

Material Safety Data Sheet
CYTOCOOL II

Section 1 - Chemical Product and Company Identification

MSDS Name:

CYTOCOOL II

Catalog Numbers:

8323

Synonyms:

HFC 134a.

Company Identification:

Richard Allan Scientific
4481 Campus Drive
Kalamazoo, MI 49008

Company Phone Number:

800-522-7270

Emergency Phone Number:

800-424-9300

CHEMTREC Phone Number, US:

(800) 424-9300

CHEMTREC Phone Number, Europe:

(202) 483-7616

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name:	Percent	EINECS/ ELINCS
811-97-2	1,1,1,2-tetrafluoroethane	100	212-377-0

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: Clear, colorless gas

Caution! Eye contact may result in permanent eye damage. Vapor reduces oxygen available for breathing. May cause skin and respiratory tract irritation. May cause frostbite. May cause central nervous system depression.

Target Organs: Central nervous system, Eyes

Potential Health Effects

Eye:

May cause eye irritation.

Skin:

Prolonged and/or repeated contact may cause defatting of the skin and dermatitis. May cause frostbite.

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Ingestion:

May cause irritation of the digestive tract.

Inhalation:

Vapor reduces oxygen available for breathing. May cause dyspnea (difficult or labored breathing). May cause cardiac abnormalities. Inhalation overexposure may lead to central nervous system depression, producing effects such as dizziness, headache, confusion, incoordination, nausea, weakness, and loss of consciousness. Extreme exposures may cause other CNS effects including death.

Chronic:

Repeated exposure may cause central nervous system damage. Chronic hydrocarbon abuse (for example, sniffing glue or light hydrocarbons such as contained in this material) has been associated with irregular heart rhythms and potential cardiac arrest.

Section 4 - First Aid Measures

Eyes:

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

Skin:

Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Treat for frostbite.

Ingestion:

Do not induce vomiting. Get medical aid.

Inhalation:

Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician:

Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Containers may explode if exposed to fire.

Extinguishing Media:

Use extinguishing media most appropriate for the surrounding fire.

Autoignition Temperature:

> 743°F (> 395.00°C)

Explosion Limits:

Lower: Not available Upper: Not available

Flash Point:

Not applicable.

NFPA Rating:

(estimated) Health: 1; Flammability: 0; Instability: 0

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Section 6 - Accidental Release Measures

General Information:

Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

Section 7 - Handling and Storage

Handling:

Wash thoroughly after handling. Use with adequate ventilation. Avoid contact with skin and eyes. May cause frostbite on contact. Prevent buildup of vapors. Contact with chlorine or other strong oxidizing agents should be avoided. CYTOCOOL II should not be mixed with air for leak testing or used for any other purposes above atmospheric pressure. Do not heat above 126°F (52°C).

Storage:

Keep away from heat and flame. Store in a cool, dry place. Do not store in direct sunlight.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name:	ACGIH	NIOSH	OSHA
1,1,1,2-tetrafluoroethane	None listed	None listed	None listed

OSHA Vacated PELs

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:

Wear appropriate gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

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Section 9 - Physical and Chemical Properties

Physical State: Gas
Color: Clear, colorless
Odor: Ethereal odor - weak odor
pH: No information found
Vapor Pressure: 96 psia @25°C (77°F)
Vapor Density: 3.6 @ 77F
Evaporation Rate: No information found
Viscosity: No information found
Boiling Point: -15.7736°F
Freezing/Melting Point: No information found
Decomposition Temperature: No information found
Solubility in water: 0.15% @77F in water.
Specific Gravity/Density: 1.21 (water=1)
Molecular Formula: CH₂FCF₃
Molecular Weight: 102.0076

Section 10 - Stability and Reactivity

Chemical Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Incompatible materials, excess heat, Do not heat above 126°F (52°C).

Incompatibilities with Other Materials

Strong oxidizing agents, alkali metals, alkaline earth metals, chlorine, metal powders

Hazardous Decomposition Products

Hydrofluoric acid, carbonyl fluoride

Hazardous Polymerization

Has not been reported.

Section 11 - Toxicological Information

RTECS:

CAS# 811-97-2: KI8842500

LD50/LC50:

CAS# 811-97-2:

Inhalation, mouse: LC50 = 1700 gm/m³/2H

Inhalation, rat: LC50 = 1500 gm/m³/4H.

Carcinogenicity:

CAS# 811-97-2: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

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Epidemiology:

No information found

Teratogenicity:

No information found

Reproductive:

See actual entry in RTECS for complete information.

Mutagenicity:

No information found

Neurotoxicity:

No information found

Other:

See actual entry in RTECS for complete information.

Section 12 - Ecological Information

No information found

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Part 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P Series Wastes

None of the components are on this list.

RCRA U Series Wastes

None of the components are on this list.

Section 14 - Transport Information

US DOT

Canadian TDG

Proper Shipping Name: 1,1,1,2-TETRAFLUOROETHANE

Not Regulated.

Hazard Class: 2.2

UN Number: UN3159

Packing Group:

Section 15 - Regulatory Information

US Federal

TSCA

CAS# 811-97-2 is listed on the TSCA Inventory.

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Health and Safety Reporting List

CAS# 811-97-2: Effective 10/15/90, Sunset 11/9/93

Chemical Test Rules

TSCA Section 12b

None of the components are on this list.

TSCA Significant New Use Rule (SNUR)

None of the components are on this list.

CERCLA Hazardous Substances and corresponding RQs

None of the components are on this list.

SARA Section 302 Extremely Hazardous Substances

None of the components are on this list.

SARA Hazard Categories

Not available

SARA Section 313

None of the components are on this list.

Clean Air Act - Hazardous Air Pollutants (HAPs)

None of the components are on this list.

Clean Air Act - Class 1 Ozone Depleters

None of the components are on this list.

Clean Air Act - Class 2 Ozone Depleters

None of the components are on this list.

Clean Water Act - Hazardous Substances

None of the components are on this list.

Clean Water Act - Priority Pollutants

None of the components are on this list.

Clean Water Act - Toxic Pollutants

None of the components are on this list.

OSHA - Highly Hazardous

None of the components are on this list.

OSHA - Specifically Regulated Chemicals

None of the components are on this list.

US State

State Right to Know

1,1,1,2-tetrafluoroethane can be found on the following state Right-to-Know lists: Minnesota.

California Prop 65

None of the components are on this list.

California No Significant Risk Level

None of the components are on this list.

European/International Regulations

European Labelling in Accordance with EC Directives:

Hazard Symbols: None listed

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Risk Phrases: None listed
Safety Phrases: S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)

No information found

United Kingdom Occupational Exposure Limits

No information found

United Kingdom Maximum Exposure Limits

No information found

Canadian DSL/NDSL

CAS# 811-97-2 is listed on Canada's DSL List.

Canadian WHMIS Classifications

This product has a WHMIS classification of A.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

No information found

Section 16 - Other Information

Color information has been
MSDS Creation Date: September 13, 2005
Revision Date: September 18, 2008

This MSDS is intended for review and guidance in the receipt, storage, handling, use and disposal of product purchased from us, and for no other purpose. Use this product only as directed and in accordance with applicable instructions and warnings provided with the product. Please consult your institution's policies regarding use of this product. If you have obtained this MSDS other than in connection with the supply of this product from us, this MSDS should be consulted for general information only, and should not be relied upon for any purpose. As with the use of all hazardous materials, you should in all instances follow the guidance of the MSDS provided or available with the specific product purchased.