

DATE: 08/14/93
INDEX: 05912870140

ACCT: 888235-01
CAT NO: BP11051

PO NBR: N/A

PAGE: 1

METHANOL
METHANOL
METHANOL

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

THIS INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES.

SUBSTANCE IDENTIFICATION

SUBSTANCE: **METHANOL** CAS-NUMBER 67-56-1

TRADE NAMES/SYNONYMS:

METHYL ALCOHOL; WOOD ALCOHOL; METHYL HYDROXIDE; CARBINOL;
MONOHYDROXYMETHANE; WOOD SPIRIT; WOOD NAPHTHA; METHYLOL; COLONIAL SPIRIT;
COLUMBIAN SPIRIT; PYROXYLIC SPIRIT; COULOMATIC (R) CONDITIONER SOLUTION;
STANDARD WATER IN METHANOL; STCC 4909230; UN 1230; RCRA U154;
A454; A452; A936; A408; A947; A935; BP1105; A412; A411; A433P; SW2;
SC95; A452SK; A408SK; A412P; A434; A412SK; A450; A433S; CH40; ACC14280

CHEMICAL FAMILY:
HYDROXYL, ALIPHATIC

MOLECULAR FORMULA: C-H3-O-H

MOLECULAR WEIGHT: 32.04

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=3 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=3 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: METHYL ALCOHOL (METHANOL) PERCENT: 100
CAS# 67-56-1

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:

METHYL ALCOHOL (METHANOL):
200 PPM (262 MG/M3) OSHA TWA (SKIN); 250 PPM (328 MG/M3) OSHA STEL
200 PPM (262 MG/M3) ACGIH TWA (SKIN); 250 PPM (328 MG/M3) ACGIH STEL
200 PPM (262 MG/M3) NIOSH RECOMMENDED TWA (SKIN);
250 PPM (328 MG/M3) NIOSH RECOMMENDED STEL
200 PPM (262 MG/M3) DFG MAK TWA (SKIN);
400 PPM (524 MG/M3) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT

MEASUREMENT METHOD: SILICA GEL TUBE; WATER; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 2000, METHANOL).

5000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY
SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

OSHA REVOKED THE FINAL RULE LIMITS OF JANUARY 19, 1989 IN RESPONSE TO THE 11TH CIRCUIT COURT OF APPEALS DECISION (AFL-CIO V. OSHA) EFFECTIVE JUNE 30, 1993. SEE 29 CFR 1910.1000 (58 FR 35338)

PHYSICAL DATA

DESCRIPTION: CLEAR, COLORLESS LIQUID WITH A CHARACTERISTIC ALCOHOLIC ODOR.

BOILING POINT: 149 F (65 C) MELTING POINT: -137 F (-94 C)

SPECIFIC GRAVITY: 0.7914 VAPOR PRESSURE: 97.25 MMHG @ 20 C

EVAPORATION RATE: (BUTYL ACETATE=1) 4.6 SOLUBILITY IN WATER: VERY SOLUBLE

ODOR THRESHOLD: 100 PPM VAPOR DENSITY: 1.11

SOLVENT SOLUBILITY: ETHER, BENZENE, ALCOHOL, ACETONE, CHLOROFORM, ETHANOL.

VISCOSITY: 0.59 CPS @ 20 C

FIRE AND EXPLOSION DATA

DATE: 08/14/93
INDEX: 05912870140

ACCT: 888235-01
CAT NO: BP11051

PO NBR: N/A

PAGE: 2

FIRE AND EXPLOSION HAZARD:
DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT, FLAME, OR OXIDIZERS.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE.

FLASH POINT: 52 F (11 C) (CC) UPPER EXPLOSIVE LIMIT: 36.0%

LOWER EXPLOSIVE LIMIT: 6.0% AUTOIGNITION TEMP.: 725 F (385 C)

FLAMMABILITY CLASS(OSHA): IB

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR ALCOHOL-RESISTANT FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR ALCOHOL-RESISTANT FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:

MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. DIKE FIRE-CONTROL WATER FOR LATER DISPOSAL; DO NOT SCATTER THE MATERIAL. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 28).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING AMOUNTS AS FOG. SOLID STREAMS MAY NOT BE EFFECTIVE. COOL CONTAINERS WITH FLOODING QUANTITIES OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING TOXIC VAPORS, KEEP UPWIND.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49-CFR 172.101:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49-CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49-CFR 173.119
EXCEPTIONS: 49-CFR 173.118

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204 EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 09/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
METHYL ALCOHOL-UN 1230

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
3 - FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID, POISON

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:

EXCEPTIONS: NONE
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.243

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 1 L
CARGO AIRCRAFT ONLY: 60 L

TOXICITY

METHYL ALCOHOL (METHANOL):
IRRITATION DATA: 20 MG/24 HOURS SKIN-RABBIT MODERATE; 40 MG EYE-RABBIT MODERATE; 100 MG/24 HOURS EYE-RABBIT MODERATE
TOXICITY DATA: 86,000 MG/M3 INHALATION-HUMAN TCL0; 300 PPM INHALATION-HUMAN TCL0; 64,000 PPM/4 HOURS INHALATION-RAT LC50; 1000 PPM INHALATION-MONKEY LCLO; 50 GM/M3/2 HOURS INHALATION-MOUSE LCLO; 44,000 MG/M3/6 HOURS INHALATION-CAT LCLO; 15,800 MG/KG SKIN-RABBIT LD50; 393 MG/KG SKIN-MONKEY LDLO; 428 MG/KG ORAL-HUMAN LDLO; 143 MG/KG ORAL-HUMAN LDLO; 6422 MG/KG

DATE: 08/14/93 ACCT: 888235-01
INDEX: 05912870140 CAT NO: BP11051 PO NBR: N/A

PAGE: 3

ORAL-MAN LDLO: 3429 MG/KG ORAL-MAN TDLO: 4 GM/KG ORAL-WOMAN TDLO: 7 GM/KG
ORAL-MONKEY LD50: 5628 MG/KG ORAL-RAT LD50: 7300 MG/KG ORAL-MOUSE LD50:
14 200 MG/KG ORAL-RABBIT LD50: 7500 MG/KG ORAL-DOG LDLO: 9800 MG/KG
SUBCUTANEOUS-MOUSE LD50: 2131 MG/KG INTRAVENOUS-RAT LD50: 4710 MG/KG
INTRAVENOUS-MOUSE LD50: 8907 MG/KG INTRAVENOUS-RABBIT LD50: 4641 MG/KG
INTRAVENOUS-CAT LDLO: 7529 MG/KG INTRAPERITONEAL-RAT LD50: 10,765 MG/KG
INTRAPERITONEAL-MOUSE LD50: 1826 MG/KG INTRAPERITONEAL-RABBIT LD50:
3556 MG/KG INTRAPERITONEAL-GUINEA PIG LD50: 8555 MG/KG
INTRAPERITONEAL-HAMSTER LD50: 868 MG/KG UNREPORTED-MAN LDLO; MUTAGENIC
DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).

CARCINOGEN STATUS: NONE.

LOCAL EFFECTS: IRRITANT- SKIN, EYE.

ACUTE TOXICITY LEVEL: SLIGHTLY TOXIC BY DERMAL ABSORPTION AND INGESTION;

RELATIVELY NON-TOXIC BY INHALATION.

TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT; NEUROTOXIN.

AT INCREASED RISK FROM EXPOSURE: PERSONS WITH KIDNEY, EYE OR SKIN DISORDERS.

HEALTH EFFECTS AND FIRST AID

INHALATION:

METHYL ALCOHOL (METHANOL):

NARCOTIC/NEUROTOXIN. 25,000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.

ACUTE EXPOSURE- MAY CAUSE IRRITATION OF THE MUCOUS MEMBRANES, COUGHING,

OPPRESSION IN THE CHEST, TRACHEITIS, BRONCHITIS, TINNITUS, UNSTEADY

GAIT, TWITCHING, COLIC, CONSTIPATION, NYSTAGMUS, AND BLEPHAROSPASM.

SYMPTOMS FROM OCCUPATIONAL EXPOSURE INCLUDE PARESTHESIAS, NUMBNESS AND

SHOOTING PAINS IN THE HANDS AND FOREARMS. METABOLIC ACIDOSIS, AND EFFECTS

ON THE EYES AND CENTRAL NERVOUS SYSTEM MAY OCCUR AS DETAILED IN ACUTE

INGESTION.

CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE EFFECTS AS IN

ACUTE INGESTION. REPEATED EXPOSURE TO 200-375 PPM CAUSED RECURRENT

HEADACHES IN WORKERS. EXPOSURE FOR 4 YEARS TO 1200-8000 PPM RESULTED IN

MARKED DIMINUTION OF VISION AND ENLARGEMENT OF THE LIVER IN A WORKMAN.

REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING

HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST.

TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

METHYL ALCOHOL (METHANOL):

IRRITANT/NARCOTIC/NEUROTOXIN.

ACUTE EXPOSURE- CONTACT WITH LIQUID MAY CAUSE IRRITATION. SKIN ABSORPTION

MAY OCCUR AND CAUSE METABOLIC ACIDOSIS AND EFFECTS ON THE EYES AND CENTRAL

NERVOUS SYSTEM AS DETAILED IN ACUTE INGESTION.

CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT WITH THE LIQUID MAY CAUSE

DEFATTING OF THE SKIN RESULTING IN ERYTHEMA, SCALING, AND ECZEMATOID

DERMATITIS. CHRONIC ABSORPTION MAY RESULT IN METABOLIC ACIDOSIS AND

EFFECTS AS DETAILED IN ACUTE INGESTION.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED

AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO

EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL

ATTENTION IMMEDIATELY.

EYE CONTACT:

METHYL ALCOHOL (METHANOL):

IRRITANT

ACUTE EXPOSURE- VAPORS MAY CAUSE IRRITATION. HIGH CONCENTRATIONS HAVE

BEEN REPORTED TO CAUSE VIOLENT INFLAMMATION OF THE CONJUNCTIVA AND

EPITHELIAL DEFECTS ON THE CORNEA. MILD IRRITATION MAY OCCUR WITH

DILUTE SOLUTIONS; THE UNDILUTED LIQUID HAS PRODUCED MODERATE CORNEAL

OPACITY AND CONJUNCTIVAL REDNESS IN RABBITS. APPLICATION OF A DROP

OF METHANOL IN RABBIT EYES CAUSED A MILD REVERSIBLE REACTION, GRADED

3 ON A SCALE OF 1-10 AFTER 24 HOURS.

CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT MAY CAUSE CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE.

OCCASIONALLY LIFTING UPPER AND LOWER LIDS. UNTIL NO EVIDENCE OF CHEMICAL

REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

METHYL ALCOHOL (METHANOL):

NARCOTIC/NEUROTOXIN.

ACUTE EXPOSURE- MAY CAUSE MILD AND TRANSIENT INEBRIATION AND SUBSEQUENT

DROWSINESS FOLLOWED BY AN ASYMPTOMATIC PERIOD LASTING 8-48 HOURS.

FOLLOWING THE DELAY, COUGHING, DYSPNEA, HEADACHE, DULLNESS, WEAKNESS,

VERTIGO OR DIZZINESS, NAUSEA, VOMITING, OCCASIONAL DIARRHEA, ANOREXIA,

VIOLENT PAIN IN THE BACK, ABDOMEN, AND EXTREMITIES, RESTLESSNESS, APATHY

OR DELIRIUM, AND RARELY, EXCITEMENT AND MANIA MAY OCCUR. RAPID, SHALLOW

RESPIRATION DUE TO METABOLIC ACIDOSIS. COLD AND CLAMMY SKIN, HYPOTENSION,

CYANOSIS, OPISTHOTONOS, CONVULSIONS, MILD TACHYCARDIA, CARDIAC DEPRESSION,

PERIPHERAL NEURITIS, CEREBRAL AND PULMONARY EDEMA, UNCONSCIOUSNESS, AND

COMA ARE POSSIBLE. EFFECTS ON THE EYE MAY INCLUDE OPTIC NEURITIS, BLURRED

OR DIMMED VISION, DILATED, UNRESPONSIVE PUPILS, PTOSIS, EYE PAIN,

CONCENTRIC CONSTRICTION OF VISUAL FIELDS, DIPLOPIA, CHANGE IN COLOR

PERCEPTION, PHOTOPHOBIA, AND OPTIC NERVE ATROPHY. PARTIAL BLINDNESS OR

POSSIBLY DELAYED TRANSIENT OR PERMANENT BLINDNESS MAY OCCUR. BILATERAL

SENSORINEURAL DEAFNESS HAS BEEN REPORTED IN A SINGLE CASE. LIVER, KIDNEY,

DATE: 08/14/93 ACCT: 888235-01
INDEX: 05912870140 CAT NO: BP11051 PO NBR: N/A

PAGE: 4

HEART, STOMACH, INTESTINAL AND PANCREATIC DAMAGE MAY ALSO OCCUR. DEATH
MAY BE DUE TO RESPIRATORY FAILURE OR RARELY FROM CIRCULATORY COLLAPSE.
AS LITTLE AS 15 ML HAS CAUSED BLINDNESS; THE USUAL FATAL DOSE IS
60-240 ML. PROLONGED ASTHENA AND IRREVERSIBLE EFFECTS ON THE NERVOUS
SYSTEM INCLUDING DIFFICULTY IN SPEECH, MOTOR DYSFUNCTION WITH RIGIDITY,
SPASTICITY, AND HYPOKINESIS HAVE BEEN REPORTED.
CHRONIC EXPOSURE- REPEATED INGESTION MAY CAUSE VISUAL IMPAIRMENT AND
BLINDNESS AND OTHER SYSTEMIC EFFECTS AS DETAILED IN ACUTE INGESTION.
REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- IF INGESTION OF METHANOL IS DISCOVERED WITHIN 2 HOURS, GIVE
SYRUP OF IPECAC. LAVAGE THOROUGHLY WITH 2-4 L OF TAP WATER WITH SODIUM
BICARBONATE (20 G/L) ADDED. GET MEDICAL ATTENTION IMMEDIATELY. LAVAGE
SHOULD BE PERFORMED BY QUALIFIED MEDICAL PERSONNEL (DREISBACH, HANDBOOK
OF POISONING, 12TH ED.).

ANTIDOTE:

THE FOLLOWING ANTIDOTE(S) HAVE BEEN RECOMMENDED. HOWEVER, THE DECISION AS TO
WHETHER THE SEVERITY OF POISONING REQUIRES ADMINISTRATION OF ANY ANTIDOTE AND
ACTUAL DOSE REQUIRED SHOULD BE MADE BY QUALIFIED MEDICAL PERSONNEL.

METHANOL POISONING:

GIVE ETHANOL, 50% (100 PROOF), 1.5 ML/KG ORALLY INITIALLY, DILUTED TO NOT MORE
THAN 5% SOLUTION, FOLLOWED BY 0.5-1.0 ML/KG EVERY 2 HOURS ORALLY OR
INTRAVENOUSLY FOR 4 DAYS IN ORDER TO REDUCE METABOLISM OF METHANOL AND TO
ALLOW TIME FOR ITS EXCRETION. BLOOD ETHANOL LEVEL SHOULD BE IN THE RANGE OF
1-1.5 MG/ML (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). ANTIDOTE SHOULD
BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

ORAL OR INTRAVENOUS ADMINISTRATION OF 4-METHYLPYRAZOLE INHIBITS ALCOHOL
DEHYDROGENASE AND HAS BEEN USED EFFECTIVELY AS AN ANTIDOTE FOR METHANOL OR
ETHYLENE GLYCOL POISONING (ELLENHORN AND BARCELOUX, MEDICAL TOXICOLOGY).

REACTIVITY

REACTIVITY:

STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:

METHYL ALCOHOL (METHANOL):

ACETYL BROMIDE: VIOLENT REACTION WITH FORMATION OF HYDROGEN BROMIDE.

ALKYLALUMINUM SOLUTIONS: VIOLENT REACTION.

ALUMINUM: CORRODES.

BARIUM PERCHLORATE: DISTILLATION YIELDS HIGHLY EXPLOSIVE ALKYL PERCHLORATE.

BERYLLIUM HYDRIDE: VIOLENT REACTION, EVEN AT -196 C.

BROMINE: VIGOROUSLY EXOTHERMIC REACTION.

CALCIUM CARBIDE: VIOLENT REACTION.

CHLORINE: POSSIBLE IGNITION AND EXPLOSION HAZARD.

CHLOROFORM AND SODIUM HYDROXIDE: EXPLOSIVE REACTION.

CHROMIUM TRIOXIDE (CHROMIC ANHYDRIDE): POSSIBLE IGNITION.

CYANURIC CHLORIDE: VIOLENT REACTION.

DICHLOROMETHANE: POSSIBLE IGNITION AND EXPLOSION.

DIETHYL ZINC: POSSIBLE IGNITION AND EXPLOSION.

HYDROGEN PEROXIDE + WATER: EXPLOSION HAZARD.

IODINE + ETHANOL + MERCURIC OXIDE: EXPLOSION HAZARD.

LEAD: CORRODES.

LEAD PERCHLORATE: EXPLOSION HAZARD.

MAGNESIUM: VIOLENT REACTION.

MAGNESIUM (POWDERED): MIXTURES ARE CAPABLE OF DETONATION.

METALS: INCOMPATIBLE.

NICKEL: POSSIBLE IGNITION IN THE PRESENCE OF NICKEL CATALYST.

NITRIC ACID (CONCENTRATED): MIXTURES OF GREATER THAN 25% ACID MAY DECOMPOSE

VIOLENTLY.

OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.

PERCHLORIC ACID: EXPLOSION HAZARD.

PHOSPHOROUS TRIOXIDE: POSSIBLE VIOLENT REACTION AND IGNITION.

PLASTICS, RUBBER, COATINGS: MAY BE ATTACKED.

POTASSIUM: POSSIBLE DANGEROUS REACTION.

POTASSIUM HYDROXIDE + CHLOROFORM: EXOTHERMIC REACTION.

POTASSIUM TERT-BUTOXIDE: FIRE AND EXPLOSION HAZARD.

SODIUM + CHLOROFORM: POSSIBLE EXPLOSION.

SODIUM HYPOCHLORITE: EXPLOSION HAZARD.

SODIUM METHOXIDE + CHLOROFORM: VIOLENT REACTION.

SULFURIC ACID: FIRE AND EXPLOSION HAZARD.

ZINC: EXPLOSION HAZARD.

DECOMPOSITION:

THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION:

HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL

TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING
OF THIS SUBSTANCE.

****STORAGE****

STORE IN ACCORDANCE WITH 29 CFR 1910.106.
STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

****DISPOSAL****

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER U154.

CONDITIONS TO AVOID

AVOID CONTACT WITH HEAT, SPARKS OR OTHER IGNITION SOURCES. VAPORS MAY BE EXPLOSIVE. MATERIAL IS POISONOUS; AVOID INHALATION OF VAPORS OR CONTACT WITH SKIN. DO NOT ALLOW MATERIAL TO CONTAMINATE WATER SOURCES.

SPILL AND LEAK PROCEDURES

SOIL SPILL:
DIG HOLDING AREA SUCH AS LAGOON, POND OR PIT FOR CONTAINMENT.

DIKE FLOW OF SPILLED MATERIAL USING SOIL OR SANDBAGS OR FOAMED BARRIERS SUCH AS POLYURETHANE OR CONCRETE.

AIR SPILL:
APPLY WATER SPRAY TO KNOCK DOWN VAPORS.

WATER SPILL:
ALLOW SPILLED MATERIAL TO AERATE.

LIMIT SPILL MOTION AND DISPERSION WITH NATURAL BARRIERS OR OIL SPILL CONTROL BOOMS.

USE SUCTION HOSES TO REMOVE TRAPPED SPILL MATERIAL.

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES. DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA! KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY.

REPORTABLE QUANTITY (RQ): 5000 POUNDS
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.
VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
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).

METHYL ALCOHOL (METHANOL):

2000 PPM- ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.

5000 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS-FLOW MODE.

10,000 PPM- ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR THAT HAS A TIGHT-FITTING FACEPIECE AND IS OPERATED IN A CONTINUOUS-FLOW MODE.

25,000 PPM- ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE AND OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ESCAPE- ANY APPROPRIATE ESCAPE-TYPE, SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

EMERGENCY EYE WASH: 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.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 09/25/84 REVISION DATE: 07/14/93

-ADDITIONAL INFORMATION-
THIS INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES.