PRODUCT SAFETY DATA SHEET

GENETRON® 12 Dichlorodifluoromethane

A. GENERAL INFORMATION

TRADE NAME / COMMON NAME:
GENETRON® 12 dichlorodifluoromethane

C.A.S. NO. 76-71-8

CHEMICAL NAME AND/or SYNONYM:
Dichlorodifluoromethane

FORMULA:
CCl2F2

MOLECULAR WEIGHT
120.91

ALLIED CORPORATION
ADDRESS (INC. STREET, CITY, STATE AND ZIP CODE)
P.O. Box 11398
Marionetown, N.O. 07990

CONTACT
Director, Product Safety
PHONE NUMBER
(201) 455-4157
LAST ISSUE DATE
March, 1982
CURRENT ISSUE DATE
August, 1985

B. FIRST AID MEASURES

EMERGENCY PHONE NUMBER
(201) 455-2000

INHALATION:
Remove immediately to fresh air. If breathing has stopped, give artificial respiration, preferably mouth-to-mouth. Use oxygen as required, provided a qualified operator is available. Do not give epinephrine (adrenaline).

SKIN OR EYE CONTACT:
Immediately bathe any frostbite (do not rub) with lukewarm (not hot) water. In the absence of water, cover with soft wool or other suitable material. Contact a physician for any low temperature burns from liquid contact.

INGESTION:
This is improbable due to the low (circa −30°C) boiling point.

C. HAZARDS INFORMATION

HEALTH

INHALATION:
This material is low in toxicity at concentrations as high as 4% (40,000 ppm). When oxygen levels in air are reduced to 12−14%, symptoms of asphyxiation will occur; loss of coordination, increased pulse rate, cardiac sensitization, and deeper respiration are also possible. See Section K for further discussion.

INGESTION:
Not applicable, since material is gaseous at normal temperature and pressure.

SKIN:
Contact with liquid material can cause frostbite, indicated by pallor or redness, loss of sensation, and swelling.

EYES:
Same as for skin.

PERMISSIBLE CONCENTRATION, AIR
OSHA/TWA: 1000 ppm.

A.C.G.H./TLV: the same.

TOXIC CHRONIC TOXICITY:

D. FIRE AND EXPLOSION HAZARDS

FLASH POINT
N.A.

AUTOIGNITION TEMPERATURE
Not applicable

FLAMMABLE LIMITS IN AIR (% BY VOLUME)
LOWER – N.A.
UPPER – N.A.

INHALATION, FIRE AND EXPLOSION HAZARDS:
Material is a liquid and gas under its own vapor pressure. While not combustible itself, contact with certain metals (see Section G) may produce exothermic reactions or potentially explosive combinations. See, also, toxic decomposition products under Section G.

E. PRECAUTIONS / PROCEDURES

FIRE EXTINGUISHING AGENTS RECOMMENDED:
Any standard agent — choose the one that is appropriate for type of fire. Material itself is non-flammable.

FIRE EXTINGUISHING AGENTS TO AVOID:
Not pertinent.

SPECIAL FIRE FIGHTING PRECAUTIONS:
Although not flammable, when this material is in a fire, firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against suffocation and possible toxic decomposition products. Use water spray to keep fire-exposed containers cool.

VENTILATION:
Ventilation should be adequate to meet TLV requirements and minimize exposure. Provide local exhaust at filling zones and where leakage is probable. Mechanical (General) ventilation is adequate for other operating areas and for storage areas.

NORMAL HANDLING:
Avoid contact with eye, skin or clothing. Do not puncture or drop cylinders or expose them to open flame or excessive heat. Use authorized containers only. Follow standard safety precautions for handling and use of cylinders of compressed gas — Reference (a).

STORAGE:
Store in a cool, dry, well-ventilated area away from heat, flame or combustibles. Protect cylinder and its fittings from physical damage. Storage area and storage locations should be avoided. See Reference (a) for further details on storage.

SPILL OR LEAK TRAITEMENTS PERSONAL PROTECTIVE EQUIPMENT — SECTION 10:
Using a self-contained air supply and protection against frostbite, personnel should attempt to close valves or repair source of leak.

If a large quantity is released, evacuate personnel and allow to dissipate. (Note Sections C and K for health hazards involved in inhalation and contact exposure.)

SPECIAL PRECAUTIONS / PROCEDURES/ LABEL INSTRUCTIONS:
This product can cause death or serious personal injury if handled improperly. Follow OSHA regulations for compressed gases — References (1) and (2) — and Reference (a) for cylinder handling. Workers with cardiovascular or pulmonary problems should have medical evaluation before exposure.

F. PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION:
None generally required for adequately-vented situations. For unusual situations, use a NIOSH-approved, supplied-air respirator or a positive pressure, self-contained breathing apparatus.

WEAR CHEMICAL SAFETY GOGGLES IF THERE IS ANY REASONABLE PROBABILITY OF CONTACT WITH LIQUID. IN THIS CASE, DO NOT WEAR CONTACT LENSES.

H. HANDS AND BODY:

WEAR PROTECTIVE IMPERVIOUS GLOVES WITH PVA OUTER LAYER (2ND CHOICE: NEOPRENE) IN SITUATIONS WHERE LEAKAGE OR HANDLING OF LIQUID IS A POSSIBILITY. IMPERVIOUS SHOES AND CLOTHING SHOULD ALSO BE WORN WHERE LEAKAGE IS PROBABLE. GLOVES, CLOTHING AND SHOES SHOULD BE THERMALLY INSULATED TO PREVENT FREEZING.

I. OTHER CLOTHING AND EQUIPMENT:

PROVIDE CONVENIENT WATER SOURCE FOR FIRST-AID TREATMENT IN CASE OF FROSTBITE (SEE SECTION B).
I. ENVIRONMENTAL

DEGRADABILITY/STABILIZATION

Degradability (BOD): Not pertinent.
Aquatic Toxicity: TLm90: over 1000 ppm — Reference (a).

OCTANOL/WATER PARTITION COEFFICIENT

Unknown

II. PHYSICAL DATA

MATERIAL IS IN NORMAL CONDITIONS:

☐ LIQUID ☐ SOLID ☑ GAS

APPEARANCE AND ODOR

Colorless liquefied gas with faint ethereal odor.

BOILING POINT

-29.0°C

MELTING POINT

-159°C

SPECIFIC GRAVITY

21.1°C, liquid:

1.325

At 21.1°C and 1 atm:

4.26

[Ref. (b)]

SOLUBILITY IN WATER (% by weight)

0.028 @ 77°F

N.A. (gas)

VAPOR PRESSURE

3 mm Hg @ 20°C

85 psia @ 21.1°C (70°F)

III. REACTIVITY DATA

STABILITY

☐ INSTABLE ☑ STABLE

CONDITIONS TO AVOID

Lighted cigarettes, hot sparks, welding.
Temperatures above 550°C — Reference (c).
Decomposes in fires.

INCOMPATIBILITY MATERIALS TO AVOID

Aluminum in the form of freshly abraded surface (strong exothermic reaction) — Reference (d), or powdered aluminum — Reference (b). Magnesium powder @ 400°C will ignite or, with sparks, will explode — Reference (d). Zinc powder — Reference (b). Chemically active metals, such as sodium, potassium, or calcium — Reference (b).

HAZARDOUS DECOMPOSITION PRODUCTS

Halogen, halogen acids, and possibly carbonyl halides, such as phosgene.

HAZARDOUS POLYMERIZATION

☐ MAY OCCUR ☑ WILL NOT OCCUR

CONDITIONS TO AVOID

Not pertinent.

IV. ADDITIONAL INFORMATION

SECTION J — REFERENCES (General) — continued


SECTION K — HAZARDS INFORMATION — continued

Inhalation:

This material is low in toxicity; its predominant hazard is simple asphyxiation from displacement of air for breathing. However, it must not be considered inert! High concentrations in air (in the order of 20 times the TLV) have been shown to reduce ventilatory capacity of the lungs temporarily and to produce minor cardiac effects, which can be greatly increased by the presence of a second agent, endoaphine (adenine). The ACGIH-recommended TLV of 1000 ppm should provide a substantial margin of safety to prevent organic injury as well as cardiac sensitization. — Reference: ACGIH: Documentation of TLVs, 4th edition.

A narcotic effect has been reported; also, published animal studies report that cardiac arrhythmia (which may be fatal in animals and in humans) and myocardial depression are produced in the following species, if intaked 5 minutes at varying concentrations:

Species

Minimum Inhaled Concentration (ppm)

Monkey

50,000 = 100,000

Mouse

over 40,000

Rat

over 400,000

Dog

100,000