products in the work area.

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 to Yellow</td>
</tr>
<tr>
<td>Odor</td>
<td>Pungent odor (Amine like)</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>127.2</td>
</tr>
<tr>
<td>pH</td>
<td>Approximately 12.5 @ 5 g/l 68 °F (20 °C)</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>323 - 329 °F (162 - 165 °C) @ 759.8 mmHg</td>
</tr>
<tr>
<td>Melting/Freezing Point</td>
<td>&lt; -76 °F (&lt; -60 °C)</td>
</tr>
<tr>
<td>Viscosity</td>
<td>1.19 mPa.s @ 68 °F (20 °C)</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Essentially Insoluble</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.85 @ 68 °F (20 °C)</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>Not Established</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>2.7 mmHg @ 68 °F (20 °C)</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not Established</td>
</tr>
</tbody>
</table>

Section 10: Stability and Reactivity

Stability: Stable
Hazardous Polymerization: Will not occur
Conditions to Avoid: Periods of prolonged overheating or temperatures above 86 F (30 C) will cause discoloration.
Decomposition Products: By heat or fire: oxides of carbon, oxides of nitrogen, and other aliphatic fragments which have not been determined.

Section 11: Toxicological Information

Toxicity Data for ADDOCAT 726B 374.8D
Acute oral toxicity: LD50 = 425 mg/kg (Rat)
Eye Irritation: Corrosive (Rabbit)
Skin Irritation: Corrosive (Rabbit)
Toxicity Data for N,N-dimethylcyclohexanamine

Acute oral toxicity: \( \text{LD}_{50} = 425 \text{ mg/kg (Rat)} \)

Acute dermal toxicity: \( \text{LD}_{50} = 400 - 2,000 \text{ mg/kg (Rat)} \)

Acute inhalation toxicity: \( 4.5 \text{ mg/L, 4 hrs, (Rat)} \)
\( 4.4 \text{ mg/L, 4 hrs, (Rabbit)} \)

Eye Irritation: Corrosive (Rabbit)

Skin Irritation: Corrosive (Rabbit)

Sensitization: No sensitization. (Guinea pig)

Section 12: Ecological Information

Ecological Data for ADDOCAT 726B 374.8D

Ecological Note: This product is considered toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

Ecological Data for N,N-dimethylcyclohexanamine

Fish Toxicity: \( 22 - 46 \text{ mg/L, 96 hrs. Ide, silver or golden orfe (Leuciscus idus)} \)

Biodegradation: \( > 70 \%, \) Biodegradation tests indicate that this material would meet the OECD guidelines for classification as "readily biodegradable."

Inhibition Bacteria: \( \text{EC}_{50}: 209 \text{ mg/L, 17 hrs.} \)

Plant Toxicity: \( 309 \text{ mg/L, 72 hrs. Algae} \)

Ecological Note: Water Pollution Class WGK 1 - slightly hazardous to water (German Water Resources Act)

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: Dimethylcyclohexylamine
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)
Proper Shipping Name: Dimethylcyclohexylamine
Hazard Class or Division: 8, 3
UN/NA Number: UN2264
Packing Group: II
Hazard Label(s): Corrosive, Flammable Liquid
Hazard Placard(s): Corrosive, Flammable

Marine Transportation (IMO / IMDG)
Proper Shipping Name: Dimethylcyclohexylamine
Hazard Class Division 8, 3.2
Number: UN2264
Packing Group: II
Hazard Label(s): Corrosive, Flammable Liquid
Hazard Placard(s): Corrosive, Flammable Liquid

Air Transportation (ICAO / IATA)
Proper Shipping Name: Dimethylcyclohexylamine
Hazard Class Division: 8
Number: UN2264
Subsidiary Risk: 3
Packing Group: II
Hazard Label(s): Corrosive, Flammable Liquid
Radioactive?: Non-Radioactive
Passenger Air - Max. Qty.: 1 L
Passenger Packing Instruction: 808
Cargo Air - Max. Qty.: 30 L
Cargo Air Packing: 812
Instruction:

Section 15: Regulatory Information

United States Federal Regulations

OSHA Hazcom Standard Rating: Hazardous

TSCA Inventory List: On TSCA Inventory

CERCLA Hazardous Substance:
  Component(s) None
  Reportable Quantity

Material Name: ADDOCAT 726B  374.8D   Article Number: 2290005
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SARA Title III
SARA Section 302 Extremely Hazardous Substances:

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

SARA Section 311/312 Hazard Categories:

Immediate Health Hazard, Fire Hazard

SARA Section 313 Toxic Chemicals:

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

RCRA Status:
When discarded in its purchased form, this product meets the criteria of corrosivity, and should be managed as a hazardous waste (EPA Hazardous Waste Number D002). (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 Min.</th>
<th>Concentration Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N-dimethylcyclohexanamine 98-94-2</td>
<td>PA-N, NJ-H</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

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

N,N-dimethylcyclohexanamine 98-94-2

100%

State Code Translation Table

PA-N = Pennsylvania Non-hazardous
NJ-H = New Jersey Hazardous Substance List
NJ-S = New Jersey Special Health Hazardous Substance List

Foreign Chemical Inventory List(s)

- EINECS (Europe): Listed
- DSL (Canada): Listed
- AICS (Australia): Listed
- MITI (Japan): Listed
- MOE (Korea): Listed
- PICCS (Philippines): Listed

Section 16: Other Information

HMIS Rating

<table>
<thead>
<tr>
<th></th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>3</td>
</tr>
<tr>
<td>Flammability</td>
<td>2</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: (440) 285-3547
MSDS Number: 000000000381
Version Date: 11/08/2006
MSDS Version: 3.1

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Indicates Relevant Change Made.