

# 2-Chloro-1,1,1,2-tetrafluoropropane

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations  
 SDS ID: 1100769  
 Issue date: 12/1/2015 Revision date: 10/11/2024 Version: 1.1

### SECTION 1: Identification

#### 1.1. Identification

Product form : Substance  
 Substance name : 2-Chloro-1,1,1,2-tetrafluoropropane  
 CAS-No. : 421-73-8  
 Product code : 1100-7-69  
 Formula : C<sub>3</sub>H<sub>3</sub>ClF<sub>4</sub>  
 Other means of identification : MFCD22123954

#### 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.  
 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                                  |
| Skin corrosion/irritation Category 2                                                          | H315 | Causes skin irritation                                                              |
| Serious eye damage/eye irritation Category 2A                                                 | H319 | Causes serious eye irritation                                                       |
| Specific target organ toxicity – Single exposure, Category 3,<br>Respiratory tract irritation | H335 | May cause respiratory irritation                                                    |
| 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  
 H315 - Causes skin irritation  
 H319 - Causes serious eye irritation

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### Precautionary statements (GHS US)

H335 - May cause respiratory irritation  
H420 - Harms public health and the environment by destroying ozone in the upper atmosphere  
: P261 - Avoid breathing fumes, gas, mist, spray, vapors.  
P264 - Wash skin thoroughly after handling  
P271 - Use only outdoors or in a well-ventilated area.  
P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
P302+P352 - If on skin: Wash with plenty of soap and water  
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.  
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P312 - Call a POISON CENTER or doctor/physician if you feel unwell  
P321 - Specific treatment (see supplemental first aid instructions on this label)  
P332+P313 - If skin irritation occurs: Get medical advice/attention.  
P337+P313 - If eye irritation persists: Get medical advice/attention.  
P362+P364 - Take off contaminated clothing and wash it before reuse.  
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.  
P405 - Store locked up.  
P410+P403 - Protect from sunlight. Store in a well-ventilated place.  
P501 - Dispose of contents/container to an approved waste disposal plant  
P502 - Refer to manufacturer/supplier for information on recovery/recycling

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

No additional information available

### 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                                                                                     |
|-----------------------------------------------------------|--------------------|-------|-----------------------------------------------------------------------------------------------------------|
| 2-Chloro-1,1,1,2-tetrafluoropropane<br>(Main constituent) | CAS-No.: 421-73-8  | ≤ 100 | Press. Gas (Liq.), H280<br>Skin Irrit. 2, H315<br>Eye Irrit. 2A, H319<br>STOT SE 3, H335<br>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 : Wash with plenty of soap and water. Get medical advice/attention.

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|                                      |                                                                                                                                                                                                               |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 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 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 | : Use extinguishing media appropriate for surrounding fire. |
|------------------------------|-------------------------------------------------------------|

### 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. May form flammable/explosive vapor-air mixture. |

### 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. Consider the risk of potentially explosive atmospheres. Eliminate every possible source of ignition. |

### 6.2. Environmental precautions

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

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### 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. Handle empty containers with care because residual vapors are flammable. 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. Keep away from ignition sources (including static discharges). Proper grounding procedures to avoid static electricity should be followed. Use only non-sparking tools. |
| 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. Keep away from ignition sources. |
| Incompatible materials | : Refer to Section 10 on Incompatible Materials.                                                                                                |
| Storage area           | : Store in dry, cool, well-ventilated area.                                                                                                     |

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

No additional information available

### 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                                                         |

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### Respiratory protection:

In case of inadequate ventilation wear respiratory protection. 29 CFR 1910.134: Respiratory Protection

### Personal protective equipment symbol(s):



### 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                                  | : Liquid            |
| Color                                           | : No data available |
| Odor                                            | : No data available |
| Odor threshold                                  | : No data available |
| pH                                              | : No data available |
| Melting point                                   | : No data available |
| Freezing point                                  | : No data available |
| Boiling point                                   | : 22 °C             |
| Flash point                                     | : No data available |
| Relative evaporation rate (butyl acetate=1)     | : No data available |
| Flammability (solid, gas)                       | : No data available |
| Vapor pressure                                  | : No data available |
| Relative vapor density at 20 °C                 | : No data available |
| Relative density                                | : No data available |
| Molecular mass                                  | : 150.5 g/mol       |
| Solubility                                      | : No data available |
| Partition coefficient n-octanol/water (Log Pow) | : No data available |
| 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.

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### 10.3. Possibility of hazardous reactions

No additional information available

### 10.4. Conditions to avoid

Keep away from heat, sparks and flame.

### 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

#### 2-Chloro-1,1,1,2-tetrafluoropropane (421-73-8)

|                                     |                                                                                                                                            |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| LC50 Inhalation - Rat [ppm]         | 30000 ppm                                                                                                                                  |
| ATE US (gases)                      | 30000 ppmV/4h                                                                                                                              |
| Skin corrosion/irritation           | : Causes skin irritation.                                                                                                                  |
| Serious eye damage/irritation       | : Causes serious eye irritation.                                                                                                           |
| Respiratory or skin sensitization   | : Not classified                                                                                                                           |
| Germ cell mutagenicity              | : Not classified                                                                                                                           |
| Carcinogenicity                     | : Not classified                                                                                                                           |
| Reproductive toxicity               | : Not classified                                                                                                                           |
| STOT-single exposure                | : May cause respiratory irritation.                                                                                                        |
| 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

#### 2-Chloro-1,1,1,2-tetrafluoropropane (421-73-8)

|                               |                                                                                                                                 |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 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

#### 2-Chloro-1,1,1,2-tetrafluoropropane (421-73-8)

|                           |                                                                                                                                                                                                                   |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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. |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

Other information : Class II ozone-depleting substance.

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Waste treatment methods                    | : Prevent runoff from entering drains, sewers or waterways. See the EPA's Interim Guidance on PFAS Destruction and Disposal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Sewage disposal recommendations            | : See the EPA's Interim Guidance on PFAS Destruction and Disposal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Product/Packaging disposal recommendations | : See the EPA's Interim Guidance on PFAS Destruction and Disposal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Additional information                     | : EPA's Interim Guidance on PFAS Destruction and Disposal (Dec. 18, 2020    <a href="https://downloads.regulations.gov/EPA-HQ-OLEM-2020-0527-0002/content.pdf">https://downloads.regulations.gov/EPA-HQ-OLEM-2020-0527-0002/content.pdf</a> ). The National Defense Authorization Act for Fiscal Year 2020, Public Law No: 116-92 (hereafter, "FY 2020 NDAA"), was signed into law on December 19, 2019. Section 7361 of the FY 2020 NDAA directs the U.S. Environmental Protection Agency (EPA) to publish interim guidance on the destruction and disposal of perfluoroalkyl and polyfluoroalkyl substances (PFAS) and materials containing PFAS. This interim guidance fulfills that direction. EPA will review the interim guidance at least every 3 years and revise it, if appropriate based on the availability of new information or other factors. |
| Ecological information                     | : 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

Not regulated for transport

### 14.2. UN proper shipping name

|                             |                  |
|-----------------------------|------------------|
| Proper Shipping Name (DOT)  | : Not applicable |
| Proper Shipping Name (TDG)  | : Not applicable |
| Proper Shipping Name (IMDG) | : Not applicable |
| Proper Shipping Name (IATA) | : Not applicable |

### 14.3. Transport hazard class(es)

#### DOT

Transport hazard class(es) (DOT) : Not applicable

#### TDG

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

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### IMDG

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

### IATA

Transport hazard class(es) (IATA) : Not applicable

### 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

No data available

#### TDG

No data available

#### IMDG

No data available

#### IATA

No data available

### 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

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

|                                     |                  |      |
|-------------------------------------|------------------|------|
| 2-Chloro-1,1,1,2-tetrafluoropropane | CAS-No. 421-73-8 | 100% |
|-------------------------------------|------------------|------|

### 15.2. International regulations

#### CANADA

No additional information available

#### EU-Regulations

No additional information available

#### National regulations

No additional information available

### 15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

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### SECTION 16: Other information

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| Full text of H-phrases |                                                                                     |
|------------------------|-------------------------------------------------------------------------------------|
| H280                   | Contains gas under pressure; may explode if heated                                  |
| H315                   | Causes skin irritation                                                              |
| H319                   | Causes serious eye irritation                                                       |
| H335                   | May cause respiratory irritation                                                    |
| H420                   | Harms public health and the environment by destroying ozone in the upper atmosphere |

Safety Data Sheet (SDS), USA

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is offered solely for your consideration, investigation, and verification. It does not represent any guarantee of the properties of the product nor that the hazard precautions or procedures described are the only ones which exist. SynQuest shall not be held liable for any damage resulting from handling or from contact with the above product.