

MATERIAL SAFETY DATA SHEET

CYTOCOOL™ II

RICHARD-ALLAN SCIENTIFIC

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24 hours Everyday

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1. SUBSTANCE IDENTIFICATION

SUBSTANCE: **CYTOCOOL™ II**

CATALOG NUMBER: 8323

TRADE NAMES/SYNONYMS: Cytocool™ II Tissue Freezing Aerosol, HFC 134a

CHEMICAL FAMILY: Fluorocarbon

2. COMPOSITION AND INGREDIENTS INFORMATION

1,1,1,2-Tetrafluoroethane	CAS# 811-97-2	100%
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3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4):	Health=1	Fire=0	Reactivity=0
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Primary Routes of Exposure: Inhalation, skin and eye contact.

Acute Effects: Gross exposure may cause central nervous depression with dizziness, confusion, uncoordination, drowsiness or unconsciousness. Other symptoms of over exposure includes: Irregular heart beat with a strange sensation in the chest, "heart thumping", apprehension, lightheadedness, feeling of fainting, dizziness, weakness, sometimes progressing to loss of consciousness and death. Suffocation may result if air is replaced by vapors.

Chronic Effects: Increased susceptibility to the effects of this material may be observed in persons with pre-existing disease of the central nervous system and cardiovascular system. Repeated or prolonged exposure may cause irregular heartbeat, dizziness, and weakness sometimes progressing to loss of consciousness or death.

Potential Health Effects:

- *Inhalation may cause drowsiness, increased heart rate, loss of coordination, or loss of consciousness.*
- *Eye contact may cause frostbite if liquid or escaping vapors contact eyes.*
- *Skin contact may cause frostbite if liquid or escaping vapors contact the skin.*
- *Ingestion is not considered a primary route of exposure.*

4. FIRST-AID PROCEDURES

Inhalation: Remove from exposure area to fresh air immediately. If breathing has stopped, give artificial respiration. If breathing is difficult give oxygen. Get medical attention immediately.

Eye Contact: Flush eyes immediately with large amounts of water, occasionally lifting upper and lower lids for at least 15-20 minutes. Call a physician.

Skin Contact: Remove contaminated clothing and shoes immediately. Flush skin with plenty of water for at least 15 minutes. Treat for frostbite if necessary by gently warming affected area. Call a physician.

Ingestion: N/A

5. FIRE FIGHTING PROCEDURES

Cytocool™ II is not flammable at ambient temperatures and atmospheric pressure. However, Cytocool™ II has been shown in tests to be combustible at pressure as low as 5.5 psig at 177°C (351°F) when mixed with air at concentrations of generally a more than 60-volume % air. Experimental data have also been reported which indicate combustibility of Cytocool™ II in the presence of certain concentrations of chlorine.

FLASH POINT: Will not burn

UPPER EXPLOSIVE LIMIT: N/A

LOWER EXPLOSIVE LIMIT: N/A

AUTOIGNITION TEMP.: >743°F

FIRE FIGHTING MEDIA: Use media appropriate for surrounding material

FIRE RESPONSE PROCEDURES: Cylinders may rupture under fire conditions. Cool containers with water spray. Self-contained breathing apparatus (SCBA) may be required if cylinders rupture or release under fire conditions.

6. ACCIDENTAL RELEASE MEASURES

Ventilate area, especially low or enclosed places where heavy vapors might collect. Remove open flames. Use self-contained breathing apparatus if large spill or leak occurs.

7. HANDLING AND STORAGE

General Handling: Caution! May cause frostbite on contact. Use only with adequate ventilation. Prevent buildup of vapors. Keep away from open flames. Avoid contact with eyes. Avoid prolonged or repeated breathing of vapor. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Cytocool™ II should not be mixed with air for leak testing or used for any other purpose above atmospheric pressure. Contact with chlorine or other strong oxidizing agents should also be avoided. Store in a cool, dry place. Do not heat above 126°F (52°C).

8. EXPOSURE CONTROL (PERSONAL PROTECTION)

RESPIRATOR: None required under ordinary conditions of use.

VENTILATION: Normal ventilation for standard manufacturing procedures is generally adequate. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places.

CLOTHING: Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

GLOVES: Employee must wear appropriate protective gloves to prevent contact with this substance.

EYE PROTECTION: Employee must wear splash-proof or dust-resistant 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.

EXPOSURE LIMITS: PEL (OSHA) None Established

TLV (ACGIH) None established

9. PHYSICAL PROPERTIES

DESCRIPTION: Liquefied Gas with a slight ether odor
VAPOR PRESSURE: 96 psia @ 25°C (77°F)
SOLUBILITY IN WATER: 0.15 WT% @ 25°C @ 14.7 psia
DENSITY:(25°C):1.21g/cm³
%Volitiles: 100WT%

BOILING POINT: -26.5°C (-15.7°F)@
736mm Hg
VAPOR DENSITY: 3.6 (Air=1.0) @
25°C (77°F)

10. STABILITY AND REACTIVITY INFORMATION

REACTIVITY: Stable under normal temperatures and pressures.

INCOMPATIBILITIES: Incompatible with alkali or alkaline earth metals- powered AL, Zn, Be, etc.

DECOMPOSITION:

Thermal decomposition products may include toxic and hazardous fumes by forming hydrofluoric acid and possibly carbonyl fluoride.

POLYMERIZATION:

Hazardous polymerization will not occur

11. TOXICOLOGICAL INFORMATION

Eye: A short duration spray of vapor produced very slight eye irritation.

Skin: Animal testing indicates this material is a slight skin irritant, but not a skin sensitizer.

Inhalation: 4 hour, ALC, rat: 567,000 ppm

12. ECOLOGICAL INFORMATION

Aquatic Toxicity:

48 hour EC50: Daphnia magna: 980 mg/L

96 hour LC50: Rainbow trout: 450 mg/L

13. DISPOSAL GUIDELINES

Comply with Federal, State, and local regulations.

14. TRANSPORT INFORMATION

Proper shipping name: Consumer Commodity - ORM-D

15. REGULATORY INFORMATION

SARA TITLE III (Superfund Amendment and Reauthorization Act)

SECTION 302 AND 304: Extremely Hazardous Substance List (40 CFR 355)- Not Listed

SECTION 311: Hazard Categorization (40 CFR 370)- Acute, Chronic, and Pressure

SECTION 313: Toxic Chemicals Listing (40 CFR 372.65)- Not listed as a toxic chemical

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)

SECTION 102(A) Hazardous Substances (40 CFR 302.4)- Not Listed

RCRA (Resource Conservation and Recovery Act.)

40 CFR 261.21 Hazardous Waste Number: Not listed.

NJ-RTK (New Jersey- State Right To Know)

Environmental Hazardous Substance List: Not Listed

TSCA (Toxic Substance Control Act)

Reported/ Included

16. OTHER INFORMATION

Cytocool™II as manufactured by Richard-Allan Scientific is intended for legal use in laboratories and manufacturing environments.