

MATERIAL SAFETY DATA SHEET

OHS24940

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OCCUPATIONAL HEALTH SERVICES, INC.
400 PLAZA DRIVE
HARMON MEADOWS
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EMERGENCY CONTACT:
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Don dinger v. UCC
Background material
(615)292-1180

SUBSTANCE IDENTIFICATION

CAS-NUMBER 75-01-4

SUBSTANCE: VINYL CHLORIDE

TRADE NAMES/SYNONYMS:

CHLOROETHYLENE; CHLOROETHENE; VC; CHLORETHENE; TROVIDUR;
ETHYLENE MONOCHLORIDE; MONOCHLOROETHYLENE; EXON 470; MONO CHLORO ETHENE;
VINYL CHLORIDE MONOMER; VINYL CHLORIDE, INHIBITED; U043; UN 1086; OHS24940

CHEMICAL FAMILY:

HALOGEN COMPOUND, ALIPHATIC

MOLECULAR FORMULA: C₂H₃CL

MOLECULAR WEIGHT: 62.50

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

COMPONENTS AND CONTAMINANTS

COMPONENT: VINYL CHLORIDE

PERCENT: 99.9

OTHER CONTAMINANTS: WATER, ACETALDEHYDE, ACETYLENE, IRON, HYDROGEN
CHLORIDE, HYDROGEN PEROXIDE

EXPOSURE LIMITS:

VINYL CHLORIDE:

1.0 PPM OSHA TWA; 5 PPM OSHA 15 MINUTE CEILING;

0.5 PPM OSHA ACTION LEVEL AS AN 8 HOUR TWA

5 PPM ACGIH TWA

LOWEST FEASIBLE LIMIT NIOSH RECOMMENDED EXPOSURE CRITERIA

PHYSICAL DATA

DESCRIPTION: COLORLESS, SWEET SMELLING GAS; LIQUID BELOW 7 FARENHEIT

BOILING POINT: 7 F (-14 C) MELTING POINT: -245 F (-160 C)

SPECIFIC GRAVITY: 0.9 VAPOR PRESSURE: 2300 MMHG @ 20 C

SOLUBILITY IN WATER: 0.1% @ 25 C ODOR THRESHOLD: 260 PPM

VAPOR DENSITY: 2.2

SOLVENT SOLUBILITY: ETHANOL, ETHYL ETHER, BENZENE, CARBON TETRACHLORIDE,
ETHER

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FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:

DANGEROUS FIRE HAZARD AND A MODERATE EXPLOSION HAZARD WHEN EXPOSED TO HEAT OR FLAME. LARGE FIRES OF VINYL CHLORIDE ARE PRACTICALLY INEXTINGUISHABLE. VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASH POINT. VAPORS ARE HEAVIER THAN AIR, AND MAY TRAVEL A CONSIDERABLE DISTANCE TO SOURCE OF IGNITION AND FLASHBACK.

FLASH POINT: -108 F (-77 C) (CC) UPPER EXPLOSIVE LIMIT: 33%

LOWER EXPLOSIVE LIMIT: 3.6% AUTOIGNITION TEMP.: 882 F (472 C)

FLAMMABILITY CLASS(OSHA): IA

FIREFIGHTING MEDIA:

DRY CHEMICAL OR CARBON DIOXIDE
(1984 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.3).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR ALCOHOL FOAM
(1984 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.3).

FIREFIGHTING:

MOVE CONTAINER FROM FIRE AREA IF POSSIBLE. STAY AWAY FROM STORAGE TANK ENDS. FOR MASSIVE FIRE IN STORAGE AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES, ELSE WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF STORAGE TANK FROM FIRE. LET STORAGE VESSEL BURN UNLESS LEAK CAN BE STOPPED; FOR SMALLER TANKS OR CYLINDERS, EXTINGUISH/ISOLATE FROM OTHER FLAMMABLE MATERIALS (1984 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.3, GUIDE PAGE 17).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING QUANTITIES AS FOG. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING TOXIC VAPORS, KEEP UPWIND. EVACUATE TO A RADIUS OF 2500 FEET FOR UNCONTROLLABLE FIRES. IF MATERIAL LEAKING, NOT ON FIRE DOWNWIND EVACUATION MUST BE CONSIDERED (BUREAU OF EXPLOSIVES, EMERGENCY HANDLING OF HAZARDOUS MATERIALS IN SURFACE TRANSPORTATION, 1981).

STOP FLOW OF GAS (NFPA FIRE PROTECTION GUIDE ON HAZARDOUS MATERIAL, EIGHTH EDITION).

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49CFR172.101:
FLAMMABLE GAS

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49CFR172.101 AND 172.402:
FLAMMABLE GAS

TOXICITY

VINYL CHLORIDE:

500 MG/KG ORAL-RAT LD50; 20 PPM/30 MINUTES INHALATION-GUINEA PIG LCLO;
20 PPM INHALATION-HUMAN TCLO (DP1RDU); MUTAGENIC DATA (RTEC); REPRODUCTIVE EFFECTS DATA (RTEC); HUMAN CARCINOGEN (OSHA); POSITIVE HUMAN CARCINOGEN

(IARC); POSITIVE ANIMAL CARCINOGEN (IARC). STUDIES SHOW THAT HUMAN GROUPS OCCUPATIONALLY EXPOSED TO VINYL CHLORIDE RESULTED IN A SIGNIFICANT INCREASE IN ANGIOSARCOMAS OF THE LIVER, AND ALSO TUMORS OF THE BRAIN, LUNG AND HEMATOPOIETIC SYSTEMS. VINYL CHLORIDE WAS CARCINOGENIC IN RATS, MICE AND HAMSTERS FOLLOWING ORAL AND INHALATION EXPOSURE, PRODUCING ANGIOSARCOMAS OF THE LIVER AND ALSO TUMORS AT VARIOUS SITES, AND WAS CARCINOGENIC IN RATS FOLLOWING PRENATAL EXPOSURE.

VINYL CHLORIDE IS A SKIN, EYE AND MUCOUS MEMBRANE IRRITANT, CENTRAL NERVOUS SYSTEM DEPRESSANT, AND SIMPLE ASPHYXIAN. POISONING MAY AFFECT THE LIVER, LYMPHATIC SYSTEM, BLOOD, AND RESPIRATORY SYSTEM.

HEALTH EFFECTS AND FIRST AID

INHALATION:

VINYL CHLORIDE:

IRRITANT/NARCOTIC/ASPHYXIAN/CARCINOGEN.

ACUTE EXPOSURE- MAY RESULT IN A PLEASANT TASTE IN THE MOUTH, AND MAY CAUSE CENTRAL NERVOUS SYSTEM DISTURBANCES INCLUDING EUPHORIA, DROWSINESS, MARCOLEPSEY, HEADACHE, NAUSEA, STAGGERING GAIT, PARESTHESIA OF THE HANDS AND FEET, DULLING OF VISUAL AND AUDITORY RESPONSE, ANESTHESIA, AND DEATH DUE TO RESPIRATORY PARALYSIS WITH CARDIAC ARREST. CONCENTRATED VAPORS MAY RESULT IN ASPHYXIA DUE TO THE DISPLACEMENT OF OXYGEN. HUMAN AND ANIMAL PATHOLOGIC REPORTS SHOW PULMONARY EDEMA, HYPEREMIA OF KIDNEYS AND LIVER, AND HEPATIC DEGENERATION.

CHRONIC EXPOSURE- REPEATED EXPOSURE MAY RESULT IN DOSE-RELATED SENSORY DISORDERS, AUTONOMIC NERVOUS SYSTEM POLYNEURITIS, SPASTIC ANGIOEURITIS, THROMBOCYTOPENIA, SPLENOMEGALY, HEPATITIS-LIKE LIVER CHANGES, LIVER MALFUNCTION WITH PORTAL FIBROSIS, AND PULMONARY INSUFFICIENCY. WORKERS INVOLVED IN THE ACTUAL POLYMERIZATION PROCESS MAY EXHIBIT A PECULIAR TRIAD OF SYMPTOMS: MODIFICATION OF PERIPHERAL CIRCULATION RESULTING IN ATTACKS OF PALLOR, CYANOSIS, AND THEN REDNESS (RAYNAUD'S PHENOMENON); SKELETAL CHANGES OF DISTAL PHALANGES (ACRO-OSTEOLYSIS); AND SCLERODERMA-LIKE SKIN CHANGES. PSEUDO-CLUBBING OF THE FINGERS MAY ALSO OCCUR. ANIMAL STUDIES SHOW THAT VINYL CHLORIDE PRODUCES TUMORS AT DIFFERENT SITES, INCLUDING ANGIOSARCOMAS OF THE LIVER, AND IT IS CARCINOGENIC IN RATS FOLLOWING PRENATAL EXPOSURE. AN INCREASED RATE OF BIRTH DEFECTS, ESPECIALLY CENTRAL NERVOUS SYSTEM ANOMALIES, AMONG CHILDREN OF PARENTS RESIDING IN COMMUNITIES WHERE VINYL CHLORIDE PRODUCTION AND POLYMERIZATION PLANTS ARE LOCATED HAVE BEEN REPORTED IN SEVERAL STUDIES.

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. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

VINYL CHLORIDE:

IRRITANT.

ACUTE EXPOSURE- CONTACT MAY CAUSE IRRITATION, REDNESS, PAIN, AND FROSTBITE. CHRONIC EXPOSURE- WORKERS HANDLING VINYL CHLORIDE HAVE EXHIBITED A PECULIAR TRIAD OF SYMPTOMS: RAYNAUD'S PHENOMENON, ACRO-OSTEOLYSIS, AND SCLERODERMA-LIKE SKIN CHANGES.

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.

IN CASE OF FROSTBITE, WARM AFFECTED SKIN IN WARM WATER AT A TEMPERATURE OF 107 F. IF WARM WATER IS NOT AVAILABLE OR IMPRACTICAL TO USE, GENTLY WRAP AFFECTED PART IN BLANKETS. ENCOURAGE VICTIM TO EXERCISE AFFECTED PART WHILE IT IS BEING WARMED. ALLOW CIRCULATION TO RETURN NATURALLY. (MATHESON GAS, 6TH EDITION) GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:**VINYL CHLORIDE:****IRRITANT.**

ACUTE EXPOSURE- MAY CAUSE FROSTBIE, IMMEDIATE AND SEVERE IRRITATION, AND CORNEAL INJURY WITH COMPLETE RECOVERY IN 48 HOURS.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

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). IN CASE OF BURNS, APPLY STERILE BANDAGES LOOSELY WITHOUT MEDICATION. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:**VINYL CHLORIDE:****CARCINOGEN.**

ACUTE EXPOSURE- ANIMAL STUDIES INDICATE THAT ORAL ADMINISTRATION ALTERED ELECTROENCEPHALOGRAM, AND EXHIBITED IMMUNOSUPPRESSIVE ACTIVITY.
CHRONIC EXPOSURE- ORAL ADMINISTRATION TO RATS, MICE, AND HAMSTERS RESULTED IN TUMOR PRODUCTION AT VARIOUS SITES, INCLUDING ANGIOSARCOMAS OF THE LIVER.

FIRST AID- TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD LOWER THAN HIPS TO PREVENT ASPIRATION.

ANTIDOTE:

NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY**REACTIVITY:****VINYL CHLORIDE:**

SLIGHTLY REACTIVE UNDER NORMAL CONDITIONS. POLYMERIZES READILY UNDER THE INFLUENCE OF LIGHT, AIR, OR HEAT.

INCOMPATIBILITIES:**VINYL CHLORIDE:**

AIR: FORMS AN UNSTABLE POLYPEPTIDE THROUGH OXIDATION BY ATMOSPHERIC OXYGEN IN THE PRESENCE OF ANY OF A VARIETY OF CONTAMINANTS. STORAGE UNDER THESE CONDITIONS FOR A LONG PERIOD OF TIME INCREASES THE CONCENTRATION OF UNSTABLE POLYPEROXIDES TO HAZARDOUS LEVELS.

OXIDIZING AGENTS: INCOMPATIBLE.

COPPER: INCOMPATIBLE.

DECOMPOSITION:

THERMAL DECOMPOSITION MAY RELEASE TOXIC PHOSGENE, CORROSIVE HYDROGEN CHLORIDE, AND TOXIC CARBON MONOXIDE.

POLYMERIZATION:

EXPOSURE TO AIR, LIGHT, OR EXCESSIVE HEAT MAY INITIATE SELF-POLYMERIZATION.
EXPOSURE OF CONTAINERS TO FIRE OR HEAT MAY RESULT IN VIOLENT POLYMERIZATION.

CONDITIONS TO AVOID

EXTREMELY FLAMMABLE. MAY BE IGNITED BY HEAT, SPARKS OR FLAMES. VAPORS MAY TRAVEL TO A SOURCE OF IGNITION AND FLASH BACK. CONTAINER MAY EXPLODE IN HEAT OF FIRE. VAPOR EXPLOSION HAZARD INDOORS, OUTDOORS OR IN SEWERS.

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. ISOLATE AREA UNTIL GAS HAS DISPERSED. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA! KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY. VENTILATE CLOSED SPACES BEFORE ENTERING.

REPORTABLE QUANTITY: 1 POUND

THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE MUST BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE, THE STATE EMERGENCY RESPONSE COMMISSION, AND THE NATIONAL RESPONSE CENTER (800)-424-8802; IN WASHINGTON, D.C. METROPOLITAN AREA (202)-426-2675

PROTECTIVE EQUIPMENT**VENTILATION:**

PROVIDE LOCAL EXHAUST OR PROCESS ENCLOSURE VENTILATION TO MEET THE PUBLISHED EXPOSURE LIMITS. VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:

THE FOLLOWING RESPIRATORS ARE THE MINIMUM LEGAL REQUIREMENTS AS SET FORTH BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION FOUND IN 29CFR1910, SUBPART Z.

REQUIRED RESPIRATORS FOR VINYL CHLORIDE

ATMOSPHERIC CONCENTRATIONS OF VINYL
CHLORIDE

UNKNOWN OR ABOVE 3600 PPM

NOT OVER 3600 PPM

REQUIRED APPARATUS

OPEN-CIRCUIT, SELF CONTAINED
BREATHING APPARATUS, PRESSURE
DEMAND TYPE, WITH FULL FACEPIECE

COMBINATION TYPE 'C' SUPPLIED AIR
RESPIRATOR, PRESSURE DEMAND TYPE,
WITH A FULL FACEPIECE AND AUXIL-
IARY SELF CONTAINED AIR SUPPLY;

OR

COMBINATION TYPE SUPPLIED AIR
RESPIRATOR, CONTINUOUS FLOW TYPE,
WITH A FULL OR HALF FACEPIECE,

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AND AUXILIARY SELF-CONTAINED AIR
SUPPLY.

NOT OVER 1000 PPM

TYPE 'C' SUPPLIED AIR RESPIRATOR
CONTINUOUS FLOW TYPE, WITH A FULL
OR HALF FACEPIECE, HELMET OR
HOOD.

NOT OVER 100 PPM

COMBINATION TYPE 'C' SUPPLIED AIR
RESPIRATOR, DEMAND TYPE, WITH A
FULL FACEPIECE, AND AUXILIARY
SELF-CONTAINED AIR SUPPLY;

OR

OPEN-CIRCUIT SELF-CONTAINED
BREATHING APPARATUS WITH A FULL
FACEPIECE, IN DEMAND MODE;

OR

TYPE 'C' SUPPLIED AIR RESPIRATOR
DEMAND TYPE, WITH FULL FACEPIECE

NOT OVER 25 PPM

A POWERED AIR PURIFYING RESPIRA-
TOR WITH HOOD, HELMET, FULL OR
HALF FACEPIECE, AND A CANISTER
WHICH PROVIDES A SERVICE LIFE OF
AT LEAST 4 HOURS FOR CONCENTRA-
TIONS OF VINYL CHLORIDE UP TO 25
PPM;

OR

GAS MASK, FRONT- OR BACK-MOUNTED
CANISTER WHICH PROVIDES A SERVICE
LIFE OF AT LEAST 4 HOURS FOR CON-
CENTRATIONS OF VINYL CHLORIDE UP
TO 25 PPM.

NOT OVER 10 PPM

COMBINATION TYPE 'C' SUPPLIED AIR
RESPIRATOR, WITH A HALF FACEPIECE
AND AUXILIARY SELF-CONTAINED AIR
SUPPLY;

OR

TYPE 'C' SUPPLIED-AIR RESPIRATOR
DEMAND TYPE, WITH A HALF FACE-
PIECE;

OR

ANY CHEMICAL CARTRIDGE RESPIRATOR
WITH AN ORGANIC VAPOR CARTRIDGE
WHICH PROVIDES A SERVICE LIFE OF
AT LEAST 1 HOUR FOR CONCENTRA-
TIONS OF VINYL CHLORIDE UP TO 10
PPM.

ENTRY INTO UNKNOWN CONCENTRATIONS OR CONCENTRATIONS GREATER THAN 36,000 PPM
(LOWER EXPLOSION LIMIT) MAY BE MADE ONLY FOR THE PURPOSES OF LIFE RESCUE;

AND

ENTRY INTO CONCENTRATIONS OF LESS THAN 36,000 PPM, BUT GREATER THAN 3600 PPM
MAY BE MADE ONLY FOR THE PURPOSES OF LIFE RESCUE, FIREFIGHTING OR SECURING
EQUIPMENT SO AS TO PREVENT A GREATER HAZARD OF RELEASE OF VINYL CHLORIDE.

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

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

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 ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

PROTECTIVE CLOTHING MUST COMPLY WITH OSHA REQUIREMENT FOR PROTECTIVE WORK CLOTHING AND EQUIPMENT (29CFR1910.1017(H)).

GLOVES:

GLOVES MUST COMPLY WITH OSHA REQUIREMENTS FOR PROTECTIVE WORK CLOTHING AND EQUIPMENT. (29CFR1910.1017(H)).

EYE PROTECTION:

EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHALL PROVIDE AN EYE-WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - OCCUPATIONAL HEALTH SERVICES, INC.
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