

SECTION 1: Identification

1.1. Identification

Product form	: Substance
Substance name	: E-1-Chloro-3,3,3-trifluoropropene-1
CAS No	: 102687-65-0
Product code	: 1300-7-15
Formula	: C3H2CIF3
Synonyms	: trans-1-Chloro-3,3,3-trifluoropropene-1; R-1233zd-E
Other means of identification	: MFCD03092985

1.2. Relevant identified uses of the substance or mixture and uses advised against

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

1.3. Details of the supplier of the safety data sheet

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

Classification (GHS-US)

Simple Asphy H380 - May displace oxygen and cause rapid suffocation
Liquefied gas H280 - Contains gas under pressure; may explode if heated

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS04

Signal word (GHS-US)	: Warning
Hazard statements (GHS-US)	: H280 - Contains gas under pressure; may explode if heated H380 - May displace oxygen and cause rapid suffocation
Precautionary statements (GHS-US)	: P410+P403 - Protect from sunlight. Store in a well-ventilated place

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Substance type : Mono-constituent

E-1-Chloro-3,3,3-trifluoropropene-1

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Name	Product identifier	%	Classification (GHS-US)
E-1-Chloro-3,3,3-trifluoropropene-1 (Main constituent)	(CAS No) 102687-65-0	<= 100	Simple Asphy, H380 Liquefied gas, H280

Full text of H-phrases: see section 16

3.2. Mixture

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 medical advice/attention.
First-aid measures after skin contact	: Wash with plenty of soap and water. Get medical advice/attention.
First-aid measures after eye contact	: Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. 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, both acute and delayed

Symptoms/injuries	: The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.
Symptoms/injuries after inhalation	: Depression of the central nervous system, headaches, dizziness, drowsiness, loss of coordination. Cardiac disorders (arrhythmia).
Symptoms/injuries after skin contact	: Contact with the liquid may cause cold burns/frostbite.
Symptoms/injuries 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. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: The product is not flammable. Use extinguishing media appropriate for surrounding fire. Alcohol resistant foam. Carbon dioxide. Dry powder. Water spray.
------------------------------	--

5.2. Special hazards arising from the substance or mixture

Fire hazard	: Under certain temperature and pressure conditions may form a flammable mixture in the presence of air. 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. Advice for firefighters

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. Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level. Ensure adequate air ventilation. Do not breathe gas, fumes, vapor or spray. May cause suffocation by reducing oxygen available for breathing. Gas/vapor explosive with air within explosion limits. Eliminate every possible source of ignition.
------------------	--

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".
----------------------	---

6.2. Environmental precautions

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

E-1-Chloro-3,3,3-trifluoropropene-1

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

6.3. Methods and material for containment and cleaning up

For containment	: Dike for recovery or absorb with appropriate material.
Methods for cleaning up	: Take up large spills with pump or vacuum and finish with dry chemical absorbent. Use explosion-proof equipment. Take up small spills with dry chemical absorbent. Sweep or shovel spills into appropriate container for disposal.
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

Precautions for safe handling	: 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.
Safe handling of the gas receptacle	: Contents under pressure. Ensure cylinder valve is closed and not leaking after each use.
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	: Securely chain cylinders when in use and protect against physical damage.
Storage conditions	: Protect from sunlight. Do not expose to temperatures exceeding 50 °C.
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. Exposure 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.
Hand protection	: Protective gloves.
Eye protection	: Chemical goggles or safety glasses. Face shield.
Skin and body protection	: Wear suitable protective clothing.
Respiratory protection	: In case of inadequate ventilation wear respiratory protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Color	: No data available
Odor	: No data available
Odor threshold	: No data available
pH	: No data available
Melting point	: < -90 °C
Freezing point	: No data available
Boiling point	: 19 °C
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Vapor pressure	: 1137 mm Hg (@ 30°C)
Relative density	: No data available
Relative vapor density at 20 °C	: No data available
Specific gravity / density	: 1.27 g/ml

E-1-Chloro-3,3,3-trifluoropropene-1

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Molecular mass	: 130.5 g/mol
Solubility	: Water: 1.9 g/l
Log Pow	: 2.2 (@ 25 °C)
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: 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

May polymerize.

10.4. Conditions to avoid

Protect from sunlight. Do not expose to temperatures exceeding 50 °C

10.5. Incompatible materials

Finely divided metals (Al, Mg, Zn). 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 : Not classified

E-1-Chloro-3,3,3-trifluoropropene-1 (102687-65-0)	
LC50 inhalation rat (ppm)	120000 ppm/4h
ATE US (gases)	120000.000 ppmV/4h

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
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Symptoms/injuries after inhalation	: Depression of the central nervous system, headaches, dizziness, drowsiness, loss of coordination. Cardiac disorders (arrhythmia).
Symptoms/injuries after skin contact	: Contact with the liquid the may cause cold burns/frostbite.
Symptoms/injuries 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

E-1-Chloro-3,3,3-trifluoropropene-1

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

E-1-Chloro-3,3,3-trifluoropropene-1 (102687-65-0)

Log Pow	2.2 (@ 25 °C)
---------	---------------

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods	: Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber.
Waste disposal recommendations	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Additional information	: Recycle the material as far as possible.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN3163 Liquefied gas, n.o.s. (E-1-Chloro-3,3,3-trifluoropropene-1(102687-65-0)), 2.2

UN-No.(DOT) : UN3163

Proper Shipping Name (DOT) : Liquefied gas, n.o.s.
E-1-Chloro-3,3,3-trifluoropropene-1(102687-65-0)

Transport hazard class(es) (DOT) : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115

Hazard labels (DOT) : 2.2 - Non-flammable gas



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

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

DOT Symbols : G - Identifies PSN requiring a technical name

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 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.

Other information : No supplementary information available.

TDG

No additional information available

Transport by sea

UN-No. (IMDG) : 3163

Proper Shipping Name (IMDG) : LIQUEFIED GAS, N.O.S.

Class (IMDG) : 2 - Gases

E-1-Chloro-3,3,3-trifluoropropene-1

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Air transport

UN-No. (IATA)	: 3163
Proper Shipping Name (IATA)	: Liquefied gas, n.o.s.
Class (IATA)	: 2

SECTION 15: Regulatory information

15.1. US Federal regulations

E-1-Chloro-3,3,3-trifluoropropene-1 (102687-65-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

E-1-Chloro-3,3,3-trifluoropropene-1 (102687-65-0)

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification Class A - Compressed Gas

EU-Regulations

No additional information available

National regulations

E-1-Chloro-3,3,3-trifluoropropene-1 (102687-65-0)

Listed on the Japanese ISHL (Industrial Safety and Health Law)

Listed on NZIoC (New Zealand Inventory of Chemicals)

15.3. US State regulations

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

SECTION 16: Other information

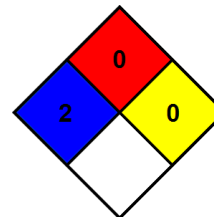
Full text of H-phrases:

Liquefied gas	Gases under pressure Liquefied gas
Simple Asphy	Simple Asphyxiant
H280	Contains gas under pressure; may explode if heated
H380	May displace oxygen and cause rapid suffocation

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

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.

SDS US (GHS HazCom 2012)

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 or any damage resulting from handling or from contact with the above product.