



FORANE 22, 04022-005

MSDS Number

CJSFT

National Stock Number

6830-00N092407

Product Name

FORANE 22, 04022-005

Manufacturer

ELF ATOCHEM NORTH AMERICA

Product Identification

Product ID:FORANE 22, 04022-005

MSDS Date:11/11/1996

FSC:6830

NIIN:00N092407

Status Code:A

MSDS Number: CJSFT

Responsible Party

ELF ATOCHEM NORTH AMERICA

2000 MARKET ST

PHILADELPHIA , PA 19103-3222

US

Emergency Phone: 215-419-7695;800-424-9300

Info Phone: 215-419-7704

Preparer: PRODUCT SAFETY DEPARTMENT

Cage: 61102

Contractor

TURCO PRODUCTS, INC. DIVISON OF ELF ATOCHEM NORTH AMERICA

PHILADELPHIA, PA 19103-3222

US

215-419-7890

Cage: 61102

Ingredients

CHLORODIFLUOROMETHANE (R-22)

CAS: 75-45-6

RTECS: PA6390000

ACGIH TLV: 3540 MG/M3;1000 PPM

Hazards

LD50 LC50 Mixture:LD50: (ORAL,RAT) 2HR-300,000 PPM

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:EYE EFTS: IRRITANT. VAP IS IRRITATING

TO EYES. LIQ IS IRRITATING TO EYES & MAY CAUSE TISS TO FREEZE. SKIN

EFTS: IRRITANT. CONT W/ LIQ MAY CAUSE TISS TO FREEZE (FROST BITE).

CHEM ITSELF IS NOT IRRITATI NG. CHLOROFLUOROCARBON (CFC) MATLS HAVE

PRDCED SENSITIZ OF MYOCARDIUM TO EPINEPHRINE IN LAB ANIMALS & COULD

HAVE SIMILAR EFT IN HUMANS. ADRENOMIMETICS (E.G., EPINEPHRINE) MAY

BE CONTRAINDICATED EXCEPT FOR LIFE-SUSTAINING USES IN HUMAN



ACUTELY/ CHRONICALLY EXPOSED TO CFC'S . TARGET ORGAN TOXIN: TARGET ORGANS AFFECTED BY EXPOS TO MATL ARE: EYES, SKIN, CNS, RESP SYS, HEART. TOX COMMENTS: POTNTL HLTH EFTS: (EFTS OF OVEREXP)
Effects of Overexposure:HLTH HAZS: SKIN CONT & INHAL ARE EXPECTED TO BE PRIMARY ROUTES OF OCCUP EXPOS TO CHLORODIFLUOROMETHANE (HCFC 22). AS W/MOST LIQUEFIED GASES, CONT W/RAPIDLY VOLATILIZING LIQ/COLD VAPS CAN CAUSE FROSTBITE TO ANY TISS. BASED ON SINGLE EXPOS ANIMAL TESTS, HCFC 22 IS CONSIDERED TO BE PRACTICALLY NON-TOXIC IF INHALED. HOWEVER, EXPOS TO HCFC 22 GAS @ HIGH CONCS MAY EFT NERV SYS & PRDCE RAPID ANESTH EFT. DENSE VAP OF HCFC 22 CAN REDUCE OXYG AVAIL FOR BRTHG & PRDCE SYMPS SUCH AS HDCH, DIZZ, DROW, CYANOSIS & LACK OF MUSCLE CTL FOLLOWED BY COLLAPSE. PRLNGD EXPOS TO OXYG-DEFICIENT ATM MAY BE FATAL. INHAL OF HCFC 22 MAY CAUSE INCR IN (SUPDAT)

First Aid

First Aid:INGEST: N/A-PRODUCT IS GAS AT AMBIENT CNDTNS. NEVER GIVE ANYTHING BY MOUTH TO UNCONSCIOUS PERSON. SKIN: FLUSH EXPOSED SKIN W/LUKEWARM WATER (NOT HOT) - OR USE OTHER MEANS TO WARM SKIN SLOWLY. GET MEDICAL ATTENTION IF FROSTBITTEN BY LIQUID/IF IRRITATION OCCURS. EYE CONT: IMMEDIATELY FLUSH W/PLENTY OF WATER. GET MED ATTN IF IRRIT PERSISTS. INHAL: REMOVE TO FRESH AIR . IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. GET MEDICAL ATTENTION.

Fire Fighting

Flash Point:NONFLAMMABLE
Autoignition Temp: =632.2C, 1170.F
Extinguishing Media:USE EXTINGUISHING MEDIA APPROPRIATE TO SURROUNDING FIRE CONDITIONS.
Fire Fighting Procedures:WEAR NIOSH APPROVED PRESSURE DEMAND SCBA & FULL PROTECTIVE EQUIPMENT . FIRE FIGHTING EQUIPMENT SHOULD BE THOROUGHLY DECONTAMINATED AFTER USE.
Unusual Fire/Explosion Hazard:THERMAL DECOMP PRODS MAY INCL CHLORIDES, FLUORIDES & PHOSGENE . MAY DECOMPOSE DURING CONT W/FLAMES, HEATING ELEMENTS/IN COMBUST ENGINES RELEASING IRRIT, TOXIC, & CORR GASES. CNTNR MAY EXPLODE IF HEATED DUE TO RSLTG PRESS RISE. SOME MIX OF HCFCs AND/OR HFCS, & AIR/OXYG MAY BE COMBUST IF PRESSURIZED & (SUPDAT)

Accidental Release

Spill Release Procedures:REMOVE/EXTING IGNIT/COMBUST SOURCES. EVACUATE ENCLOSED SPACES UNTIL GAS IS DISPERSED. KEEP UPWIND. STOP LEAK IF POSS W/OUT RISK. DISPERSE GAS W/FLOOR-LEVEL FORCED-AIR VENT. EXHST VAPS OUTDOORS. REMOVE ALL FLAMES, HEATING ELEMENTS & GAS ENGINES, WASH CONTAMINATED CLOTHES BEFORE USE. DESTROY CONTAMINATED SHOES.

Handling

Handling and Storage Precautions:DO NOT GET IN EYES, ON SKIN OR CLOTHING. DO NOT BREATHE VAPOR, MIST OR GAS. KEEP CONTAINERS CLOSED. KEEP AWAY FROM HEAT, SPARKS & FLAMES. STORE IN TIGHTLY CLOSED CONTAINR. EMPTY CONTAINR MAY CONTAIN HAZARDOUS RESIDUE. DO NOT DROP, REUSE OR REFILL CONTAINR. DO NOT SMOKE. READ LABEL BEFORE USE.
Other Precautions:DO NOT CUT, GRIND OR WELD ON OR NEAR CONTAINR DUE TO POSSIBLE TOXIC FUME GENERATION. NO SMOKING IN AREA OF USE. DO NOT USE IN GENERAL VICINITY OF ARC WELDING, OPEN FLAMES OR HOT SURFACES. HEAT AND/OR UV RADIATION MAY CAUSE FORMATION OF CHLORIDES, FLUORIDES & PHOSGENE .

Exposure Controls

Respiratory Protection:AVOID BRTHG VAP, MIST/FUMES. USE NIOSH APPRVD FULL FACE (TC-19C) SUPPLIED AIR RESP/SCBA WHERE AIRBORNE EXPOS IS LIKELY TO EXCEED REC EXPOS LIMITS. IF USED, NIOSH APPRVD FULL FACEPIECE REPLACES NEED FOR CHEM GOGGS AND/OR FACESHIELD. IF EXPOS CANNOT BE KEPT AT MIN W/ENGINEERING CTLS, USE NIOSH APPRVD RESP EQUIP AS NOTED. OBSERVE RESP USE (SUPDAT)



Ventilation: INVESTIGATE ENGINEERING TECHNIQUES TO REDUCE EXPOS BELOW AIRBORNE EXPOS LIMITS. PROVIDE VENT IF NEC TO CTL EXPOS LEVELS BELOW AIRBORNE EXPOS LIMITS (OTHER INFO)

Protective Gloves: CHEMICAL RESISTANT GLOVES TO PVNT SKIN CONT.

Eye Protection: ANSI APPROVED CHEMICAL WORKERS GOGGLES .

Other Protective Equipment: ANSI APPROVED EYE WASH & DELUGE SHOWER .

PROTECT ALL EXPOSED SKIN FROM LIQUID CONTACT. WEAR APPROP CHEM RESIST PROT CLTHG.

Work Hygienic Practices: RINSE CONTAMD SKIN PROMPTLY. WASH CONTAMD CLOTHING & CLEAN PROT EQUIP BEFORE REUSE. WASH SKIN THOROUGHLY AFTER HANDLING. CONSULT GLOVE MFR TO DETERM APPROP TYPE GLOVE MATL FOR GIVEN APPLIC.

Supplemental Safety and Health

EFTS OF OVEREXP: SENSITIVITY OF HEART TO ADRENALINE, WHICH COULD RSLT IN IRREG HEART BEATS & REDUCED HEART FUNC. WORKERS W/HEART

DISEASE/COMPROMISED HEART FUNC SHOULD LIMIT EXPOS TO MATL. EXPLO

HAZ: E XPOSED TO EXTREME HEAT/FLAME. RESP PROT: LIMITATIONS

SPECIFIED BY NIOSH/MFR. FOR EMER & OTHER CNDTNS WHERE (OTHER INFO)

Chemical Properties

Boiling Pt: -160.C, -256.F

Vapor Pres: 136 PSIA @ 21C/70F

Vapor Density: 2.98@1ATM

Spec Gravity: 1.17 (H*2O =1)

Solubility in Water: SLIGHT

Appearance and Odor: COLORLESS LIQUIFIED GAS WITH FAINT ETHEREAL ODOR.

Percent Volatiles by Volume: 100

Stability

Stability Indicator/Materials to Avoid: YES

AVOID CONT W/STRONG ALKALI/ALKALINE EARTH METALS, FINELY POWDERED METALS SUCH AS ALUMINUM, MAGNESIUM/ZINC & STRONG OXIDIZERS SINCE THEY MAY REACT W/OR ACCELERATE DECOMP OF THIS MATERIAL.

Stability Condition to Avoid: CNDTNS CONTRIBUTING TO INSTABILITY:

THERMAL DECOMP DUE TO EXPOSURE TO HEAT (>800) OR FIRE.

Hazardous Decomposition Products: CHLORIDES, FLUORIDES & PHOSGENE .

THERMAL DECOMP PRODS INCLUDE HYDROGEN FLUORIDE, HYDROGEN CHLORIDE, CARBON MONOXIDE, CARBON DIOXIDE AND CHLORINE.

Conditions to Avoid Polymerization: FLAMES, EXTREMELY HOT SURFACES, HEATING ELEMENTS, COMBUSTION ENGINES, ETC.

Disposal

Waste Disposal Methods: RECYCLE/RECLAIM IF POSSIBLE RECLAIMED MATERIAL MAY BE INCINERATED BUT TOXIC & CORROSIVE COMBUSTION PRODUCTS (HF AND HCL) MUST BE HANDLED APPROPRIATELY. CONSULT FEDERAL, STATE, OR LOCAL AUTHORITIES FOR PROPER DISPOSAL PROCEDURES.

Toxicology

Toxicological Information: DATA FROM SCIENTIFIC LITERATURE ON CHLORODIFLUOROMETHANE ARE SUMMARIZED BELOW. SINGLE EXPOS (ACUTE) STUDIES INDICATE: INHAL-PRACTICALLY NON-TOXIC (2 HR-LD50-300,000 (RAT), 390,000 PPM (MOUSE). INHAL-R AT 10 MIN-EC50 = 140,000 PPM (CNS EFTS). EYE IRRIT: SLIGHTLY IRRIT TO RABBITS (5-30 SEC. EXPOS TO GAS SPRAY). SKIN IRRIT - (MOD) IRRIT TO RABBITS (LIQUEFIED GAS W/PATCH APPLIED). THERE HAVE BEEN SEVERAL ACCIDENTAL DEATHS ASSOC W/EXPOS TO CHLORODIFLUOROMETHANE/MIX W/OTHER FLUOROCARBONS. DEATH WAS GENERALLY ATTRIBUTED TO OXYG DEFICIENCY. MICROSCOPIC EXAMINATION (TRANSPORTATION INFO)

Other Information

Disclaimer (provided with this information by the compiling agencies):

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particular situation.

Ecology

Ecological:NO EFTS WERE RPTD ON GROWTH OF AEROBIC & ANAEROSIC MICROORGANISMS OVER 24 HR PERIOD, INCL GRAM-POS & GRAM-NEG SPECIES, FROM EXPOS TO MEDIA THAT CNTND CHLORODIFLUOROMETHANE @ 5 MG/ML. CHEM FATE INFO: T HE OCTANOL/WATER PARTITION COEFFICIENT (LOG POW) FOR HCFC 22 WAS RPTD TO BE 1.08.

Transport

Transport Information:SHIPPING INFO: CHLORODIFLUOROMETHANE (R-22), 2.2 NONFLAMMABLE GAS, UN 1018. --TOX INFO: OF TISSUES OF SOME OF VICTIMS SHOWED EFFECTS ON LUNGS & FATTY DEPOSITS IN LIVER CELLS. AN INCR IN INCIDENCE OF H EART PALPITATIONS HAVE BEEN CLAIMED BY INDIVIDUALS OCCUPATIONALLY EXPOSED TO CHLORODIFLUOROMETHANE. MONITORING OF WORKERS DURING OCCUP EXPOS TO CHLORODIFLUOROMETHANE SHOWED NO CONNECTION TO EXPOS & C ARD ARRHY/NEUROLOGIC DISORDERS. OTHER EPIDEMIOLOGICAL STUDIES HAVE RPTD SIMILAR RESULTS. RPTD DAILY APPLIC OF 10 SECOND SPRAY CAUSED REDDENING & SLIGHT SWELL OF SKIN & (FED REGULATORY)

Regulatory

SARA Title III Information:SARA HAZ NOTIFICATION: HEALTH HAZARD CATEGORIES UNDER CRITERIA OF SARA TITLE RULES (40 CFR PART 370): IMMED. THIS CHEM (OR CHEMS) IS RPTD ON U.S. ENVIRONMENTAL PROT AGENCY TOXIC SUBSTANCES CTL ACT INV ENTORY. PROD CNTNS SUBSTANCE(S) WHICH ARE DEFINED AS TOXIC CHEMS UNDER, & ARE SUBJECT TO RPTG REQUIREMENTS OF, SECTION 313 OF TITLE III OF SUPERFUND AMENDMENTS & REAUTHORIZATION ACT OF 1986 & 40 CFR PART 372.

CHLORODIFLUOROMETHANE IS LISTED IN SARA SECTION 313.

Federal Regulatory Information:N/K--TRANSPORT INFO: DELAY IN HAIR GROWTH. SKIN ALLERGY WAS NOT OBSERVED IN GUINEA PIGS FOLLOWING RPTD SKIN EXPOS TO CHLORODIFLUOROMETHANE. INHAL CAUSES INITIAL STIMULATION & THEN DEPRESS OF CNS. SYMP S IN ANIMALS INCL LOSS OF EQUILIBRIUM, TREMORS, CONVULSIONS & NARCOSIS & DEATH USUALLY ATTRIBUTED TO ASPHY. AT LEVELS OF CHLORODIFLUOROMETHANE THAT CAUSE ANESTH, DOGS EXHIBITED CONVULSIONS. EXPOS BY I NHAL @ 300,000 TO 400,000 PPM FOR 10-15 MINS WAS FATAL TO RABBITS, ALSO CAUSING HEMORR & EFTS ON LIV ER. FOLLOWING INHAL EXPOS TO CHLORODIFLUOROMETHANE (STATE REGULATORY INFO)

State Regulatory Information:N/K --FED REGULATORY: FOR 50,000 PPM FOR 1 MONTH, NO EFTS WERE RPTD IN GUINEA PIGS, RATS, DOGS & CATS; 60,000 PPM FOR 2-3 MONTHS ELICITED MILD LIVER EFTS IN RABBITS; 5,000 PPM FOR 3 MONTHS CAUSED NO E FTS IN DOGS; 15,000 PPM FOR 4 MONTHS, PRDCED NO NEUROTOXIC EFTS IN RATS; 14,000 PPM FOR 10 MONTHS PRDCED EFTS ON LUNGS, CNS, HEART, LIVER, KIDNEY, SPLEEN OF RATS, MICE & RABBITS, @ 2,000 PPM NO EFTS W ERE RPTD IN RATS & MICE. AN INCREASE IN MALIGNANT TUMORS OF SALIVARY GLANDS WAS RPTD IN MALE RATS BU T NOT FEMALE RATS/MICE OF EITHER SEX AFTER INHAL EXPOS TO 50,000 PPM 5 HR/DAY, 5 DAY/WEEK FOR 21 MOS. LONG TERM INHAL OF 5000 (OTHER INFO)