METHYLENE CHLORIDE
DICHLOROMETHANE

REVISION DATE: JANUARY, 1995
REVISION NO: 1

MATERIAL SAFETY DATA SHEET

INFORMATION/EMERGENCY TELEPHONE NUMBER 616.726.3171
CHEMTREC TELEPHONE NUMBER 800.424.9300
CANADIAN EMERGENCY TELEPHONE NUMBER 613.996.6666

I. IDENTIFICATION

CHEMICAL NAME: METHYLENE CHLORIDE
CHEMICAL FAMILY: CHLORINATED HYDROCARBON
SYNONYMS: DICHLOROMETHANE, METHYLENE DICHLORIDE
DOT PROPER SHIPPING NAME: DICHLOROMETHANE
DOT HAZARD CLASS: KEEP AWAY FROM FOOD, 6.1, P.G. III
DOT IDENTIFICATION NUMBER: UN 1593
MOLECULAR WEIGHT: 84.93
FORMULA: CH2CL2
CAS NUMBER: 75-09-2

II. PHYSICAL AND CHEMICAL DATA

BOILING POINT, 760 MM HG: 39.75 C
VAPOR PRESSURE AT 20 C: 350 MM HG
% VOLATILES BY VOLUME: CA 100
FREEZING POINT: -95.14 C
VAPOR DENSITY (AIR=1): 2.9
SPECIFIC GRAVITY (H2O=1): @ 20 C 1.33
EVAPORATION RATE: (ETHER=1) CA 0.7
SOLUBILITY IN WATER: @ 20 C 1.6%
STABILITY: STABLE
HAZARDOUS POLYMERIZATION: NOT EXPECTED TO OCCUR.
APPEARANCE AND ODOR: CLEAR, COLORLESS LIQUID WITH A SWEET ETHER-LIKE ODOR.
CONDITIONS TO AVOID: HEAT, SPARKS, OPEN FLAME, OPEN CONTAINERS, POOR VENTILATION, AND MOISTURE.
MATERIALS TO AVOID: ACTIVE METALS AND STRONG ALKALINE SOLUTIONS.
HAZARDOUS DECOMPOSITION PRODUCTS: PHOSGENE, HYDROGEN CHLORIDE, AND CHLORINE

III. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): NONE (CLOSED CUP)
AUTO IGNITION TEMPERATURE: 556 C
FLAMMABLE LIMITS IN AIR % BY VOLUME: LOWER LIMIT 12.0 UPPER LIMIT 19.0
UNUSUAL FIRE AND EXPLOSION HAZARDS:
CONCENTRATED VAPORS CAN BE IGNITED BY HIGH INTENSITY HEAT SOURCE OR FLAME. TOXIC AND CORROSIVE GASES ARE FORMED ON CONTACT WITH FLAMES OR HOT GLOWING SURFACES.

IV. HAZARDOUS COMPONENTS

METHYLENE CHLORIDE WT.% CA 100 TLV 50 FPM CAS NO. 75-09-2

EXTINGUISHING MEDIA: NON-FLAMMABLE MATERIAL. USE DRY CHEMICAL, CARBON DIOXIDE, FOAM, OR WATER SPRAY AS APPROPRIATE FOR SURROUNDING FIRE AND MATERIALS.

SPECIAL FIRE FIGHTING PROCEDURES: NON-FLAMMABLE MATERIAL. WEAR FULL PROTECTIVE CLOTHING AND SELF-CONTAINED BREATHING APPARATUS. HEAT WILL BUILD PRESSURE AND MAY RUPTURE CLOSED STORAGE CONTAINERS. KEEP FIRE-EXPOSED CONTAINERS COOL WITH WATER SPRAY.
V. HEALTH HAZARDS

<table>
<thead>
<tr>
<th>OCCUPATIONAL EXPOSURE LIMITS</th>
<th>CONCENTRATION IMMEDIATELY DANGEROUS TO HEALTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA 8-HOUR PEL</td>
<td>500 PPM</td>
</tr>
<tr>
<td>CEILING</td>
<td>1,000 PPM</td>
</tr>
<tr>
<td>PEAK</td>
<td>2,000 PPM</td>
</tr>
<tr>
<td>OSHA/NIOSH</td>
<td>5,000 PPM</td>
</tr>
<tr>
<td>ACGIH TLV-TWA</td>
<td>100 PPM</td>
</tr>
<tr>
<td>ACGIH TLV-STEEL (15 MIN.)</td>
<td>500 PPM</td>
</tr>
<tr>
<td>NSC</td>
<td>200 PPM</td>
</tr>
</tbody>
</table>

NIOSH LOWEST FEASIBLE LIMIT

CARCINOGENIC DATA
METHYLENE CHLORIDE IS LISTED AS A SUSPECTED HUMAN CARCINOGEN BY ACGIH AND AS AN ANIMAL CARCINOGEN BY IARC AND NTP.

PRIMARY ROUTES OF ENTRY
METHYLENE CHLORIDE MAY EXERT ITS EFFECTS THROUGH INHALATION, SKIN ABSORPTION, AND INGESTION.

INDUSTRIAL EXPOSURE: ROUTE OF EXPOSURE/SIGNS AND SYMPTOMS

INHALATION: EXPOSURE CAN CAUSE LIGHT-HEADEDNESS, VERTIGO, DROWSINESS, NARCOSIS, HEADACHE AND DIZZINESS, UNCONSCIOUSNESS, AND EVEN DEATH IN EXTREME CASES. EXPOSURE TO VAPORS CAN ELEVATE CARBOXYHEMOGLOBIN LEVELS IN THE CARDIOVASCULAR SYSTEM.

EYE CONTACT: LIQUID AND HIGH VAPOR CONCENTRATION CAN CAUSE PAIN AND IRRITATION WITH SLIGHT CORNEAL INJURY POSSIBLE.

SKIN CONTACT: PROLONGED OR REPEATED SKIN CONTACT CAN CAUSE IRRITATION AND DERMATITIS THROUGH DEFATTING OF SKIN. PROLONGED CONTACT CAN RESULT IN SKIN ABSORPTION.

INGESTION: CAN CAUSE BURNING OF THROAT AND MOUTH.

EFFECTS OF OVEREXPOSURE
ACUTE INHALATION OR INGESTION CAUSES MILD CENTRAL NERVOUS SYSTEM DEPRESSION. THE PRIMARY TOXIC EFFECT IS NARCOSIS. OTHER TOXIC EFFECTS ARE PULMONARY EDEMA, ENCEPHALOPATHY, AND HEMOLYSIS. METHYLENE CHLORIDE IRRITATES THE EYES, SKIN, AND RESPIRATORY TRACT. NO SYSTEMIC EFFECTS HAVE BEEN REPORTED IN HUMANS, ALTHOUGH EXCESSIVE CONCENTRATIONS HAVE CAUSED CANCER AND LIVER AND KIDNEY DAMAGE IN ANIMALS.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
PRECLUDE FROM EXPOSURE INDIVIDUALS WITH DISEASES OF LIVER, KIDNEYS, CARDIOVASCULAR AND CENTRAL NERVOUS SYSTEMS, AND HEAVY SMOKERS. SIMULTANEOUS EXPOSURE TO METHYLENE CHLORIDE AND ALCOHOL CAN INCREASE THE TOXIC HAZARDS OF METHYLENE CHLORIDE.

EMERGENCY AND FIRST AID

INHALATION: IMMEDIATELY REMOVE TO FRESH AIR. IF NOT BREATHING, ADMINISTER MOUTH-TO-MOUTH RESCUE BREATHING. IF THERE IS NO PULSE, ADMINISTER CARDIOPULMONARY RESUSCITATION (CPR). CONTACT PHYSICIAN IMMEDIATELY.

EYE CONTACT: RINSE WITH copious amounts of water FOR AT LEAST 15 MINUTES. GET EMERGENCY MEDICAL ASSISTANCE.

SKIN CONTACT: FLUSH THOROUGHLY FOR AT LEAST 15 MINUTES. WASH AFFECTED SKIN WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES. WASH CLOTHING BEFORE RE-USE, AND DISCARD CONTAMINATED SHOES. GET EMERGENCY MEDICAL ASSISTANCE.

INGESTION: CALL LOCAL POISON CONTROL CENTER FOR ASSISTANCE. CONTACT PHYSICIAN IMMEDIATELY. NEVER INDUCE VOMITING OR GIVE ANYTHING
VI. SAFETY MEASURES AND EQUIPMENT

VENTILATION: ADEQUATE VENTILATION IS REQUIRED TO PROTECT PERSONNEL FROM EXPOSURE TO CHEMICAL VAPORS EXCEEDING THE PEL AND TO MINIMIZE FIRE HAZARDS. THE CHOICE OF VENTILATION EQUIPMENT, EITHER LOCAL OR GENERAL, WILL DEPEND ON THE CONDITIONS OF USE, QUANTITY OF MATERIAL, AND OTHER OPERATING PARAMETERS.

RESPIRATORY: USE APPROVED RESPIRATOR EQUIPMENT. FOLLOW NIOSH AND EQUIPMENT MANUFACTURER'S RECOMMENDATIONS TO DETERMINE APPROPRIATE EQUIPMENT (AIR-PURIFYING, AIR-SUPPLIED, OR SELF-CONTAINED BREATHING APPARATUS).

EYES: SAFETY GLASSES ARE CONSIDERED MINIMUM PROTECTION. GOGGLES OR FACE SHIELD MAY BE NECESSARY DEPENDING ON QUANTITY OF MATERIAL AND CONDITIONS OF USE.

SKIN: PROTECTIVE GLOVES AND CLOTHING ARE RECOMMENDED. THE CHOICE OF MATERIAL MUST BE BASED ON CHEMICAL RESISTANCE AND OTHER USER REQUIREMENTS. GENERALLY, VITON, POLYVINYL ALCOHOL, OR NEOPRENE OFFERS ACCEPTABLE CHEMICAL RESISTANCE. INDIVIDUALS WHO ARE ACUTELY AND SPECIFICALLY SENSITIVE TO METHYLENE CHLORIDE MAY REQUIRE ADDITIONAL PROTECTIVE EQUIPMENT.

PAGE 3

STORAGE: METHYLENE CHLORIDE SHOULD BE PROTECTED FROM MOISTURE, TEMPERATURE EXTREMES AND DIRECT SUNLIGHT. PROPER STORAGE OF METHYLENE CHLORIDE MUST BE DETERMINED BASED ON OTHER MATERIALS STORED AND THEIR HAZARDS AND POTENTIAL CHEMICAL INCOMPATIBILITY. IN GENERAL, METHYLENE CHLORIDE SHOULD BE STORED IN A COOL, WELL-VENTILATED, AND SECURE TOXIC STORAGE ROOM.

OTHER: EMERGENCY EYEWASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE AVAILABLE IN THE VICINITY OF ANY POTENTIAL EXPOSURE.

VII. SPILL AND DISPOSAL DATA

SPILL CONTROL: WEAR PROTECTIVE CLOTHING AND USE APPROVED RESPIRATOR EQUIPMENT. ABSORB SPILLED MATERIAL IN AN ABSORBENT RECOMMENDED FOR SOLVENT SPIFFS AND REMOVE TO A SAFE LOCATION FOR DISPOSAL BY APPROVED METHODS. IF RELEASED TO THE ENVIRONMENT, COMPLY WITH ALL REGULATORY NOTIFICATION REQUIREMENTS. CERCLA REPORTABLE QUANTITY: 1,000 POUNDS.

WASTE DISPOSAL: DISPOSE OF METHYLENE CHLORIDE AS AN EPA HAZARDOUS WASTE. CONTACT STATE ENVIRONMENTAL AGENCY FOR LISTING OF LICENSED HAZARDOUS WASTE DISPOSAL FACILITIES AND APPLICABLE REGULATIONS. HAZARDOUS WASTE NUMBER: U080 (TOXIC); F002 (TOXIC).

VIII. SARA/TITLE III DATA

<table>
<thead>
<tr>
<th>HAZARD CLASSIFICATION</th>
<th>CHEMICAL LISTINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMMEDIATE HEALTH:</td>
<td>YES</td>
</tr>
<tr>
<td>EXTREMELY HAZARDOUS SUBSTANCES: NO</td>
<td></td>
</tr>
<tr>
<td>DELAYED HEALTH:</td>
<td>YES</td>
</tr>
<tr>
<td>CERCLA HAZARDOUS SUBSTANCES: YES</td>
<td></td>
</tr>
<tr>
<td>FIRE:</td>
<td>YES</td>
</tr>
<tr>
<td>TOXIC CHEMICALS:</td>
<td>YES</td>
</tr>
<tr>
<td>SUDDEN RELEASE:</td>
<td>NO</td>
</tr>
<tr>
<td>REACTIVE:</td>
<td>NO</td>
</tr>
</tbody>
</table>

METHYLENE CHLORIDE IS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) AND 40CFR PART 372. THIS PRODUCT DOES NOT CONTAIN ANY OTHER TOXIC CHEMICAL ABOVE 1% CONCENTRATION OR A CARCINOGEN ABOVE 0.1% CONCENTRATION.

KEY
CA APPROXIMATELY
NA NOT APPLICABLE
C CEILING
STEL SHORT TERM EXPOSURE LEVEL (15 MINUTES)
TLV THRESHOLD LIMIT VALUE
TWA TIME WEIGHTED AVERAGE
BUAC BUTYL ACETATE
CERCLA COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT OF 1980
BURDICK & JACKSON'S DISCLAIMER: THE INFORMATION AND RECOMMENDATIONS PRESENTED IN THIS MATERIAL SAFETY DATA SHEET ARE BASED ON SOURCES BELIEVED TO BE RELIABLE ON THE DATE HEREOF. BURDICK & JACKSON MAKES NO REPRESENTATION ON ITS COMPLETENESS OR ACCURACY. IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE PRODUCT'S SUITABILITY FOR ITS INTENDED USE, THE PRODUCT'S SAFE USE, AND THE PRODUCT'S PROPER DISPOSAL. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE WITH RESPECT TO THE INFORMATION PROVIDED IN THIS MATERIAL SAFETY DATA SHEET OR TO THE PRODUCT TO WHICH SUCH INFORMATION REFERS. BURDICK & JACKSON NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT, ANY OTHER OR ADDITIONAL LIABILITY OR RESPONSIBILITY RESULTING FROM THE USE OF, OR RELIANCE UPON, THIS INFORMATION.