ISOPROPYL ALCOHOL 99%

MATERIAL SAFETY DATA SHEET

In case of Emergency call CHEMTREC 1-800-424-9300

ISOPROPYL ALCOHOL 99%

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MSDS No.  AL01

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SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

SUPPLIER..................K-Chem, Inc.
PO Box 530632
Birmingham, AL 35253

EMERGENCY PHONE NUMBER(S)...CHEMTREC DAY OR NIGHT 1-800-424-9300

REVISION DATE...............1998/12/18
SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>%CONC.</th>
<th>C.A.S.</th>
<th>ACGIH–TLV</th>
<th>OSHA–PEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISOPROPYL ALCOHOL</td>
<td>99.0</td>
<td>67–63–0</td>
<td>400 PPM TWA 500 PPM STEL</td>
<td>400 PPM TWA 500 PPM STEL</td>
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</tbody>
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* 1998 ACGIH NOTICE OF INTENDED CHANGE
200 PPM TWA 400 PPM STEL

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW..............EXTREMELY FLAMMABLE. INHALATION AND INGESTION HAZARD. SEVERE EYE IRRITANT.
KEEP AWAY FROM ALL SOURCES OF HEAT, OPEN FLAMES AND OTHER IGNITION SOURCES. AVOID ALL SKIN AND EYE CONTACT. AVOID BREATHING VAPOURS AND MISTS. USE ONLY WITH ADEQUATE VENTILATION. BOND AND GROUND ALL CONTAINERS. KEEP AWAY FROM INCOMPATIBLE MATERIALS. WASH THOROUGHLY AFTER HANDLING.

POTENTIAL HEALTH EFFECTS:

INGESTION.................SERIOUS ILLNESS MAY OCCUR FROM AS LITTLE AS 10 ml INGESTED. MAY BE FATAL IF INGESTED IN QUANTITIES GREATER THAN 100 ml.

SKIN CONTACT..............IRRITANT, MILDLY TOXIC.
MAY CAUSE IRRITATION, REDNESS AND DÉFATTING.

INHALATION..................NARCOTIC.
MAY CAUSE COUGHING, DIZZINESS, SHORTNESS OF BREATH AND INTOXICATION. INTENTIONAL INHALATION OF VAPOURS MAY CAUSE PERMANENT DAMAGE TO THE CENTRAL NERVOUS SYSTEM.

EYE CONTACT...............SEVERE IRRITANT.
MAY CAUSE CORNEAL BURNS AND EYE DAMAGE.

MEDICAL CONDITIONS
AGGRAVATED PERSONS WITH CHRONIC RESPIRATORY, SKIN OR EYE DISEASES.

SUBCHRONIC (TARGET ORGAN) EFFECTS CENTRAL NERVOUS SYSTEM DEPRESSANT POISONING MAY ALSO AFFECT THE LIVER AND KIDNEYS

CHRONIC EFFECTS REPEATED OR PROLONGED SKIN CONTACT MAY CAUSE DERMATITIS. PROLONGED OR REPEATED EYE CONTACT MAY CAUSE EYE DAMAGE. PROLONGED OR INTENTIONAL INHALATION OF VAPOURS MAY CAUSE SERIOUS HARM.

CARCINOGENICITY
NTP ....................... NO
IARC ....................... NO
OSHA ....................... NO
OTHER TOXICOLOGICAL DATA .... NARCOTIC

PRINCIPAL ROUTES OF ENTRY .... EYE CONTACT
SKIN CONTACT
INHALATION
INGESTION
SKIN ABSORPTION

SECTION 4: FIRST AID MEASURES

EYE CONTACT .......... WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15−20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.
IF PAIN, BLINKING, TEARS OR REDNESS CONTINUES THE VICTIM SHOULD CONSULT AN OPHTALMOLOGIST.

SKIN CONTACT .......... REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15−20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INHALATION .......... REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. PERFORM ARTIFICIAL RESPIRATION IF NECESSARY. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION .......... ASPIRATION HAZARD !
OBTAIN IMMEDIATE MEDICAL ASSISTANCE − DO NOT INDUCE VOMITING. IF VOMITING OCCURS SPONTANEOUSLY, KEEP HEAD BELOW HIPS TO AVOID ASPIRATION.

NOTE TO PHYSICIAN .......... TREAT SYMPTOMATICALLY

SECTION 5: FIRE FIGHTING MEASURES

FLASH POINT .......... 53°F (12°C)
METHOD .......... CLOSED CUP
IGNITION TEMPERATURE .......... 852°F (455°C)
UPPER FLAMMABLE LIMIT .......... 12.0
LOWER FLAMMABILITY LIMIT .......... 2.5
SENSITIVITY TO MECHANICAL IMPACT ............ NO
SENSITIVITY TO STATIC DISCHARGE ............ YES
EXTINGUISHING MEDIA.........FOR SMALL FIRES:
  DRY CHEMICAL, CARBON DIOXIDE, WATER-SPRAY
  OR ALCOHOL RESISTANT FOAM
FOR LARGE FIRES:
  WATER-SPRAY, FOG OR ALCOHOL RESISTANT FOAM

SPECIAL FIREFIGHTING PROCEDURES.................VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK
VAPOR-AIR MIXTURES ARE EXPLOSIVE
CONSIDER EVACUATION DOWNWIND
WEAR APPROPRIATE PROTECTION EQUIPMENT

IF POSSIBLE, MOVE CONTAINERS FROM FIRE AREA, APPLY COOLING WATER TO SIDES OF CONTAINERS ENSURING THAT YOU STAY AWAY FROM THE ENDS OF TANKS (BULK STORAGE, RAIL CARS, TANK TRUCKS). EVACUATE IMMEDIATELY IF TANKS ARE DISCOLORED OR IF RISING SOUND IS EMITTED FROM TANKS, MINIMUM EVACUATION RADIUS SHOULD BE ½ MILE.

FOR MASSIVE FIRE USE UNMANNED HOSE HOLDERS OR MONITOR NOZZLES.

WATER MAY BE INEFFECTIVE IF FLOW OF FLAMMABLE LIQUID IS NOT STOPPED.

FLAMMABILITY CLASS (OSHA)...IB

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACTION TO BE TAKEN FOR SPILLS OR RELEASES..........SHUT OFF SOURCE, IF WITHOUT RISK.
EVACUATE NON-ESSENTIAL PERSONNEL.
ELIMINATE ALL SOURCES OF IGNITION.
DIKE AREA TO PREVENT SPREADING.
PREVENT RUNOFF INTO SEWERS, WATERWAYS, DITCHES, OR STREAMS.
SHOVEL OR PUMP TO A SALVAGE TANK USING NON-SPARKING EQUIPMENT.
ABSORB RESIDUAL MATERIAL WITH AN INERT ABSORBENT.
SHOVEL ABSORBED RESIDUE INTO PROPERLY IDENTIFIED DRUMS FOR LATER DISPOSAL.
CONTACT LOCAL OFFICIALS AS REQUIRED.

SECTION 7: HANDLING AND STORAGE

HANDLING PROCEDURES.........THIS PRODUCT MUST BE HANDLED BY PROPERLY TRAINED PERSONNEL.
USE PROPER HANDLING EQUIPMENT FOR SPECIFIC HANDLING OPERATION.
WHEN TRANSFERRING MATERIAL FROM ONE CONTAINER TO ANOTHER ENSURE BONDING AND GROUNDING TO PREVENT STATIC DISCHARGE.
DO NOT BREATHE VAPOURS.
AVOID ALL SKIN AND EYE CONTACT BY WEARING PROPER PROTECTIVE EQUIPMENT.
HANDLE AWAY FROM ALL SOURCES OF IGNITION AND INCOMPATIBLE MATERIALS.

STORAGE PROCEDURES........STORE AWAY FROM ALL SOURCES OF IGNITION.
STORE AWAY FROM ALL INCOMPATIBLE MATERIALS.
ENSURE THAT THE STORAGE AREA IS ADEQUATELY VENTILATED AND EQUIPPED WITH PROPER EMERGENCY RESPONSE EQUIPMENT IN THE EVENT OF LEAK, SPILL, OR FIRE.
OBSERVE ALL FEDERAL, STATE, AND LOCAL REGULATIONS WHEN STORING THIS PRODUCT.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS........ENSURE THAT VENTILATION SYSTEM USED IS DESIGNED TO MEET PUBLISHED EXPOSURE LIMITS. PROPER HANDLING SYSTEMS SHOULD BE DESIGNED FOR SPECIFIC HANDLING OPERATION.
RESPIRATORY PROTECTION......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).
PROTECTIVE CLOTHES.........IMPERVIOUS GLOVES AND CLOTHING TO PREVENT SKIN CONTACT.
EYE AND FACE PROTECTION.....SAFETY GOGGLES AND A FACE SHIELD
OTHER PROTECTIVE EQUIPMENT..WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE A QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.
VENTILATION.................PROVIDE LOCAL EXHAUST VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS. VENTILATION EQUIPMENT SHOULD BE EXPLOSION−PROOF IF EXPLOSIVE CONCENTRATIONS OF DUST, VAPOR OR FUME ARE PRESENT.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

VAPOR DENSITY (AIR=1).......2.1
FREEZING/MELTING POINT......-128°F (-89°C)
PHYSICAL STATE..............LIQUID
ODOR........................ALCOHOL ODOR
COLOR.......................CLEAR, COLORLESS
ODOR THRESHOLD (PPM).......~200 ppm
VOLATILES % VOLUME.........100.0
EVAPORATION RATE (BUTYL ACETATE=1.0)..............NO DATA
SPECIFIC GRAVITY
(WATER=1.0)...............0.78
MOLECULAR WEIGHT..........60.11
ACID/ALKALINITY (MEQ/G).....NO DATA
PH..........................NO DATA
VOC (EPA METHOD 24).........780 g/L
SOLUBILITY IN ORGANIC
SOLVENTS....................ETHER
                        CHLOROFORM
                        MOST ORGANIC SOLVENTS
BOILING POINT...............180°F (82°C)
VAPOR PRESSURE MM/HG (20°C)..............3.3
SOLUBILITY IN WATER (20°C) ..100.0 %

SECTION 10: STABILITY AND REACTIVITY

STABILITY..................STABLE
HAZARDOUS POLYMERIZATION....WILL NOT OCCUR
HAZARDOUS THERMAL
DECOMPOSITION/COMBUSION
PRODUCTS....................OXIDES OF CARBON
INCOMPATIBILITY
(MATERIALS TO AVOID).......STRONG OXIDIZERS; ALUMINIUM METAL; NITROFORM;
                        OLEUM.
CONDITIONS TO AVOID........EXPOSURE TO HEAT, FLAME OR IGNITION SOURCES.
                        CONTACT WITH INCOMPATIBLE SUBSTANCES.

SECTION 11: TOXICOLOGICAL INFORMATION

LD50 ORAL....................ISOPROPYL ALCOHOL 99 % − RTECS 97/12 NT8050000
                        5045 mg/kg RAT
                        3600 mg/kg MOUSE
                        6410 mg/kg RABBIT
LD50 DERMAL.................ISOPROPYL ALCOHOL 99% − RTECS 97/12 NT8050000
                        12800 mg/kg RABBIT
LC50 INHALATION.............ISOPROPYL ALCOHOL 99% − RTECS 97/12 NT8050000
                        16000 ppm 8 HOURS RAT
OTHER.......................EXPERIMENTAL TERATOGENIC AND REPRODUCTIVE
                        EFFECTS. MUTATION DATA REPORTED. QUESTIONABLE
                        CARCINOGEN.
AMES TEST RESULTS..........NO DATA AVAILABLE COVERING AMES TEST RESULTS
                        ISOPROPYL ALCOHOL 99% − RTECS 95/01 NT8050000
SKIN:
                        RABBIT 500 mg MILD
                        EYE:
                        SEVERE − 100 mg RABBIT; MODERATE − 10 mg
                        RABBIT; MODERATE 100 mg/24 HOURS RABBIT

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL
INFORMATION..................NO DATA AT THIS TIME
CHEMICAL FATE INFORMATION...NO DATA AT THIS TIME
SECTION 13: DISPOSAL CONSIDERATION

DISPOSAL METHOD.............IN ACCORDANCE WITH FEDERAL, STATE, LOCAL REGULATIONS
REPORTABLE QUANTITY.........NOT APPLICABLE

SECTION 14: TRANSPORT INFORMATION

DOT SHIPPING NAME...........ISOPROPAanol
DOT HAZARD CLASS...........3 − FLAMMABLE LIQUID
                          PACKAGING GROUP II
DOT LABELS..................FLAMMABLE LIQUID
UN NUMBER...................UN1219
PLACARDS....................IN ACCORDANCE WITH DOT 49CFR173 AND 49CFR243
IATA..........................CLASS 3
IMO/IMDG....................3.2
EUROPEAN CLASS..............FLAMMABLE LIQUID
TRANSPORT EMERGENCY
PROCEDURES..................CONTACT CHEMTREC 1-800-424-9300

OTHER.......................NOT APPLICABLE

SECTION 15: REGULATORY INFORMATION

SARA SECTION 302.............NO
SARA SECTION 304.............NO
SARA HAZARD CATAGORIES
SECTION 311/312
   ACUTE HAZARD..............YES
   CHRONIC HAZARDS...........NO
   FIRE HAZARDS..............YES
   REACTIVITY HAZARDS.......NO
   SUDDEN RELEASE HAZARDS...NO
SARA (313) CHEMICALS........NO
EPA TSCA INVENTORY.........APPEARS
CERCLA SECTION 103.........NO
CANADIAN WHMIS
CLASSIFICATION............B2, D2B
OSHA PROCESS SAFETY.......NO
CANADIAN DOMESTIC
SUBSTANCES LIST (DSL).......APPEARS
CALIFORNIA PROPOSITION 65...NO
EINECS INVENTORY............200−661−7

SECTION 16: ADDITIONAL INFORMATION

DISCLAIMER..................THIS MATERIAL SAFETY DATA SHEET WAS PRODUCED FROM RELIABLE SOURCES. HOWEVER, IT IS PROVIDED WITHOUT REPRESENTATION OR WARRANTY EXPRESSED OR IMPLIED REGARDING ACCURACY OR CORRECTNESS. CONDITIONS AND METHODS OF USE ARE BEYOND THE CONTROL AND KNOWLEDGE OF K-CHEM, INC. K-CHEM, INC. DOES NOT ASSUME ANY RESPONSIBILITY AND EXPRESSLY DISCLAIMS
LIABILITY FOR INJURY, LOSS, DAMAGE OR EXPENSES ARISING FROM THE USE OF THIS PRODUCT.

ABBREVIATIONS USED THROUGHOUT THIS MSDS ARE:

ACGIH = AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS
TWA = TIME WEIGHTED AVERAGE (EXPOSURE VALUES)
STEL = SHORT TERM EXPOSURE LIMITS
OSHA = OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PEL = PERMITTED EXPOSURE LIMITS
ppm = PARTS PER MILLION
mg = MILLIGRAMS
NIOSH = NATIONAL INSTITUTE FOR OCCUPATIONAL HEALTH AND SAFETY
MSHA = MINE SAFETY AND HEALTH ADMINISTRATION
lb = POUNDS
m3 = PER METRE CUBED
NTP = NATIONAL TOXICOLOGICAL PROGRAM
g = GRAMS
ml = MILLILITRE
RTECS = REGISTRY OF TOXICS EFFECTS OF CHEMICAL SUBSTANCES (NIOSH)

SECTION 17: LABEL INFORMATION

FOR FURTHER INFORMATION.....SEE THE MATERIAL SAFETY DATA SHEET
SUPPLIER.......................K-CHEM, INC
3908 3rd Avenue South
Birmingham, AL 35253
TEL: (205) 592-0844  FAX:(205)592-8106