



## SDS Information

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### Section 1. CHEMICAL PRODUCT SECTION

Product Name: R-401b Refrigerant

Date Prepared: 05-2015

Manufacturer: Weitron, Inc.  
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Newark, DE 19702  
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### Section 2. HAZARDS IDENTIFICATION

PRODUCT HAZARD CATEGORY: Gases under pressure. Liquefied

Gas LABEL CONTENT: **Pictogram**



SIGNAL WORD: **WARNING**

HAZARDOUS WARNINGS: Contains gas under pressure; may explode if heated.

HAZARDOUS PREVENTION MEASURES: Protect from sunlight. Store in a well-ventilated place.

OTHER HAZARDS: Misuse or intentional inhalation abuse may lead to death without warning.

Vapor is heavier than air and can cause suffocation by reducing oxygen available for breathing. Rapid evaporation of the liquid may cause frostbite.

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### Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	CHEMICAL FAMILY Description	Weight %
75-45-6	Chlorodifluoromethane (HCFC-22)	61 %
2837-89-0	1-Chloro-1,2,2,2-tetrafluoroethane (HCFC-124)	28 %
75-37-6	1,1-Difluoroethane (HFC-152a)	11 %

This product contains no known hazardous materials as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

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**Emergency Overview:**

Contents under pressure. "Frostbite-like" effects may occur if the liquid or escaping vapors contact the eyes or skin. Inhalation overexposure may cause: Central nervous system depression with dizziness, confusion, loss of coordination, drowsiness, unconsciousness or death. Suffocation if air is displaced by vapors.

**Potential Health Effects:**

**Eyes:** Frostbite-like" effects may occur if the liquid or escaping vapors contact the eyes.

**Skin:** Frostbite-like" effects may occur if the liquid or escaping vapors contact the skin.

**Inhalation:** Inhalation overexposure may cause: Central nervous system depression with dizziness, confusion, loss of coordination, drowsiness, unconsciousness or death. Suffocation, if air is displaced by vapors.

**Ingestion:** Nausea and diarrhea are possible.

**Carcinogenicity:** No known cancer hazards.

**HMIS Classification:**

Health	1
Flammability	0
Reactivity	1

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**Section 4.**

**FIRST AID MEASURES**

**Eye Contact:**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

**Skin Contact:**

Wash affected area immediately with large amounts of soap or water for 15 minutes. Remove contaminated clothing and shoes, and wash before reusing. Treat affected area for frostbite if necessary by gently warming. May irritate skin. If irritation continues contact Physician.

**Inhalation:**

If inhaled, immediately remove to area with fresh air. If not breathing give artificial respiration. If breathing is difficult give oxygen. Contact Physician..

**Ingestion:**

Is not considered a potential route of exposure.

**Advice to Physician**

Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with caution and only in situations of emergency life support.

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**Section 5.**

**FIRE FIGHTING MEASURES**

**Flash Point:**

Does not flash

#### Flammable limits in Air

LEL: None

UEL: None

Based on ASHRAE Standard 34 with match ignition

Ignition Temperature: 685°C (1,265°F)

#### Extinguishing Media:

Water, carbon dioxide, foam or dry powder.

#### Fire & Explosion Hazards:

Not flammable at ambient temperatures and atmospheric pressure. Material will become combustible when mixed with air under pressure and exposed to ignition sources. Hazardous thermal decomposition products (Carbon oxides, Hydrogen Fluoride, Carbonyl fluoride, Hydrogen Chloride, Carbonyl chloride)

#### Fire Fighting Instructions:

Contents under pressure and container may rupture when exposed to high temperature. Product may act as asphyxiate. As in any fire, wear self-contained breathing apparatus pressure-demand MSHA/NIOSH (approved or equivalent) and full protective gear. Contain runoff water. Contaminated extinguishing water must be disposed of in accordance with applicable regulations. Avoid breathing smoke, fumes, and decomposition products.

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### Section 6.

### ACCIDENTAL RELEASE MEASURES

#### Safeguards (Personnel)

Evacuate personnel to safe areas. Ventilate area. Wear appropriate personal protective equipment

#### Initial Containment

Contain spilled material. Do not allow material to enter soil or surface water. Product evaporates

#### Spill Procedures

Contain spilled material. Large spillage should be dammed-off and pumped into containers.

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### Section 7.

### HANDLING AND STORAGE

#### Handling (Personnel)

Do not breathe vapors. Do not get in eyes, on skin or clothing. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Use appropriate personal protective equipment when using material. Do not puncture or drop cans. Do not expose cans to high heat or open flame.

#### Handling (Physical Aspects)

Avoid contact with strong oxidizing agents. Avoid contact with eyes and skin. Keep away from children.

#### Storage Precautions

Protect containers from physical damage. Do not Puncture, incinerate or store cans above

120°F. Keep in cool dry area out of direct sunlight.

## Section 8. EXPOSURE CONTROL/PERSONAL PROTECTION

### Engineering Controls:

Good general ventilation should be sufficient under normal use conditions.

### Eye/Face Protective Requirements:

Wear safety glasses, splash goggles or face shield. Where contact with this material is likely, eye protection is recommended.

### Skin Protection:

Wear protective gloves to minimize skin contamination. When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material.

### Respiratory Protection:

Under normal use conditions, with adequate ventilation, no special handling equipment is required.

### Miscellaneous

Use good personal hygiene practices; limit exposure to product whenever possible to minimize clean-up.

### Exposure Guidelines

#### Exposure Limit Values

##### Chlorodifluoromethane

TLV	1,000 ppm	TWA
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##### 1-Chloro-1,2,2,2-tetrafluoroethane

AEL	1,000 ppm	8 & 12 hr. TWA
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##### 1,1-Difluoroethane

AEL	1,000 ppm	8 & 12 hr. TWA
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\*AEL is DuPont's Acceptable Exposure Limit. TLV is Threshold Limit Value governmentally imposed for occupational exposure

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## Section 9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Liquefied Gas
Color:	Colorless
Odor:	Slight ethereal odor
Boiling Point:	-34.6°C (-30.3°F)
Solubility in Water:	1.0g/L at 25°C (77°F)
Vapor Pressure:	80.1 psig @ 21°C (70°F)
Vapor Gravity:	Not Determined
Density:	1.188 g/cm <sup>3</sup> @25°C (77°F)
PH:	<7
Volatile Organic Compounds (VOC)	Not Determined

Flash point & additional flammability data found in section 5.

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**Section 10.****STABILITY AND REACTIVITY**

## Stability

This compound is stable at ambient conditions.

## Polymerization

Hazardous polymerization will not occur

## Conditions to avoid

Do not mix with air above atmospheric pressure or oxygen. Do not puncture, incinerate or store cans above 120°F. Keep in cool dry area out of direct sunlight.

## Incompatibility with other materials

Avoid contact with strong oxidizing agents. Incompatible with alkali or alkaline earth metals – powdered aluminum, Zink, etc.

## Decomposition

Avoid high temperatures or open flames which can decompose material forming hydrofluoric acid, hydrochloric acid, and possibly carbonyl halides.

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**Section 11.****TOXICOLOGY INFORMATION**

## Chlorodifluoromethane (HCFC-22)

Dermal : not applicable

Oral : not applicable

Inhalation 4 h LC50 : 220000 ppm, rat

Inhalation : dog

Cardiac sensitization

Skin Irritation : No irritation, rabbit

Not expected to cause skin irritation based on expert review of properties of the substance

No skin irritation, human

Eye Irritation : No irritation, rabbit

Not expected to cause skin irritation based on expert review of properties of the substance

No skin irritation, human

Skin Sensitization : Did not cause sensitization on laboratory animals, guinea pig

Not expected to cause sensitization based on expert review of the properties of the substance

Did not cause sensitization on humans

Repeated dose toxicity : Inhalation

Rat

No toxicologically significant effects were found

Carcinogenicity : Overall weight of evidence indicates that the substance is not carcinogenic

An increased incidence of benign tumors was observed in laboratory animals

Mutagenicity : Did not cause genetic damage in animals  
Did not cause genetic damage in cultured mammalian cells  
Experiments showed mutagenic effects in cultured bacterial cells  
Reproductive toxicity : Animal testing showed no reproductive toxicity  
Teratogenicity : Animal testing showed effects on embryo-fetal development at level equal to or above those cause maternal toxicity  
Further information : Cardiac sensitization threshold limit: 175000 mg/m<sup>3</sup>

#### 1-Chloro-1,2,2,2-tetrafluoroethane (HCFC-124)

Dermal : not applicable  
Oral : not applicable  
Inhalation 4 h LC50 : >230000 ppm, rat  
Anaesthetic effects  
Central nervous system effects  
Inhalation LOAEC : 25000 ppm, dog  
Cardiac sensitization  
Skin irritation : No skin irritation, not tested on animals  
Not expected to cause skin irritation based on expert review of the properties of the substance  
Eye irritation : No eye irritation, not tested on animals  
Not expected to cause eye irritation based on expert review of the properties of the substance  
Skin sensitization : Does not cause skin sensitization, not tested on animals  
Not expected to cause sensitization based on expert review of the properties of the substance  
There are no reports of human respiratory sensitization  
Repeated dose toxicity : Inhalation  
Multiple species  
No toxicologically significant events were found  
Carcinogenicity : Animal testing did not show any carcinogenic effects  
Mutagenicity : Did not cause genetic damage in animals  
Did not cause genetic damage in cultured mammalian cells  
Did not cause genetic damage in cultured bacterial cells  
Teratogenicity : Animal testing showed no developmental toxicity  
Further information : Cardiac sensitisation threshold limit: 140000 mg/m<sup>3</sup>

#### 1,1-Difluoroethane (HFC-152a)

Inhalation 4 h LC50 : >437500 ppm, rat  
Inhalation 4 h NOAEC : 66400 ppm, rat  
Inhalation 4 h LOAEC : 175200 ppm, rat  
Respiratory effects  
Anaesthetic effects  
Central nervous system depression  
Narcosis  
Inhalation LOAEC : 150000 ppm, dog  
Cardiac sensitization  
Inhalation NOAEC : 50000 ppm, dog  
Cardiac sensitization

Skin irritation	: No skin irritation, not tested on animals Not expected to cause skin irritation based on expert review of properties of substance
Eye irritation	: No eye irritation, not tested on animals Not expected to cause eye irritation based on expert review of the properties of the substance
Skin sensitization	: Does not cause skin sensitization. Not tested on animals Not expected to cause sensitization based on expert review of the properties of the substance
Repeated dose toxicity	: Inhalation Rat No toxicologically significant effects were found
Carcinogenicity	: Animal testing did not show any carcinogenic effects
Mutagenicity	: Did not cause genetic damage to animals Genetic damage in cultured mammalian cells was observed in so laboratory tests but not in others Did not cause genetic damage in cultured bacterial cells
Teratogenicity	: Evidence suggests the substance is not a developmental toxin in animals
Further information	: Cardiac sensitization threshold limit: 405215 mg/m <sup>3</sup>

## Section 12.

## ECOLOGICAL INFORMATION

### Aqua Toxicity

#### Chlorodifluoromethane (HCFC-22)

96 h LC50	: Zebra fish 777 mg/L
72 h EC50	: Algae 250 mg/L
48 h EC50	: Daphnia magna (water flea) 433 mg/L

#### 1,1-Difluoroethane (HFC-152a)

96 h LC50	: Fish (unspecified species) 295.783 mg/L
96 h EC50	: Algae 47.755 mg/L (calculated)
48 h EC50	: Daphnia 146.695 mg/L

### Environmental Fate

#### Chlorodifluoromethane (HCFC-22)

Biodegradability	: According to the results of the tests of biodegradability this product is not readily biodegradable
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## Section 13.

## DISPOSAL CONSIDERATIONS

### Waste Disposal

Can be used after re-conditioning. Recover by distillation or remove to a permitted waste disposal facility. Comply with Federal, State, and local regulations

### Environmental Hazards

Empty Pressure Vessels should be returned to the supplier

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**Section 14.**

**TRANSPORTATION INFORMATION**

US DOT Information:

Shipping Name : Liquefied gas, n.o.s. (Chlorodifluoromethane, 1-Chloro-1,2,2,2-Tetrafluoroethane)  
Product Label : Liquefied gas, n.o.s. (Chlorodifluoromethane, 1-Chloro-1,2,2,2-Tetrafluoroethane)  
Shipping Class : 2.2  
UN/NA # : 3163

ICAO/IATA

Shipping Name : Liquefied gas, n.o.s. (Chlorodifluoromethane, 1-Chloro-1,2,2,2-Tetrafluoroethane)  
Shipping Class : 2.2  
UN/NA# : UN3163  
Exceptions : Can qualify for limited quantity under special provisions  
Other information : Non-flammable

IMDG

Shipping Name : Liquefied gas, n.o.s. (Chlorodifluoromethane, 1-Chloro-1,2,2,2-Tetrafluoroethane)  
Shipping Class : 2.2  
UN/NA# : UN3163  
Exceptions : Can qualify for limited quantity under special provisions  
Other information : Non-flammable

Other Transportation Information:

The Transport information may vary with the container and mode of shipment.

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**Section 15.**

**REGULATORY INFORMATION**

**Miscellaneous Information**

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA)

This material or all of its components are listed (or considered as having been notified) on the European Inventory of Existing Chemical Substances (EINECS)

SARA 313 Regulated Chemicals : 1-Chloro-1,2,2,2-tetrafluoroethane, Chlorodifluoromethane

Pa Right to know Regulated Chemicals :Substances on the Pennsylvania Hazardous Substances List present at concentrations of 1% or more:  
Chlorodifluoromethane

NJ Right to know Regulated Chemicals :Substances on the New Jersey Workplace Hazardous Substance List present at a concentration of 1% or more:



Chlorodifluoromethane, 1-Chloro-1,2,2,2-tetrafluoroethane,  
1,1-Difluoroethane

This material or all of its components are listed on the Canadian Domestic Substances List (DSL)

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**Section 16.**

**OTHER INFORMATION**

To the best of our knowledge, the information contained herein is accurate. **However, neither Weitron Inc. nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.** Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.