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ISOAMYL ALCOHOL
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Alcohol, Isoamyl

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

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **ISOAMYL ALCOHOL** CAS-NUMBER 123-51-3

TRADE NAMES/SYNONYMS:

3-METHYL-1-BUTANOL; ISOBUTYL CARBINOL; ISOAMYLOL; ISOPENTANOL;
2-METHYL-4-BUTANOL; 3-METHYL BUTANOL; 3-METHYL BUTAN-1-OL;
FERMENTATION AMYL ALCOHOL; ISOPENTYL ALCOHOL; A393; 18-X; BP1150; UN 1105;
ACCI1550

CHEMICAL FAMILY:
HYDROXYL, ALIPHATIC

MOLECULAR FORMULA: C5-H12-O

MOLECULAR WEIGHT: 88.2

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=2 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=2 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: ISOAMYL ALCOHOL PERCENT: 100
CAS# 123-51-3

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:

ISOAMYL ALCOHOL:
100 PPM (361 MG/M3) OSHA TWA; 125 PPM (452 MG/M3) OSHA STEL
100 PPM (361 MG/M3) ACGIH TWA; 125 PPM (452 MG/M3) ACGIH STEL
100 PPM (361 MG/M3) NIOSH RECOMMENDED TWA;
125 PPM (452 MG/M3) NIOSH RECOMMENDED STEL
100 PPM (361 MG/M3) DFG MAK TWA;
200 PPM (722 MG/M3) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT

MEASUREMENT METHOD: CHARCOAL TUBE; 2-PROPANOL/CARBON DISULFIDE; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 1402, ALCOHOLS III).

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: COLORLESS LIQUID WITH A DISAGREEABLE ODOR AND A PUNGENT,

REPULSIVE TASTE. BOILING POINT: 505 C @ 750 MMHG

MELTING POINT: -179 F (-117 C) SPECIFIC GRAVITY: 0.8

VAPOR PRESSURE: 2.8 MM @ 20 C SOLUBILITY IN WATER: SLIGHTLY SOLUBLE

ODOR THRESHOLD: 7.0 PPM VAPOR DENSITY: 3.0

SOLVENT SOLUBILITY: SOLUBLE IN ALCOHOL, ETHER, ACETIC ACID, CHLOROFORM, AND BENZENE.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
MODERATE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

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

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VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASH POINT.

SLIGHT EXPLOSION HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FLASH POINT: 109 F (43 C) (CC) UPPER EXPLOSIVE LIMIT: 9.0% AT 100 C

LOWER EXPLOSIVE LIMIT: 1.2% AUTOIGNITION TEMP.: 862 F (350 C)

FLAMMABILITY CLASS(OSHA): II

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).

ALCOHOL FOAM
(NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. FOR MASSIVE FIRE IN CARGO AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES; IF THIS IS IMPOSSIBLE, WITHDRAW FROM AREA AND LET FIRE BURN. 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 AMOUNTS OF WATER. APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING VAPORS, KEEP UPWIND.

TRANSPORTATION DATA

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

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49-CFR 172.101 AND SUBPART E:
NONE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: NONE
EXCEPTIONS: 49-CFR 173.118A

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. (58 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. (58 FR 47158, 09/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
AMYL ALCOHOLS-UN 1105

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 III

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

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.150
NON-BULK PACKAGING: 49 CFR 173.203
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 60 L
CARGO AIRCRAFT ONLY: 220 L

TOXICITY

ISOAMYL ALCOHOL:
IRRITATION DATA: 150 PPM EYE-HUMAN; 20 MG/24 HOURS EYE-RABBIT MODERATE;
20 MG/24 HOURS SKIN-RABBIT MODERATE.
TOXICITY DATA: 150 PPM INHALATION-HUMAN TCLD; 3212 MG/KG SKIN-RABBIT LD50;
1300 MG/KG ORAL-RAT LD50; 3438 MG/KG ORAL-RABBIT LD50; 7480 MG/KG
SUBCUTANEOUS-MOUSE LD50; 234 MG/KG INTRAVENOUS-MOUSE LD50; 1570 MG/KG

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INTRAVENOUS-RABBIT LDLO; 210 MG/KG INTRAVENOUS-CAT LDLO. 813 MG/KG
INTRAPERITONEAL-RAT LDLO; 233 MG/KG INTRAPERITONEAL-MOUSE LDLO; TUMORIGENIC
DATA (RTECS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: CORROSIVE- EYE; IRRITANT- INHALATION, SKIN.
ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INGESTION; SLIGHTLY TOXIC BY
DERMAL ABSORPTION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH CHRONIC RESPIRATORY DISEASE.

HEALTH EFFECTS AND FIRST AID

INHALATION:

ISOAMYL ALCOHOL:
IRRITANT/NARCOTIC.

10,000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.

ACUTE EXPOSURE - MAY IRRITATE NOSE, THROAT, OR UPPER RESPIRATORY TRACT,
OR CAUSE HEADACHE, DIZZINESS, FAINTNESS, DROWSINESS, OR NAUSEA. SEVERE
EXPOSURE MAY CAUSE NARCOSIS, CONFUSION, OR BONE MARROW DAMAGE, OR MAY BE
FATAL BY LONG-TIME EXPOSURE.
CHRONIC EXPOSURE - HAS NOT BEEN REPORTED IN HUMANS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING
HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD
PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND
AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN
SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION
IMMEDIATELY.

SKIN CONTACT:

ISOAMYL ALCOHOL:
IRRITANT.

ACUTE EXPOSURE - MAY CAUSE IRRITATION AND DEFATTING OF SKIN.
CHRONIC EXPOSURE - MAY CAUSE DERMATITIS WITH DEFATTING OF SKIN.

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:

ISOAMYL ALCOHOL:
CORROSIVE.

ACUTE EXPOSURE - MAY CAUSE HUMAN IRRITATION AT LEVELS OF 150 PPM.
INSTILLATION OF 0.005 ML OF UNDILUTED MATERIAL PRODUCED SEVERE BURNS IN
RABBIT EYES WITH MODERATELY SEVERE CORNEAL NECROSIS.
CHRONIC EXPOSURE - DEPENDING ON THE CONCENTRATION AND DURATION OF EXPOSURE,
MAY CAUSE CONJUNCTIVITIS OR EFFECTS AS DETAILED IN ACUTE EXPOSURE.

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:

ISOAMYL ALCOHOL:
NARCOTIC.

ACUTE EXPOSURE - MAY CAUSE HEADACHE, DIZZINESS, NAUSEA, DIARRHEA, OR
VOMITING. SEVERE EXPOSURE MAY CAUSE NARCOSIS AND UNCONSCIOUSNESS.
CHRONIC EXPOSURE - NO DATA AVAILABLE.

FIRST AID- IF PERSON IS CONSCIOUS, GIVE LARGE QUANTITIES OF WATER AND
INDUCE VOMITING. DO NOT MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK
ANYTHING. MAINTAIN BLOOD PRESSURE, AIRWAY, AND GIVE OXYGEN IF RESPIRATION
IS DEPRESSED. GET MEDICAL ATTENTION.

ANTIDOTE:

NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:

STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:

ISOAMYL ALCOHOL:

HYDROGEN TRISULFIDE: EXPLOSIVE REACTION.
OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.
REDUCING MATERIALS: MAY REACT VIGOROUSLY.

DECOMPOSITION:

THERMAL DECOMPOSITION MAY RELEASE ACRID SMOKE AND IRRITATING FUMES.

POLYMERIZATION:

HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL
TEMPERATURES AND PRESSURES.

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STORAGE AND DISPOSAL

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

STORAGE

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

STORE IN ACCORDANCE WITH 29 CFR 1910.106.

BONDING AND GROUNDING: SUBSTANCES WITH LOW ELECTROCONDUCTIVITY, WHICH
MAY BE IGNITED BY ELECTROSTATIC SPARKS, SHOULD BE STORED IN CONTAINERS
WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1983.
RECOMMENDED PRACTICE ON STATIC ELECTRICITY.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF
HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D001.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

CONDITIONS TO AVOID

AVOID CONTACT WITH HEAT, SPARKS, FLAMES, OR OTHER SOURCES OF IGNITION. VAPORS
MAY BE EXPLOSIVE AND POISONOUS; DO NOT ALLOW UNNECESSARY PERSONNEL IN AREA.
DO NOT OVERHEAT CONTAINERS; CONTAINERS MAY VIOLENTLY RUPTURE AND TRAVEL A
CONSIDERABLE DISTANCE IN HEAT OF FIRE.

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:

SHUT OFF IGNITION SOURCES. 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.

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).

ISOAMYL ALCOHOL:

1000 PPM - ANY CHEMICAL CARTRIDGE RESPIRATOR WITH A FULL FACEPIECE AND
ORGANIC VAPOR CARTRIDGE(S).
ANY POWERED, AIR-PURIFYING RESPIRATOR WITH ORGANIC VAPOR
CARTRIDGE(S).

2500 PPM - ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS-FLOW MODE.

5000 PPM - ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE
ANY AIR-PURIFYING, FULL-FACEPIECE RESPIRATOR (GAS MASK) WITH A
CHIN-STYLE, FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.

10000 PPM - ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS
OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ESCAPE - ANY AIR-PURIFYING, FULL-FACEPIECE RESPIRATOR (GAS MASK) WITH A
CHIN-STYLE, FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
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.

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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.

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