

STOODY INDUSTRIAL AND WELDING SUPPLY, INC.

## MATERIAL SAFETY DATA SHEET (MSDS)

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Refrigerant R114**CHEMICAL NAME:** Dichlorotetrafluoroethane**CHEMICAL FAMILY:** Halogenated Hydrocarbon**FORMULA:** CClF<sub>2</sub> CClF<sub>2</sub>**SYNONYMS:** Fluorocarbon-114,  
Dichlorotetrafluoroethane, 1, 2-  
Ethane, 1, 2-Dichlorotetrafluoro  
F-114  
Refrigerant 114  
R114**NAME AND ADDRESS:**STOODY INDUSTRIAL AND WELDING SUPPLY, INC.  
3316 National Avenue  
San Diego, CA 92113**TELEPHONE:****Emergency Phone: (800) 633-8253 (24 hr.)****Routine information call: (619) 234-6750**

Weekdays 7:30 AM – 5:00 PM

**[USE]:** Industrial process cooling, centrifugal chillers

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME /CAS NUMBER	PERCENTAGE	OSHA PEL	ACGIH TLV
1, 2-dichloro-1, 1, 2, 2-tetrafluoroethane / 76-14-2	100%	1000 ppm, 7000 mg/m <sup>3</sup> 8 Hr. TWA	1000 ppm, 6990 mg/m <sup>3</sup> 8 Hr. TWA, A4

**[LD<sub>50</sub>]:** Not Req'd **[LC<sub>50</sub>]:** Not Req'd

## 3. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW:****CAUTION:** Avoid breathing vapors and liquid contact with skin or eyes.  
Use with sufficient ventilation to keep employee exposure below minimum limits.  
Liquid contact can cause frostbite.  
Self-contained breathing apparatus may be required for rescue workers**POTENTIAL HEALTH EFFECTS INFORMATION:****ROUTES OF EXPOSURE:****INHALATION:** High concentration of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapor reduces oxygen available for breathing and is heavier than air.

Overexposure by inhalation of vapors may cause nonspecific discomfort such as nausea, headache, or weakness; temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation.

**EYE CONTACT:** Overexposure by eye contact with the vapors may include eye irritation with discomfort, tearing, or blurring of vision.**SKIN CONTACT:** Overexposure may include skin irritation with discomfort or rash. Contact with liquid can cause frostbite.**[SKIN ABSORPTION]:** Not probable**[INGESTION]:** Ingestion is not considered a potential route of exposure.**CHRONIC EFFECTS:** None established**MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:** Individuals with preexisting diseases of the central nervous or cardiovascular system may have increased susceptibility to the toxicity of excessive exposures.**OTHER EFFECTS OF OVEREXPOSURE:** None expected**CARCINOGENICITY:** None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

## 4. FIRST AID MEASURES

**INHALATION:** Immediately remove to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.**EYE CONTACT:** Immediately flush with plenty of water for at least 15 minutes. Call a physician.**SKIN CONTACT:** Flush with water. Treat for frostbite if necessary. Get medical attention if irritation is present.**INGESTION:** Ingestion is not considered a potential route of exposure.

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**NOTES TO PHYSICIAN:** Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution in situations of emergency life support.

**5. FIRE FIGHTING MEASURES**

**FLASH POINT:** Will not burn

**AUTOIGNITION:** Not determined

**AUTODECOMPOSITION:** 593°C (1099°F)

**FLAMMABLE LIMITS IN AIR BY VOLUME:**

**LOWER:** Not applicable

**UPPER:** Not applicable

**EXTINGUISHING MEDIA:** As appropriate for combustibles in area. Extinguishant for other burning material in area is sufficient to stop burning.

**SPECIAL FIRE FIGHTING INSTRUCTIONS:** Use water spray or fog to cool containers. Self-contained breathing apparatus (SCBA) is required if cylinders rupture or contents are released under fire conditions.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Cylinders are equipped with pressure and temperature relief devices but still may rupture under fire conditions. Decomposition may occur

**HAZARDOUS COMBUSTION PRODUCTS:** Can react violently if in contact with alkali or powered alkaline earth metals such as sodium, potassium, calcium, barium, powered aluminum, magnesium and zinc.

**GENERAL HAZARDS:** Decomposition products are hazardous. Refrigerant R114 can be decomposed by high temperatures (open flames, glowing metal surfaces, ect.) forming hydrochloric and hydrofluoric acids – possibly carbonyl halides.

**[SENSITIVITY TO STATIC DISCHARGE]:** None

**[SENSITIVITY TO MECHANICAL IMPACT]:** None

**6. ACCIDENTAL RELEASE MEASURES****STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

**NOTE:** Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate personal protective equipment during clean-up.

Ventilate spill area, especially low or enclosed places where heavy vapors might collect. Remove open flames. Use self-contained breathing apparatus (SCBA) for large spills. Comply with Federal, State, and local regulations on reporting releases.

**7. HANDLING AND STORAGE**

**PRECAUTIONS TO BE TAKEN IN STORAGE:** Store in a cool, well-ventilated area of low fire risk. Keep cylinders dry. Cylinders should be stored upright with valve protection cap in place and firmly secured to prevent falling or being knocked over. Protect cylinders from physical damage; do not drag, roll, slide or drop. Full and empty cylinders should be segregated. Use a first-in, first-out inventory system to prevent full containers from being stored for long periods of time.

**PRECAUTIONS TO BE TAKEN IN HANDLING:** Avoid breathing vapors and contact of liquid with skin or eyes. Use a suitable hand truck for cylinder movement. Never attempt to lift a cylinder by its valve protection cap. Never apply flame or localized heat directly to any part of the cylinder. High temperature may cause damage to cylinder and/or premature failure of pressure relief device which will result in venting of cylinder contents. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Never insert an object (e.g., wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing a leak to occur. Use an adjustable strap wrench to remove over-tight or rusted caps. Never strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****ENGINEERING CONTROLS:**

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

**RESPIRATORY PROTECTION (SPECIFY TYPE):**

**General Use:** Under normal manufacturing conditions, no respiratory protection is required when using this product.

**Emergency Use:** Self contained breathing apparatus (SCBA) is required if a large release occurs.

**PROTECTIVE GLOVES:** Impervious gloves should be used if liquid contact with skin is possible. Work gloves are recommended when handling cylinders.

**EYE PROTECTION:** Chemical splash goggles should be available for use as needed to prevent liquid contact with the eyes. Safety glasses are recommended when handling cylinders.

**OTHER PROTECTIVE EQUIPMENT:** Safety shoes are recommended when handling cylinders.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

**MOLECULAR WEIGHT:** 170.92

**LIQUID DENSITY:** 1.46 g/cc @ 25° C (77° F)

**BOILING POINT (1 ATM):** 4°C (39°F)

**SPECIFIC GRAVITY (Water =1):** 1.465 (Liquid)

**FREEZING POINT/MELTING POINT:** -94°C

**VAPOR PRESSURE (AT 25° C):** 31psia

**VAPOR DENSITY (Air = 1):** 6.2 @ 25° C (77° F)

**% VOLATILES:** 100 wt%

**EVAPORATION RATE (CC14=1):** > 1

**SOLUBILITY IN WATER:** 0.013% wt. @ 25° C (77° F)

**EXPANSION RATIO:** Not applicable.

**[pH]:** Neutral

**APPEARANCE, ODOR AND STATE:** Clear, colorless gas with a slight ethereal odor (shipped as liquified gas).

**[COEFFICIENT OF WATER/OIL DISTRIBUTION]:** Not applicable

**[ODOR THRESHOLD]:** Not applicable.

## 10. STABILITY AND REACTIVITY

**STABILITY:** Stable under normal conditions.

**CONDITIONS TO AVOID:** Open flames and high temperatures.

**INCOMPATIBILITY (Materials to Avoid):** Incompatible with alkali or alkaline earth metals – powered Al, Zn, Be, etc.

**REACTIVITY:**

- A) **HAZARDOUS DECOMPOSITION PRODUCTS:** Decomposition products are hazardous. R114 can decomposed at high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids, and possibly carbonyl halides. These are toxic and corrosive.
- B) **HAZARDOUS POLYMERIZATION:** Will not occur.

## 11. TOXICOLOGICAL INFORMATION

**[IRRITANCY OF MATERIAL]:** Mild (skin and eyes)

**[SENSITIZATION TO MATERIAL]:** Untested

**[REPRODUCTIVE EFFECTS]:** No animal test reports available

**[TERATOGENICITY]:** None

**[MUTAGENICITY]:** None

**[SYNERGISTIC MATERIALS]:** None

## 12. ECOLOGICAL INFORMATION

R114 refrigerant is a Class I ozone depleting chemicals (40 CFR Part 82). R114 refrigerant is not listed as a marine pollutant by DOT (49 CFR Part 171). Discharged product is not a hazardous waste under RCRA, 40 CFR 261.

## 13. DISPOSAL CONSIDERATIONS

**WASTE DISPOSAL METHOD:** Comply with Federal, State and local regulations. Reclaim by distillation or remove to a licensed waste disposal.

## 14. TRANSPORT INFORMATION

**DOT/IMO SHIPPING NAME:** 1, 2-DICHLORO-1, 1, 2, 2-TETRAFLUOROETHANE

**HAZARD CLASS:** 2.2 (Nonflammable Gas)

**IDENTIFICATION NUMBER:** UN 1958

**[PIN]:** 1958

**PRODUCT RQ:** None

**SHIPPING LABEL(s):** Nonflammable Gas

**PLACARD (When required):** Nonflammable Gas

**SPECIAL SHIPPING INFORMATION:** Cylinders should be transported in a secure position, in a well ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards and should be discouraged.

## 15. REGULATORY INFORMATION

The following information concerns selected regulatory requirements potentially applicable to this product. Not all such requirements are identified. Users of this product are responsible of their own regulatory compliance on a federal, state [provincial], and local level.

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**U.S. FEDERAL REGULATIONS:****EPA - ENVIRONMENTAL PROTECTION AGENCY**

**CERCLA:** Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (40 CFR Parts 117 and 302):

CERCLA Hazardous Substance: No

**SARA:** Superfund Amendment and Reauthorization Act

**SECTION 302/304:** Requires emergency planning on threshold planning quantities (TPQ) and release reporting based on reportable quantities (RQ) of EPA's extremely hazardous substances (40 CFR Part 355).

Extremely Hazardous Substances: No

Threshold Planning Quantity (TPQ): Not applicable

**SECTIONS 311/312:** Require submission of material safety data sheets (MSDSs) and chemical inventory reporting with identification of EPA defined hazard classes (40 CFR Part 370). The hazard classes for this product are:

IMMEDIATE: Yes

PRESSURE: No

DELAYED: No

REACTIVITY: No

FIRE: No

**SECTION 313:** Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

1, 2-DICHLORO-1, 1, 2, 2-TETRAFLUOROETHANE disclosure as a toxic chemical is required.

**40 CFR PART 68:** Risk Management Programs for Chemical Accidental Release Prevention. Requires the development and implementation of risk management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

1, 2-DICHLORO-1, 1, 2, 2-TETRAFLUOROETHANE is not listed as a regulated substance.

**TSCA:** Toxic Substance Control Act: 1, 2-DICHLORO-1, 1, 2, 2-TETRAFLUOROETHANE is listed on the TSCA inventory. Included/Reported.

**OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:**

**29 CFR Part 1910.119:** Process Safety Management of Highly Hazardous Chemicals. Requires facilities to develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals, listed on Appendix A of the standard.

1, 2-DICHLORO-1, 1, 2, 2-TETRAFLUOROETHANE is not listed as a highly hazardous chemical.

**[CANADIAN REGULATIONS:]****16. OTHER INFORMATION**

This product may be required to bear the following label: **Warning:** Contains Dichlorotetrafluoroethane, a substance which harms public health and environment by destroying ozone in the upper atmosphere.

**SPECIAL PRECAUTIONS:**

Use piping and equipment adequacy designed to withstand pressures to be encountered. Use a check valve or other protective apparatus in any line or piping from cylinder to prevent reverse flow.

Shipment of compressed gas containers which have not been filled with the owner's consent is a violation of Federal law (49 CFR Part 173.301(b)).

**MIXTURES:** When two or more gases or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

**OTHER INFORMATION:****NFPA RATINGS:**

HEALTH: = 1

FLAMMABILITY: = 0

REACTIVITY: = 1

SPECIAL: = None

**HMIS RATINGS:**

HEALTH: = 1

FLAMMABILITY: = 0

REACTIVITY: = 1

**STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:****THREADED:**

CGA 660

**PIN-INDEXED YOKE:**

Not applicable

**ULTRA HIGH INTEGRITY:**

Not applicable

Use the proper CGA connections, DO NOT USE ADAPTERS

Further information can be found in pamphlets published by: Compressed Gas Association Inc. (CGA), 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102. Telephone: (703) 412-0900.

**[PREPARED BY]:** Stody Industrial and Welding Supply, Inc.