

## PRODUCT IDENTIFICATION

PRODUCT NAME: CAS NO.: 75-71-8

**FORANE (R)**

SYNONYMS:

CFC 12, R-12, FOOD FREEZANT 12

CHEMICAL NAME:

DICHLORODIFLUOROMETHANE (R-12)

MOLECULAR FORMULA:

CCL<sub>2</sub>F<sub>2</sub>

CHEMICAL FAMILY: CHLOROFLUOROCARBONS

## INGREDIENTS-----HAZARD CLASSIFICATIONS

COMPONENTS-HAZARDOUS: DICHLORODIFLUOROMETHANE (R-12)

CAS NO.: 75-71-8

%.: 100.0

COMMENTS: OSHA FINAL LIMITS:

TWA=1,000 PPM

=4,950 MG/M(3)

ACGIH TLV:TWA=1,000 PPM

=4,950 MG/M(3)

\*LISTED SARA SECTION 313\*

NFPA-2-0-0

## SHIPPING INFORMATION

DICHLORODIFLUOROMETHANE (R-12), 2.2 NONFLAMMABLE GAS, UN 1028

## PHYSICAL PROPERTIES

BOILING POINT/RANGE: -29.8 C (-21.6 F)

MELTING POINT: NA

FREEZING POINT: -157.8 C (-252 F)

MOLECULAR WEIGHT: 120.93

SPECIFIC GRAVITY(H<sub>2</sub>O=1): 1.29 @ 30 C / 0 C

VAPOR PRESSURE(MM HG): 84.9 PSIA @ 21C/70F

VAPOR DENSITY(AIR=1): 4.17

SOLUBILITY IN H<sub>2</sub>O: SLIGHT

% VOLATILES BY VOLUME: 100

APPEARANCE AND ODOR: COLORLESS LIQUEFIED GAS WITH  
FAINT, ETHEREAL ODOR.  
APPEARANCE AND ODOR: CLEAR,  
COLORLESS, LIQUEFIED GAS WITH  
FAINT ETHEREAL (ETHER-LIKE) ODOR.

## FIRE AND EXPLOSION DATA

FLASH POINT: NONFLAMMABLE  
FLAMMABLE LIMITS: LOWER: NA  
UPPER: NA  
AUTOIGNITION TEMP.: NE  
EXTINGUISHING MEDIA: USE EXTINGUISHING MEDIA  
APPROPRIATE TO SURROUNDING FIRE  
CONDITIONS

SPECIAL FIRE FIGHTING PROCEDURES:  
WEAR SELF-CONTAINED BREATHING APPARATUS IF FIGHTING FIRES NEAR THIS  
PRODUCT DUE TO TOXICITY OF THERMAL DECOMPOSITION PRODUCTS. KEEP  
CONTAINERS COOL.

UNUSUAL FIRE AND EXPLOSION HAZARDS:  
MAY DECOMPOSE DURING CONTACT WITH FLAMES, HEATING ELEMENTS, OR IN  
COMBUSTION ENGINES RELEASING IRRITATING, TOXIC, AND CORROSIVE GASES.  
CONTAINER MAY EXPLODE IF HEATED DUE TO RESULTING PRESSURE RISE.

#### REACTIVITY DATA

STABILITY: STABLE  
CONDITIONS CONTRIBUTING TO INSTABILITY: THERMAL DECOMPOSITION

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

INCOMPATIBILITY-AVOID CONTACT WITH: STRONG ALKALIS AND STRONG  
OXIDIZERS. AVOID CONTACT WITH STRONG ALKALI OR ALKALINE EARTH  
METALS, FINELY POWDERED METALS SUCH AS ALUMINUM, MAGNESIUM OR  
ZINC AND STRONG OXIDIZERS SINCE THEY MAY REACT WITH OR ACCELERATE  
DECOMPOSITION OF THIS MATERIAL.

HAZARDOUS DECOMPOSITION THERMAL AND OTHER:  
THERMAL DECOMPOSITION PRODUCTS INCLUDE HYDROGEN FLUORIDE,  
HYDROGEN CHLORIDE, CARBON MONOXIDE, CARBON DIOXIDE AND CHLORINE.

CONDITIONS TO AVOID:  
FLAMES, EXTREMELY HOT METAL SURFACES, HEATING ELEMENTS,  
COMBUSTION ENGINES, ETC.

#### TOXICITY

ROUTE	ANIMAL	DATA
ORAL	RAT	NO DEATHS UP TO 1,000MG/KG
DERMAL		NE SEE COMMENTS
INHALATION	RAT	30MIN LC50 > 800,000 PPM.

## TOXIC EFFECTS/ROUTES OF ENTRY

### EYE EFFECTS:

IRRITANT. VAPOR IS IRRITATING TO EYES. LIQUID IS IRRITATING TO EYES AND MAY CAUSE TISSUES TO FREEZE.

### SKIN EFFECTS:

CONTACT WITH LIQUID MAY CAUSE TISSUES TO FREEZE (FROST BITE).  
CHEMICAL ITSELF IS NOT IRRITATING.

### OTHER TOXIC EFFECTS:

THIS PRODUCT DOES NOT CONTAIN ANY COMPONENTS LISTED BY NTP OR IARC OR REGULATED BY OSHA AS CARCINOGENS.

### TARGET ORGAN TOXIN:

TARGET ORGANS AFFECTED BY EXPOSURE TO THIS MATERIAL ARE: EYES, SKIN, CENTRAL NERVOUS SYSTEM, RESPIRATORY SYSTEM, HEART.

### TOXICITY COMMENTS:

DENSE VAPOR DISPLACES BREATHING AIR IN CONFINED OR UNVENTILATED AREAS. INHALING CONCENTRATED VAPORS CAN CAUSE DROWSINESS, UNCONSCIOUSNESS, RESPIRATORY DEPRESSION AND DEATH DUE TO ASPHYXIATION. THIS COMPOUND ALSO INCREASES THE SENSITIVITY OF THE HEART TO ADRENALIN, POSSIBLY RESULTING IN RAPID HEARTBEAT (TACHYCARDIA), IRREGULAR HEARTBEAT (CARDIAC ARRHYTHMIAS), AND DEPRESSION OF CARDIAC FUNCTION. PERSONS WITH PRE-EXISTING HEART DISEASE MAY BE AT INCREASED RISK FROM EXPOSURE.

## HEALTH HAZARD INFORMATION

### PERMISSIBLE EXPOSURE LIMITS

PERMISSIBLE EXPOSURE LIMITS ARE LISTED IN THE 'INGREDIENTS' SECTION.

### EMERGENCY FIRST AID

#### INGESTION

N/A - PRODUCT IS A GAS AT AMBIENT CONDITIONS. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

#### DERMAL

FLUSH EXPOSED SKIN WITH LUKEWARM WATER (NOT HOT) - OR USE OTHER MEANS TO WARM SKIN SLOWLY. GET MEDICAL ATTENTION IF FROSTBITTEN BY LIQUID OR IF IRRITATION OCCURS.

#### EYE CONTACT

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.

## **INHALATION**

**REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION IF BREATHING IS DIFFICULT, GIVE OXYGEN. GET MEDICAL ATTENTION.**

## **SPECIAL PROTECTION INFORMATION**

### **VENTILATION REQUIREMENTS:**

USE WITH ADEQUATE VENTILATION. CHECK AIR FOR CONTAMINANT AND FOR OXYGEN DEFICIENCY. WHERE VENTILATION IS INADEQUATE, USE A LOCAL EXHAUST SYSTEM TO REMOVE VAPORS.

EYE:USE GOGGLES TO PROTECT EYES.

### **HAND (GLOVE TYPE):**

USE SYNTHETIC RUBBER GLOVES SUCH AS NEOPRENE. LINED GLOVES ARE RECOMMENDED FOR PROTECTION FROM COLD.

### **RESPIRATOR TYPE:**

IN INADEQUATELY VENTILATED AREAS, A NIOSH/MSHA APPROVED (TC-19C) SUPPLIED AIR RESPIRATOR OR SELF-CONTAINED BREATHING APPARATUS IS REQUIRED.

### **OTHER PROTECTIVE EQUIPMENT:**

PROTECT ALL EXPOSED SKIN FROM LIQUID CONTACT.

## **SPECIAL HANDLING AND STORAGE CONDITIONS**

DO NOT GET IN EYES, ON SKIN OR CLOTHING. DO NOT BREATHE VAPOR, MIST OR GAS. KEEP CONTAINER CLOSED. KEEP AWAY FROM HEAT, SPARKS AND FLAMES. STORE IN TIGHTLY CLOSED CONTAINERS. EMPTY CONTAINER MAY CONTAIN HAZARDOUS RESIDUE. DO NOT DROP, REUSE OR REFILL CONTAINER. DO NOT SMOKE. READ LABEL BEFORE USE. DO NOT CUT, GRIND OR WELD ON OR NEAR CONTAINER DUE TO POSSIBLE TOXIC FUME GENERATION.

## **SPILL MANAGEMENT**

REMOVE OR EXTINGUISH IGNITION OR COMBUSTION SOURCES. EVACUATE ENCLOSED SPACES UNTIL GAS IS DISPERSED. KEEP UPWIND. STOP LEAK IF POSSIBLE WITHOUT RISK. DISPERSE GAS WITH FLOOR-LEVEL FORCED-AIR VENTILATION. EXHAUST VAPORS OUTDOORS. REMOVE ALL FLAMES, HEATING ELEMENTS AND GAS ENGINES. WASH CONTAMINATED CLOTHES BEFORE USE. DESTROY CONTAMINATED SHOES.

## **DISPOSAL PROCEDURES**

RECYCLE OR RECLAIM IF POSSIBLE. RECLAIMED MATERIAL MAY BE INCINERATED BUT TOXIC AND CORROSIVE COMBUSTION PRODUCTS (HF AND

HCL) MUST BE HANDLED APPROPRIATELY.

CONSULT FEDERAL, STATE, OR LOCAL AUTHORITIES FOR PROPER DISPOSAL PROCEDURES

#### **ADDITIONAL INFORMATION**

SARA HAZARD NOTIFICATION:

THIS PRODUCT CONTAINS A SUBSTANCE WHICH IS DEFINED AS TOXIC CHEMICAL UNDER, AND SUBJECT TO THE REPORTING REQUIREMENTS OF, SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372. SEE INGREDIENTS-HAZARD CLASSIFICATION SECTION FOR LISTED CHEMICAL.

MSDS PREPARED BY PRODUCT SAFETY DEPT.

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NA - NOT APPLICABLE NE - NOT ESTABLISHED

(R) - INDICATES REGISTERED TRADEMARK OF ELF ATOCHEM NORTH AMERICA