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KEROSENE
KEROSENE
KEROSENE

MATERIAL SAFETY DATA SHEET

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **KEROSENE**

CAS-NUMBER 8008-20-6

TRADE NAMES/SYNONYMS:
FUEL OIL NO. 1; COAL OIL; RANGE OIL; KEROSENE; STCC 4915171; UN 1223; K-10;
ACC10090

CHEMICAL FAMILY:
HYDROCARBON, ALIPHATIC

HYDROCARBON, AROMATIC

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

COMPONENTS AND CONTAMINANTS

COMPONENT: KEROSENE PERCENT: >99.0
CAS# 8008-20-6

OTHER CONTAMINANTS: MAY CONTAIN TRACES OF SULFUR AND BENZENE.

EXPOSURE LIMITS:
KEROSENE (FUEL OIL NO. 1):
100 MG/M3 (14 PPM) NIOSH RECOMMENDED 10 HOUR TWA

PHYSICAL DATA

DESCRIPTION: ODORLESS TO LIGHT-BROWN, MOBILE, OILY LIQUID WITH A MILD

PETROLEUM ODOR. BOILING POINT: 304-574 F (151-301 C)

MELTING POINT: 0 F (-18 C) SPECIFIC GRAVITY: 0.8

VAPOR PRESSURE: 5 MMHG @ 38 C SOLUBILITY IN WATER: INSOLUBLE

ODOR THRESHOLD: 0.09 PPM (0.6 MG/M3) VAPOR DENSITY: 4.5

VISCOSITY: >1.3 CST @ 40 C

FIRE AND EXPLOSION DATA

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

VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASH POINT.

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

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

FLASH POINT: >100 F (>43 C) (CC) UPPER EXPLOSIVE LIMIT: 5.0%

LOWER EXPLOSIVE LIMIT: 0.7% AUTOIGNITION TEMP.: 410 F (210 C)

FLAMMABILITY CLASS(OSHA): II

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

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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 FLOODING AMOUNTS OF WATER AS A FOG, SOLID STREAMS MAY BE INEFFECTIVE. 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

TOXICITY

KEROSENE (FUEL OIL NO. 1):
TOXICITY DATA: 3570 MG/KG ORAL-MAN TDLO; 500 MG/KG ORAL-MAN LDLO;
36 GM/KG ORAL-RAT LD50; 4 GM/KG ORAL-DOG LDLO; 7072 MG/KG ORAL-RABBIT LD50;
20 GM/KG ORAL-GUINEA PIG LD50; 800 MG/KG INTRATRACHEAL-DOG LDLO;
800 MG/KG INTRATRACHEAL-RAT LDLO; 200 MG/KG INTRATRACHEAL-RABBIT LD50;
403 MG/KG INTRAVENOUS-MAN TDLO; 200 MG/KG INTRAVENOUS-DOG LDLO;
180 MG/KG INTRAVENOUS-RABBIT LD50; 10700 MG/KG INTRAPERITONEAL-RAT LDLO;
6600 MG/KG INTRAPERITONEAL-RABBIT LD50; 1176 MG/KG UNREPORTED-MAN LDLO
MUTAGENIC DATA (RTECS)

CARCINOGEN STATUS: HUMAN INADEQUATE EVIDENCE (IARC GROUP-3).

LOCAL EFFECTS: IRRITANT- MUCOUS MEMBRANE, SKIN.

ACUTE TOXICITY: RELATIVELY NONTOXIC BY INGESTION.

TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT.

ADDITIONAL DATA: USE OF EPINEPHRINE OR SIMILAR STIMULANTS MAY INDUCE VENTRICULAR FIBRILLATION.

HEALTH EFFECTS AND FIRST AID

INHALATION:

KEROSENE (FUEL OIL NO. 1):

IRRITANT/NARCOTIC.

ACUTE EXPOSURE- INHALATION HAZARD IS LOW DUE TO THE LOW VAPOR PRESSURE. ONE STUDY CONCLUDED THAT THERE IS NO INDICATION OF TOXICITY AT CONCENTRATIONS OF 100 MG/M3 OR BELOW. HIGH CONCENTRATIONS OF MIST OR VAPOR MAY CAUSE MUCOUS MEMBRANE IRRITATION, A BURNING SENSATION IN THE CHEST, AN ODOR OF KEROSENE ON THE BREATH, AND CHEMICAL PNEUMONITIS. THERE MAY BE TRANSIENT EUPHORIA AND EXCITEMENT FOLLOWED BY SYMPTOMS OF CENTRAL NERVOUS SYSTEM DEPRESSION WHICH MAY INCLUDE HEADACHE, NAUSEA, DIZZINESS, WEAKNESS, ATAXIA, RESTLESSNESS, AND RINGING IN THE EARS. DISORIENTATION AND CONFUSION MAY PROGRESS TO DROWSINESS AND COMA, SOMETIMES WITH CONVULSIONS. VASOMOTOR DISTURBANCES, POSSIBLY WITH CYANOSIS OF THE EXTREMITIES MAY OCCUR. DEATH IS USUALLY DUE TO RESPIRATORY ARREST, BUT RARELY SUDDEN DEATH MAY OCCUR, PRESUMABLY DUE TO VENTRICULAR FIBRILLATION.

CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE TO KEROSENE MIST MAY CAUSE MUCOUS MEMBRANE IRRITATION AND POLYEMIA. AEROSOL EXPOSURE AT 500-12000 MG/M3 FOR 2 HOURS/DAY FOR 2-4 WEEKS CAUSED LEUKOCYTOSIS, TRACHEITIS, BRONCHITIS, AND PNEUMONIA. MALAISE, WEAKNESS, TREMOR, TWITCHING, VERTIGO, AND PAIN IN THE EXTREMITIES HAVE ALSO BEEN REPORTED. DOGS AND RATS EXPOSED TO 100 MG/M3 OF DEODORIZED KEROSENE FOR 6 HOURS/DAY, 5 DAYS/WEEK FOR 67 DAYS SHOWED NO TOXIC EFFECTS.

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:

KEROSENE (FUEL OIL NO. 1):

IRRITANT.

ACUTE EXPOSURE- DIRECT CONTACT MAY CAUSE DEFATTING WITH DRYNESS, IRRITATION, DERMATITIS, AND EDEMA. SECONDARY INFECTIONS ARE POSSIBLE. IN ONE STUDY, SKIN DEVELOPED A BURNING SENSATION DURING THE FIRST HOUR OF EXPOSURE, ERYTHEMA BY THE SECOND, AND BLISTER FORMATION BY THE TWELFTH. ALTHOUGH ABSORPTION THROUGH INTACT SKIN IS SLIGHT, IT MAY BE MODERATE THROUGH

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INJURED SKIN. KEROSENE MAY INCREASE THE TOXICITY OF SKIN-SENSITIZING AGENTS.

CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE DEFATTING AND DERMATITIS. SEVERAL CASES HAVE BEEN REPORTED IN HUMANS WHERE MISUSE OF KEROSENE TO MASSAGE EXTREMITIES RESULTED IN APLASTIC ANEMIA AND DEATH, PROBABLY DUE TO ABSORPTION OF BENZENE. RABBITS TREATED FOR 3 DAYS WITH 3 ML/KG/DAY EXPERIENCED HAIR LOSS, SCALING, CRACKING OF THE EPIDERMIS, BUT NO SYSTEMIC TOXICITY.

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:

KEROSENE (FUEL OIL NO. 1):

ACUTE EXPOSURE- APPLICATION TO THE HUMAN EYE IS REPORTED TO CAUSE NO DISCOMFORT OR INJURY.

CHRONIC EXPOSURE- NO DATA AVAILABLE.

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:

KEROSENE (FUEL OIL NO. 1):

NARCOTIC.

ACUTE EXPOSURE- MAY CAUSE LOCAL IRRITATION WITH A BURNING SENSATION IN THE MOUTH, ESOPHAGUS, AND STOMACH; AND VOMITING, BELCHING, AND DIARRHEA WITH BLOOD-TINGED FECES. ASPIRATION INTO THE LUNGS MAY OCCUR READILY DURING INGESTION OR SUBSEQUENT VOMITING OR BELCHING. EVEN SMALL AMOUNTS MAY CAUSE CHEMICAL PNEUMONITIS WITH PULMONARY EDEMA AND HEMORRHAGE AND MAY POSSIBLY BE COMPLICATED BY SECONDARY BACTERIAL PNEUMONIA. SIGNS OF LUNG INVOLVEMENT ARE SUDDEN DEVELOPMENT OF RAPID, LABORED BREATHING, DISTRESS, CYANOSIS WITH RALES, FEVER, AND TACHYCARDIA. IF SUFFICIENT AMOUNTS ARE INGESTED AND RETAINED, SYMPTOMS OF CENTRAL NERVOUS SYSTEM DEPRESSION MAY OCCUR AS DETAILED IN ACUTE INHALATION; DROWSINESS MAY PROGRESS TO COMA, SOMETIMES WITH CONVULSIONS. SEVERE CASES MAY BE FATAL. VENTRICULAR FIBRILLATION IS POSSIBLE.

CHRONIC EXPOSURE- REPEATED DOSING OF RATS AND RABBITS BY GASTRIC INTUBATION DID NOT RESULT IN PULMONARY INJURY.

FIRST AID- ONLY HYDROCARBONS THAT ARE SOLVENTS FOR A TOXIC AGENT OR ARE THEMSELVES TOXIC NEED TO BE EVACUATED. EXTREME CARE MUST BE USED TO PREVENT ASPIRATION. GASTRIC LAVAGE WITH A CUFFED ENDOTRACHEAL TUBE IN PLACE TO PREVENT FURTHER ASPIRATION SHOULD BE DONE WITHIN 15 MINUTES. IN THE ABSENCE OF DEPRESSION OR CONVULSIONS OR IMPAIRED GAG REFLEX, EMESIS CAN ALSO BE INDUCED USING SYRUP OF IPECAC WITHOUT INCREASING THE HAZARD OF ASPIRATION (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GASTRIC LAVAGE SHOULD BE PERFORMED BY QUALIFIED MEDICAL PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

ANTIDOTE:

NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:

STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:

KEROSENE (FUEL OIL NO. 1):

OXIDIZERS: POSSIBLE VIOLENT REACTION OR IGNITION.

NITROGEN TETROXIDE: POSSIBLE EXPLOSION.

CHLORINE: VIGOROUS REACTION OR POSSIBLE IGNITION OR EXPLOSION.

FLUORINE: POSSIBLE IGNITION OR EXPLOSION.

MAGNESIUM PERCHLORATE: POSSIBLE EXPLOSION ON HEATING.

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.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

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****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.

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 VENTILATION AND/OR GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON INFORMATION FOUND IN THE PHYSICAL DATA, TOXICITY AND HEALTH EFFECTS SECTIONS. THEY ARE RANKED IN ORDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST BE BASED ON THE SPECIFIC OPERATION, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND MUST BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

ANY TYPE 'C' SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE OR WITH A FULL FACEPIECE, HELMET OR HOOD OPERATED IN CONTINUOUS-FLOW MODE.

ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

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:
WEAR OIL IMPERVIOUS CLOTHING. AVOID PROLONGED OR REPEATED CONTACT WITH SUBSTANCE. AVOID WEARING OIL SOAKED CLOTHING.

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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