

DATE: 04/25/91
INDEX: N/A

ACCT: 888328-01
CAT NO: H3404

PAGE: 1
PO NBR: N/A

HEPTANE
HEPTANE
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MATERIAL SAFETY DATA SHEET

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **HEPTANE**
CAS-NUMBER 142-82-5

TRADE NAMES/SYNONYMS:
NORMAL HEPTANE; DIPROPYL METHANE; HEPTYL HYDRIDE; SKELLYSOLVE C;
DIPROPYLMETHANE; N-HEPTANE; STCC 4909190; UN 1206;
H350; H340; 03008; H20; BP1115; H350SK; C7H16; ACC10680

CHEMICAL FAMILY:
HYDROCARBON, ALIPHATIC

MOLECULAR FORMULA: C-H3-(C-H2)5-C-H3

MOLECULAR WEIGHT: 100.21

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: N-HEPTANE
CAS# 142-82-5
PERCENT: 100

EXPOSURE LIMITS:

HEPTANE:
400 PPM (1600 MG/M3) OSHA TWA; 500 PPM (2000 MG/M3) OSHA STEL
400 PPM (1600 MG/M3) ACGIH TWA; 500 PPM (2000 MG/M3) ACGIH STEL
85 PPM NIOSH RECOMMENDED 10 HOUR TWA; 440 PPM NIOSH RECOMMENDED 15 MINUTE
CEILING.

PHYSICAL DATA

DESCRIPTION: VOLATILE, CLEAR, COLORLESS LIQUID, WITH A FAINT GASOLINE-LIKE
ODOR. BOILING POINT: 208 F (98 C) MELTING POINT: -132 F (-91 C)
SPECIFIC GRAVITY: 0.6837 VOLATILITY: 100% VAPOR PRESSURE: 40 MMHG @ 20 C
EVAPORATION RATE: (BUTYL ACETATE=1) 2.80 SOLUBILITY IN WATER: 0.005%
ODOR THRESHOLD: 200 PPM VAPOR DENSITY: 3.45
SOLVENT SOLUBILITY: SOLUBLE IN ETHANOL, ETHER, CHLOROFORM, ACETONE.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
DANGEROUS 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.

VAPOR-AIR MIXTURES ARE EXPLOSIVE.

DUE TO LOW ELECTROCONDUCTIVITY OF THE SUBSTANCE, FLOW OR AGITATION MAY
GENERATE ELECTROSTATIC CHARGES RESULTING IN SPARKS WITH POSSIBLE IGNITION.

FLASH POINT: 25 F (-4 C) (CC) UPPER EXPLOSIVE LIMIT: 6.7%

LOWER EXPLOSIVE LIMIT: 1.05% AUTOIGNITION TEMP.: 399 F (204 C)

FLAMMABILITY CLASS(OSHA): IB

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM

Chemistry

DATE: 04/25/91
INDEX: N/A

ACCT: 888328-01
CAT NO: H3404

PAGE: 2
PO NBR: N/A

(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

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

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 27).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING AMOUNTS AS FOG, SOLID STREAMS MAY SPREAD FIRE. COOL CONTAINERS WITH FLOODING QUANTITIES OF WATER, APPLY FROM AS FAR A DISTANCE POSSIBLE. AVOID BREATHING TOXIC VAPORS, KEEP UPWIND.

WATER MAY BE INEFFECTIVE (NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1984)

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

TOXICITY

HEPTANE:
TOXICITY DATA: 1000 PPM/6 MINUTES INHALATION-HUMAN TCL0; 75 GM/M3/2 HOURS
INHALATION-MOUSE LC50; 222 MG/KG INTRAVENOUS-MOUSE LD50.
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: IRRITANT- INHALATION, SKIN, EYE.
ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INHALATION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT
AT INCREASED RISK FROM EXPOSURE; PERSONS WITH A HISTORY OF SKIN OR CHRONIC
RESPIRATORY DISEASE.
ADDITIONAL DATA: STIMULANTS SUCH AS EPINEPHRINE OR EPHEDRINE MAY
INDUCE VENTRICULAR FIBRILLATION.

HEALTH EFFECTS AND FIRST AID

INHALATION:
HEPTANE:
IRRITANT/NARCOTIC. 5000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- EXCESSIVE INHALATION OF VAPORS MAY CAUSE IRRITATION OF THE
NASAL AND RESPIRATORY TRACT. INHALATION OF 1000-2000 PPM FOR 4-6 MINUTES
CAUSED SLIGHT TO MODERATE VERTIGO IN HUMANS; AND 5000 PPM FOR 4-7 MINUTES
CAUSED NARCOSIS WITH MARKED VERTIGO, HEADACHE, LIGHT-HEADEDNESS, WEAKNESS,
INABILITY TO WALK A STRAIGHT LINE, INCOORDINATION, AND HILARITY OR
GIDDINESS; 5000 PPM FOR 15 MINUTES CAUSED SLIGHT NAUSEA, LOSS OF APPETITE,
A PERSISTING GASOLINE TASTE IN THE MOUTH, AND STUPOR. HIGH CONCENTRATIONS
MAY CAUSE ASPHYXIATION AND UNCONSCIOUSNESS. EXPOSURE TO 10,000-15,000 PPM
FOR 30-50 MINUTES PRODUCED NARCOSIS IN MICE; 15,000-20,000 PPM FOR 30-60
MINUTES PRODUCED CONVULSIONS AND DEATH; AND EXPOSURE TO 48,000 PPM FOR
3-4 MINUTES RESULTED IN RESPIRATORY ARREST. MYOCARDIAL SENSITIZATION MAY
OCCUR.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

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:
HEPTANE:
IRRITANT.

ACUTE EXPOSURE- DIRECT CONTACT WITH THE LIQUID MAY CAUSE IRRITATION WITH
REDNESS, PAIN, BURNING, AND ITCHING. SKIN ABSORPTION MAY OCCUR.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT WITH THE LIQUID MAY CAUSE
DEFATTING OF THE SKIN WITH DERMATITIS.

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:

DATE: 04/25/91
INDEX: N/A

ACCT: 888328-01
CAT NO: H3404

PAGE: 3
PO NBR: N/A

HEPTANE:
IRRITANT.

ACUTE EXPOSURE- LIQUID MAY CAUSE IRRITATION WITH REDNESS, TEARING, AND BLURRED VISION.
CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE TO IRRITANTS MAY CAUSE CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (30-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
HEPTANE:
NARCOTIC.

ACUTE EXPOSURE- INGESTION MAY CAUSE IRRITATION TO THE GASTROINTESTINAL TRACT, ABDOMINAL PAIN AND SWELLING, NAUSEA, VOMITING, AND DIARRHEA. IF SUFFICIENT AMOUNTS ARE ABSORBED, HEADACHE AND CENTRAL NERVOUS SYSTEM DEPRESSION MA OCCUR. IN TESTS WITH ANIMALS, ASPIRATION OF THE C6-8 ALIPHATIC HYDROCARBONS CAUSED IMMEDIATE DEATH DUE TO CARDIAC ARREST, RESPIRATORY PARALYSIS AND ASPHYXIA.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- EXTREME CARE MUST BE USED TO PREVENT ASPIRATION. USE GASTRIC LAVAGE WITH ACTIVATED CHARCOAL AND A CUFFED ENDOTRACHEAL TUBE WITHIN 15 MINUTES. IN THE ABSENCE OF DEPRESSION OR CONVULSIONS OR IMPAIRED GAG REFLEX, IPECAC EMESIS CAN BE DONE. WHEN VOMITING BEGINS, KEEP HEAD LOWER THAN HIPS TO PREVENT ASPIRATION. AFTER VOMITING STOPS, GIVE 30-60 MILLILITERS OF FLEET'S PHOSPHO-SODA DILUTED 1:4 IN WATER. MAINTAIN AIRWAY, BLOOD PRESSURE AND RESPIRATION. (DREISBACH, HANDBOOK OF POISONING, 11TH ED.) TREATMENT MUST BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL. GET MEDICAL ATTENTION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
HEPTANE:

LIQUID CHLORINE AND RED PHOSPHORUS: VIOLENT REACTION.
OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.
PLASTICS, RUBBER, COATINGS: MAY BE ATTACKED.

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. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

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.

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 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. AVOID OVERHEATING OF CONTAINERS; CONTAINERS MAY VIOLENTLY RUPTURE IN HEAT OF FIRE. AVOID CONTAMINATION OF WATER SOURCES.

DATE: 04/25/91
INDEX: N/A

ACCT: 888328-01
CAT NO: H3404

PAGE: 4
PO NBR: N/A

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 RESTRICT ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION:

PROVIDE LOCAL EXHAUST OR 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).

HEPTANE:

850 PPM- ANY CHEMICAL CARTRIDGE RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE(S).
ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.

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

2125 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.

4250 PPM- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A TIGHT-FITTING FACEPIECE OPERATED IN A CONTINUOUS FLOW MODE.

5000 PPM- ANY SUPPLIED-AIR RESPIRATOR WITH A HALF-MASK AND OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR 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 WITH FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE AND OPERATED IN 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.
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