

### SECTION 1: Identification

#### 1.1. Identification

Product form : Substance  
 Substance name : 1,2-Dichlorotetrafluoroethane  
 CAS-No. : 76-14-2  
 Product code : 1100-6-05  
 Formula : C2Cl2F4  
 Other means of identification : MFCD00000778

#### 1.2. Recommended use and restrictions on use

Use of the substance/mixture : Laboratory chemicals  
 Manufacture of substances  
 Scientific research and development

#### 1.3. Supplier

SynQuest Laboratories, Inc. Inc.  
 P.O. Box 309  
 Alachua, FL, Alachua, 32615  
 United States of America  
 T (386) 462-0788 - F (386) 462-7097  
[info@synquestlabs.com](mailto:info@synquestlabs.com) - [www.synquestlabs.com](http://www.synquestlabs.com)

#### 1.4. Emergency telephone number

Emergency number : (844) 523-4086 (3E Company - Account 10069)

### SECTION 2: Hazard(s) identification

#### 2.1. Classification of the substance or mixture

##### GHS US classification

Gases under pressure Liquefied gas	H280	Contains gas under pressure; may explode if heated
Hazardous to the ozone layer Category 1	H420	Harms public health and the environment by destroying ozone in the upper atmosphere

Full text of H statements : see section 16

#### 2.2. GHS Label elements, including precautionary statements

##### GHS US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Warning  
 Hazard statements (GHS US) : H280 - Contains gas under pressure; may explode if heated  
 H420 - Harms public health and the environment by destroying ozone in the upper atmosphere  
 Precautionary statements (GHS US) : P410+P403 - Protect from sunlight. Store in a well-ventilated place.  
 P502 - Refer to manufacturer/supplier for information on recovery/recycling

#### 2.3. Other hazards which do not result in classification

Other hazards which do not result in classification : May cause frostbite.

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### 2.4. Unknown acute toxicity (GHS US)

No additional information available

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Substance type : Mono-constituent

Name	Product identifier	%	GHS US classification
1,2-Dichlorotetrafluoroethane (Main constituent)	CAS-No.: 76-14-2	≤ 100	Press. Gas (Liq.), H280 Ozone 1, H420

Full text of hazard classes and H-statements : see section 16

### 3.2. Mixtures

Not applicable

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

First-aid measures general	: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Move the affected personnel away from the contaminated area.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. If not breathing, give artificial respiration. Get immediate medical advice/attention.
First-aid measures after skin contact	: Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.
First-aid measures after eye contact	: Remove contact lenses, if present and easy to do. Continue rinsing. Immediately flush eyes thoroughly with water for at least 15 minutes. Get immediate medical advice/attention.
First-aid measures after ingestion	: Due to its physical form, exposure to this chemical is not likely. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth out with water. Get medical advice/attention.

### 4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects	: The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.
Symptoms/effects after inhalation	: May cause drowsiness or dizziness.
Symptoms/effects after skin contact	: Contact with the liquid the may cause cold burns/frostbite.
Symptoms/effects after eye contact	: Direct contact with the liquefied gas may cause severe and possibly permanent eye injury due to frostbite from rapid liquid evaporation.

### 4.3. Immediate medical attention and special treatment, if necessary

No additional information available

## SECTION 5: Fire-fighting measures

### 5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Alcohol resistant foam. Carbon dioxide. Dry powder. Water spray. Use extinguishing media appropriate for surrounding fire.

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### 5.2. Specific hazards arising from the chemical

- Fire hazard : Thermal decomposition generates: Carbon oxides. Hydrogen chloride. Hydrogen fluoride.  
Explosion hazard : Contains gas under pressure; may explode if heated. Use water spray or fog for cooling exposed containers.

### 5.3. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.  
Protection during firefighting : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus. For further information refer to section 8: "Exposure controls/personal protection".

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Evacuate unnecessary personnel. Ensure adequate air ventilation. May cause suffocation by reducing oxygen available for breathing. Do not breathe gas, fumes, vapor or spray.

#### 6.1.1. For non-emergency personnel

- Emergency procedures : Only qualified personnel equipped with suitable protective equipment may intervene.

#### 6.1.2. For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".  
Emergency procedures : Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level.

### 6.2. Environmental precautions

Avoid release to the environment. Notify authorities if product enters sewers or public waters.

### 6.3. Methods and material for containment and cleaning up

- For containment : Stop leak if safe to do so.  
Methods for cleaning up : Ventilate area.  
Other information : For disposal of solid materials or residues refer to section 13 : "Disposal considerations".

### 6.4. Reference to other sections

No additional information available

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Additional hazards when processed : Pressurized container: Do not pierce or burn, even after use. Close valve after each use and when empty.  
Precautions for safe handling : Do not handle until all safety precautions have been read and understood. Ensure good ventilation of the work station. Do not breathe fumes, gas, mist, spray, vapors. Wear personal protective equipment. Avoid contact with skin and eyes.  
Hygiene measures : Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

### 7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Comply with applicable regulations.  
Storage conditions : Protect from sunlight. Do not expose to temperatures exceeding 50 °C. Keep container closed when not in use.  
Incompatible materials : Refer to Section 10 on Incompatible Materials.

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Storage area : Store in dry, cool, well-ventilated area.

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

1,2-Dichlorotetrafluoroethane (76-14-2)	
<b>USA - ACGIH - Occupational Exposure Limits</b>	
Local name	Dichlorotetrafluoroethane
ACGIH OEL TWA [ppm]	1000 ppm
Remark (ACGIH)	Pulm func
ACGIH chemical category	Not Classifiable as a Human Carcinogen
<b>USA - OSHA - Occupational Exposure Limits</b>	
Local name	Dichlorotetrafluoro-ethane
OSHA PEL TWA [1]	7000 mg/m <sup>3</sup>
OSHA PEL TWA [2]	1000 ppm
<b>USA - IDLH - Occupational Exposure Limits</b>	
IDLH [ppm]	15000 ppm
<b>USA - NIOSH - Occupational Exposure Limits</b>	
NIOSH REL TWA	7000 mg/m <sup>3</sup>
NIOSH REL TWA [ppm]	1000 ppm

#### 8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Systems under pressure should be regularly checked for leakage. Oxygen detectors should be used when asphyxiating gases may be released.

#### 8.3. Individual protection measures/Personal protective equipment

<b>Hand protection:</b>
protective gloves. 29 CFR 1910.138: Hand Protection
<b>Eye protection:</b>
Chemical goggles or safety glasses. Face shield. 29 CFR 1910.133: Eye and Face Protection
<b>Skin and body protection:</b>
Wear suitable protective clothing
<b>Respiratory protection:</b>
In case of inadequate ventilation wear respiratory protection. 29 CFR 1910.134: Respiratory Protection

#### Personal protective equipment symbol(s):



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### Thermal hazard protection:

Cold insulating gloves.

### Other information:

Safety shoes. 29 CFR 1910.136: Foot Protection.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Clear, colorless gas. Liquefied compressed gas.
Color	: Clear Colorless
Odor	: slight Sweet
Odor threshold	: No data available
pH	: No data available
Melting point	: -94 °C
Freezing point	: No data available
Boiling point	: 3,8 °C
Critical temperature	: 145,63 °C
Critical pressure	: 473,2 kPa
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: 27,4 psia (@ 21 °C)
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Density	: 1,44 g/ml (@ 30 °C)
Molecular mass	: 170,92 g/mol
Solubility	: Water: 0,11 g/l (at 20 °C)
Partition coefficient n-octanol/water (Log Pow)	: 2,8 (at 25 °C)
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No additional information available

### 10.2. Chemical stability

The product is stable at normal handling and storage conditions.

### 10.3. Possibility of hazardous reactions

No additional information available

### 10.4. Conditions to avoid

Protect from sunlight. Do not expose to temperatures exceeding 50 °C. Keep away from heat, sparks and flame.

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### 10.5. Incompatible materials

Alkali metals. Finely divided metals (Al, Mg, Zn). Strong bases. Strong oxidizing agents.

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Hazardous decomposition products in case of fire, see Section 5.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified  
Acute toxicity (dermal) : Not classified  
Acute toxicity (inhalation) : Not classified

#### 1,2-Dichlorotetrafluoroethane (76-14-2)

LC50 Inhalation - Rat	72 lb/h (Exposure time: 30 min)
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Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified
Viscosity, kinematic	: No data available
Symptoms/effects	: The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.
Symptoms/effects after inhalation	: May cause drowsiness or dizziness.
Symptoms/effects after skin contact	: Contact with the liquid the may cause cold burns/frostbite.
Symptoms/effects after eye contact	: Direct contact with the liquefied gas may cause severe and possibly permanent eye injury due to frostbite from rapid liquid evaporation.

## SECTION 12: Ecological information

### 12.1. Toxicity

No additional information available

### 12.2. Persistence and degradability

#### 1,2-Dichlorotetrafluoroethane (76-14-2)

Persistence and degradability	Not readily biodegradable. May cause long-term adverse effects in the environment. PBT - Persistent, Bioaccumulative and Toxic.
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### 12.3. Bioaccumulative potential

#### 1,2-Dichlorotetrafluoroethane (76-14-2)

Partition coefficient n-octanol/water (Log Pow)	2,8 (at 25 °C)
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### 1,2-Dichlorotetrafluoroethane (76-14-2)

Bioaccumulative potential	Perfluorinated alkanes (PFAs, "forever chemicals") are long lasting, widely used chemicals that break down slowly over time. The potential hazards of PFAs are under investigation and have not been established.
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### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

Other information : Class I - Group I ozone-depleting substance.

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Waste treatment methods	: Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber.
Sewage disposal recommendations	: See the EPA's Interim Guidance on PFAS Destruction and Disposal.
Product/Packaging disposal recommendations	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Additional information	: Recycle the material as far as possible.
Ecology - waste materials	: This material is considered to be a "Forever chemical". Prevent any possible release to the environment. Do not discharge into drains. Take all necessary measures to prevent accidental discharge of products into drains and waterways due to the rupture of containers or transfer systems, or emergency response.

## SECTION 14: Transport information

### 14.1. UN number

DOT NA No	: UN1958
UN-No. (TDG)	: Not applicable
UN-No. (IMDG)	: 1958
UN-No. (IATA)	: 1958

### 14.2. UN proper shipping name

Proper Shipping Name (DOT)	: 1,2-Dichloro-1,1,2,2- tetrafluoroethane
Proper Shipping Name (TDG)	: Not applicable
Proper Shipping Name (IMDG)	: 1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 114)
Proper Shipping Name (IATA)	: 1,2-Dichloro-1,1,2,2-tetrafluoroethane

### 14.3. Transport hazard class(es)

#### DOT

Transport hazard class(es) (DOT)	: 2.2
Hazard labels (DOT)	: 2.2



#### TDG

Transport hazard class(es) (TDG)	: Not applicable
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#### IMDG

Transport hazard class(es) (IMDG)	: 2.2
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Hazard labels (IMDG) : 2.2



### IATA

Transport hazard class(es) (IATA) : 2.2

Hazard labels (IATA) : 2.2



### 14.4. Packing group

Packing group (DOT) : Not applicable

Packing group (TDG) : Not applicable

Packing group (IMDG) : Not applicable

Packing group (IATA) : Not applicable

### 14.5. Environmental hazards

Other information : No supplementary information available.

### 14.6. Special precautions for user

#### DOT

UN-No.(DOT) : UN1958

DOT Special Provisions (49 CFR 172.102) : T50 - When portable tank instruction T50 is referenced in Column (7) of the 172.101 Table, the applicable liquefied compressed gases are authorized to be transported in portable tanks in accordance with the requirements of 173.313 of this subchapter.

DOT Packaging Exceptions (49 CFR 173.xxx) : 306

DOT Packaging Non Bulk (49 CFR 173.xxx) : 304

DOT Packaging Bulk (49 CFR 173.xxx) : 314;315

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 75 kg

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 150 kg

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

#### TDG

Emergency Response Guide (ERG) Number : 126

#### IMDG

Limited quantities (IMDG) : 120 ml

Excepted quantities (IMDG) : E1

Packing instructions (IMDG) : P200

Tank instructions (IMDG) : T50

EmS-No. (Fire) : F-C - FIRE SCHEDULE Charlie - NON-FLAMMABLE GASES

EmS-No. (Spillage) : S-V - SPILLAGE SCHEDULE Victor - GASES (NON-FLAMMABLE, NON-TOXIC)

Stowage category (IMDG) : A

#### IATA

PCA Excepted quantities (IATA) : E1

PCA Limited quantities (IATA) : Forbidden

PCA limited quantity max net quantity (IATA) : Forbidden

PCA packing instructions (IATA) : 200



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PCA max net quantity (IATA) : 75kg  
CAO packing instructions (IATA) : 200  
CAO max net quantity (IATA) : 150kg  
ERG code (IATA) : 2L

### 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

#### 1,2-Dichlorotetrafluoroethane (76-14-2)

Subject to reporting requirements of United States SARA Section 313

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

1,2-Dichlorotetrafluoroethane	CAS-No. 76-14-2	100%
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### 15.2. International regulations

#### CANADA

#### 1,2-Dichlorotetrafluoroethane (76-14-2)

Listed on the Canadian DSL (Domestic Substances List)

#### EU-Regulations

#### 1,2-Dichlorotetrafluoroethane (76-14-2)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)  
Listed on ELINCS (European List of Notified Chemical Substances)

#### National regulations

#### 1,2-Dichlorotetrafluoroethane (76-14-2)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing New Chemical Substances) inventory  
Listed on KECL/KECI (Korean Existing Chemicals Inventory)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Japanese Pollutant Release and Transfer Register Law (PRTR Law)  
Listed on INSQ (Mexican National Inventory of Chemical Substances)

### 15.3. US State regulations

#### 1,2-Dichlorotetrafluoroethane (76-14-2)

State or local regulations	U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List
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California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

### SECTION 16: Other information

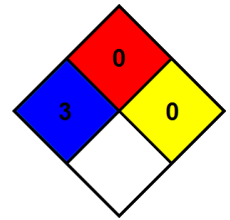
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Full text of H-phrases	
H280	Contains gas under pressure; may explode if heated
H420	Harms public health and the environment by destroying ozone in the upper atmosphere

NFPA health hazard : 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

NFPA fire hazard : 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating

Health : 0 Minimal Hazard - No significant risk to health

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Safety Data Sheet (SDS), USA