

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations SDS ID: 6162201 Issue date: 8/4/2016 Revision date: 3/31/2023 Version: 1.1

SECTION 1: Identification

1.1. Identification	
Product form Substance name CAS-No. Product code Formula Synonyms Other means of identification	 Substance Trifluoromethanesulfonyl fluoride 335-05-7 6162-2-01 CF402S PFC-MSF MFCD00042402
1.2. Recommended use and restrictions on	
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 - www.synquestlabs.com	
1.4. Emergency telephone number	
Emergency number	: (844) 523-4086 (3E Company - Account 10069)

SECTION 2: Hazard(s) identification

GHS US classification

Gases under pressure Liquefied gas	H280	Contains gas under pressure; may explode if heated
Acute toxicity (oral) Category 4	H302	Harmful if swallowed
Acute toxicity (dermal) Category 4	H312	Harmful in contact with skin
Acute toxicity (inhalation) Category 3	H331	Toxic if inhaled
Skin corrosion/irritation Category 1B	H314	Causes severe skin burns and eye damage
Serious eye damage/eye irritation Category 1	H318	Causes serious eye damage
Specific target organ toxicity – Single exposure, Category 3,	H335	May cause respiratory irritation
Respiratory tract irritation		

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)



:



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Hazard statements (GHS US)	 H280 - Contains gas under pressure; may explode if heated H302+H312 - Harmful if swallowed or in contact with skin H314 - Causes severe skin burns and eye damage H318 - Causes serious eye damage H331 - Toxic if inhaled
Precautionary statements (GHS US)	, 6
	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

2.3. Other hazards which do not result in classification

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

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
Trifluoromethanesulfonyl fluoride (Main constituent)	CAS-No.: 335-05-7	≤ 100	Press. Gas (Liq.), H280 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 3 (Inhalation), H331 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT SE 3, H335

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

3.2. Mixtures

Not applicable

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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. Remove contaminated clothing and shoes. In case of skin contact, wearing rubber gloves rub 2.5% calcium gluconate gel continuously into the affected area for 1.5 hours or until further medical care is available. Get immediate medical advice/attention.
First-aid measures after eye contact	: Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention. Immediately flush eyes thoroughly with water for at least 15 minutes.
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 immediate medical advice/attention.
4.2. Most important symptoms and effect	ts (acute and delayed)
Potential Adverse human health effects and symptoms	: Absorption of excessive F- can result in acute systemic fluorosis with hypocalcemia, interference with various metabolic functions and organ damage (heart, liver, kidneys).
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. Material is destructive to tissue of the mucuous membranes and upper respiratory tract. Cough, shortness of breath, headache, nausea.
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

Treat symptomatically. Absorption of excessive F- can result in acute systemic fluorosis with hypocalcemia, interference with various metabolic functions and organ damage (heart, liver, kidneys).

SECTION 5: Fire-fighting measures			
5.1. Suitable (and unsuitable) extinguish	ing media		
Suitable extinguishing media	: Alcohol resistant foam. Carbon dioxide. Dry powder. Water spray. Use extinguishing media appropriate for surrounding fire.		
5.2. Specific hazards arising from the chemical			
Fire hazard Explosion hazard	 Thermal decomposition generates: Carbon oxides. Hydrogen fluoride. Sulfur oxides. 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 Protection during firefighting	 In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Wear gas tight chemically protective clothing in combination with self contained breathing apparatus. For further information refer to section 8: "Exposure controls/personal protection". 		

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SECTION 6: Accidental release measures			
6.1. Personal precautions, protective equipm	nent and emergency procedures		
General measures	: Evacuate unnecessary personnel. Ensure adequate air ventilation. 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

This material is considered to be a "Forever chemical". Prevent any possible release to the environment. Notify authorities if product enters sewers or public waters. Contain any spills with dikes or absorbents to prevent migration and entry into drains, sewers, waterways, or soil. Do not use where release to drains (sewer) and/or surface water cannot be prevented.

6.3. Methods and material for conta	inment and cleaning up
For containment	: Stop leak if safe to do so. Contain any spills with dikes or absorbents to prevent migration and entry into drains, sewers, waterways, or soil. Do not use where release to drains (sewer) and/or surface water cannot be prevented.
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. Ventilate area.
Other information	: For disposal of solid materials or residues refer to section 13 : "Disposal considerations".
6.4. Poterance to other continue	

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

No additional information available

7.2. Conditions for safe ste	prage, including any incompatibilities
Storage area	: Store in dry, cool, well-ventilated area. Store ONLY in areas where release to drains

 Store in dry, cool, well-ventilated area. Store ONLY in areas where release to drains (sewer) and/or surface water can be prevented. This material is considered to be a "Forever chemical". Any possible release to the environment must be prevented. Notify authorities if product enters sewers or public waters.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Trifluoromethanesulfonyl fluoride (335-05-7)

No additional information available

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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 regularily checked for leakage. Oxygen detectors should be used when asphyxiating gases may be released. Gas detectors should be used when toxic gases may be released.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

protective gloves. 29 CFR 1910.138: Hand Protection

Eye protection:

Chemical goggles or safety glasses. Face shield. 29 CFR 1910.133: Eye and Face Protection

Skin and body protection:

Wear suitable protective clothing

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

Divisional atota		Con
Physical state	:	Gas
Color	:	No data available
Odor	:	No data available
Odor threshold	:	No data available
рН	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	-21 °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	:	152.07 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

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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.

10.5. Incompatible materials

Glass. 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)	: Harmful if swallowed.
Acute toxicity (dermal)	: Harmful in contact with skin.
Acute toxicity (inhalation)	: Toxic if inhaled.
Skin corrosion/irritation	: Causes severe skin burns.
Serious eye damage/irritation	: Causes serious eye damage.
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
Potential Adverse human health effects and symptoms	: Absorption of excessive F- can result in acute systemic fluorosis with hypocalcemia, interference with various metabolic functions and organ damage (heart, liver, kidneys).
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. Material is destructive to tissue of the mucuous membranes and upper respiratory tract. Cough, shortness of breath, headache, nausea.

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Symptoms/effects after skin contact	:	Contact with the
Symptoms/effects after eye contact	:	Direct contact

: Contact with the liquid the may cause cold burns/frostbite.

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	
Trifluoromethanesulfonyl fluoride (335-05-7)	
Persistence and degradability	Not readily biodegradable. May cause long-term adverse effects in the environment. PBT - Persistent, Bioaccumulative and Toxic.
12.3. Bioaccumulative potential	
Trifluoromethanesulfonyl fluoride (335-05-7)	
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

No additional information available

13.1. Disposal methods

SECTION 13: Disposal considerations

Waste treatment methods : Prevent runoff from entering drains, sewers or waterways. See the EPA's Interim Guidance on PFAS Destruction and Disposal. : See the EPA's Interim Guidance on PFAS Destruction and Disposal. Sewage disposal recommendations 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 II ÷ https://downloads.regulations.gov/EPA-HQ-OLEM-2020-0527-0002/content.pdf). 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. 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.

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SECTION 14: Transport information	
14.1. UN number	
DOT NA No UN-No. (TDG) UN-No. (IMDG) UN-No. (IATA)	: UN3162 : UN3162 : 3162 : 3162
14.2. UN proper shipping name	
Proper Shipping Name (DOT) Proper Shipping Name (TDG) Proper Shipping Name (IMDG) Proper Shipping Name (IATA)	 Liquefied gas, toxic, n.o.s. LIQUEFIED GAS, TOXIC, N.O.S. LIQUEFIED GAS, TOXIC, N.O.S. Liquefied gas, toxic, n.o.s.
14.3. Transport hazard class(es)	
DOT Transport hazard class(es) (DOT) Hazard labels (DOT)	: 2.3 : 2.3
TDG Transport hazard class(es) (TDG) Hazard labels (TDG)	: 2.3 : 2.3
IMDG Transport hazard class(es) (IMDG) Hazard labels (IMDG)	: 2.3 : 2.3
IATA Transport hazard class(es) (IATA)	: 2.3
14.4. Packing group	
Packing group (DOT) Packing group (TDG) Packing group (IMDG) Packing group (IATA)	 Not applicable Not applicable Not applicable Not applicable
14.5. Environmental hazards	
Other information	: No supplementary information available.

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14.6. Special precautions for user

14.6. Special precautions for user	
DOT	
UN-No.(DOT)	: UN3162
DOT Special Provisions (49 CFR 172.102)	 2 - This material is poisonous by inhalation (see 171.8 of this subchapter) in Hazard Zone B (see 173.116(a) or 173.133(a) of this subchapter), and must be described as an inhalation hazard under the provisions of this subchapter. B9 - Bottom outlets are not authorized.
	B14 - Each bulk packaging, except a tank car or a multi-unit-tank car tank, must be insulated with an insulating material so that the overall thermal conductance at 15.5 C (60 F) is no more than 1.5333 kilojoules per hour per square meter per degree Celsius (0.075 Btu per hour per square foot per degree Fahrenheit) temperature differential. Insulating materials must not
	promote corrosion to steel when wet.
DOT Packaging Exceptions (49 CFR 173.xxx)	: None
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)	: Forbidden
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: Forbidden
DOT Vessel Stowage Location	: D - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.
DOT Vessel Stowage Other	: 40 - Stow "clear of living quarters"
TDG	
UN-No. (TDG)	: UN3162
TDG Special Provisions	16 - 1) The technical name of the most dangerous substance related to the primary class must be shown, in parentheses, on the shipping document following the shipping name in accordance with clause 3.5(1)(c)(i)(A) of Part 3, Documentation. The technical name must also be shown, in parentheses, on a small means of containment or on a tag following the shipping name in accordance with subsections 4.11(2) and (3) of Part 4, Dangerous Goods Safety Marks. 2) subsection (1), the technical name for the following dangerous goods is not required to be shown on a shipping document or on a small means of containment when Canadian law for domestic transport or an international convention for international transport prohibits the disclosure of the technical: a) UN1544, ALKALOID SALTS, SOLID, N.O.S. or ALKALOIDS, SOLID, N.O.S; b) UN1851, MEDICINE, LIQUID, TOXIC, N.O.S; c) UN3140, ALKALOID SALTS, LIQUID, N.O.S. or ALKALOIDS, LIQUID, N.O.S; or e) UN3249, MEDICINE, SOLID, TOXIC, N.O.S. An example in Canada is the "Food and Drugs Act", 23 - 1) A consignor of these dangerous goods must include on a shipping document, after the classification of the dangerous goods, the words "toxic by inhalation" or "toxic – inhalation hazard" or "toxique par inhalation" or "toxicité par inhalation toxicity. For example: CYANIDE SOLUTION, N.O.S, Class 6.1, Packing Group I, due to inhalation toxicity. For example: CYANIDE SOLUTION, N.O.S, Class 6.1, UN1935, PG I, toxic by inhalation 2) A person must not handle, offer for transport or transport these dangerous goods by passenger carrying road vehicle, passenger carrying railway vehicle or passenger carrying ship if they meet the criteria for inclusion in Class 6.1, Packing Group I, due to inhalation toxicity. 3) This special provision does not apply to a person who transports these dangerous goods in accordance with the exemption in section 1.15 of Part 1, Coming Into Force, Repeal, Interpretation, General Provisions and Special Cases, 38 - A person must not handle, offer for transport or
ERAP Index	large means of containment. : 25
Explosive Limit and Limited Quantity Index	: 0
Excepted quantities (TDG)	: E0
December Corrige Chin Index	· Forbiddon

- ΕU
- : Forbidden : Forbidden
- Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index

Passenger Carrying Ship Index

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Emergency Response Guide (ERG) Number	: 123
IMDG	
Special provision (IMDG)	: 274
Limited quantities (IMDG)	: 0
Excepted quantities (IMDG)	: E0
Packing instructions (IMDG)	: P200
EmS-No. (Fire)	: F-C - FIRE SCHEDULE Charlie - NON-FLAMMABLE GASES
EmS-No. (Spillage)	: S-U - SPILLAGE SCHEDULE Uniform - GASES (FLAMMABLE, TOXIC OR CORROSIVE)
Stowage category (IMDG)	: D
Stowage and handling (IMDG)	: SW2
ΙΑΤΑ	
PCA Limited quantities (IATA)	: Forbidden
PCA limited quantity max net quantity (IATA)	: Forbidden
PCA packing instructions (IATA)	: Forbidden
PCA max net quantity (IATA)	: Forbidden
CAO packing instructions (IATA)	: Forbidden
CAO max net quantity (IATA)	: Forbidden
Special provision (IATA)	: A2
ERG code (IATA)	: 2P

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

15.2. International regulations

CANADA

Trifluoromethanesulfonyl fluoride (335-05-7)

Listed on the Canadian NDSL (Non-Domestic Substances List)

EU-Regulations

Trifluoromethanesulfonyl fluoride (335-05-7)

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

National regulations

Trifluoromethanesulfonyl fluoride (335-05-7)

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

Listed on the TCSI (Taiwan Chemical Substance Inventory)

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	H-phrases		
H280	Contains gas under pressure; may explode if hea	Contains gas under pressure; may explode if heated	
H302	Harmful if swallowed	Harmful if swallowed	
H312	Harmful in contact with skin	Harmful in contact with skin	
H314	Causes severe skin burns and eye damage	Causes severe skin burns and eye damage	
H318	Causes serious eye damage	Causes serious eye damage	
H331	Toxic if inhaled	Toxic if inhaled	
H335	May cause respiratory irritation		
NFPA health h NFPA fire haza NFPA reactivit	vity permanent inju	hat, under emergency conditions, can cause serious or ury. hat will not burn under typical fire conditions, including incombustible materials such as concrete, stone, and hat in themselves are normally stable but can become evated temperatures and pressures.	
Hazard Rating Health Flammability Physical	: 3 Serious Haz given : 0 Minimal Haz : 1 Slight Hazar	ard - Major injury likely unless prompt action is taken and medical treatment is ard - Materials that will not burn d - Materials that are normally stable but can become unstable (self-react) at high and pressures. Materials may react non-violently with water or undergo hazardous	

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

polymerization in the absence of inhibitors.