

2-Chloro-1,1,1,3-tetrafluoropropane

Safety Data Sheet 110070D according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations Date of issue: 11/03/2015 Version: 1.0

SECTION 1: Identification	
.1. Identification	
Product form	: Substance
Substance name	: 2-Chloro-1,1,1,3-tetrafluoropropane
CAS No	: 117970-90-8
Product code	: 1100-7-0D
Formula	
Synonyms	: 1,1,1,3-Tetrafluoro-2-chloropropane; HCFC-244db
I.2. Relevant identified uses of the s	substance or mixture and uses advised against
Use of the substance/mixture	: Laboratory chemicals Manufacture of substances Scientific research and development
I.3. Details of the supplier of the saf	fety data sheet
SynQuest Laboratories, Inc.	
P.O. Box 309	
Alachua, FL 32615 - United States of Americ T (386) 462-0788 - F (386) 462-7097	Са
nfo@synquestlabs.com - www.synquestlabs	<u>s.com</u>
.4. Emergency telephone number	
Emergency number	: (844) 523-4086 (3E Company - Account 10069)
0	
SECTION 2: Hazard(s) identificat	ion
2.1. Classification of the substance	or mixture
Classification (GHS-US)	
Eye Irrit. 2A H319 - Causes serious eye i	irritation
Eye Irrit. 2A H319 - Causes serious eye i STOT SE 3 H335 - May cause respirator	irritation ry irritation
Eye Irrit. 2AH319 - Causes serious eye iSTOT SE 3H335 - May cause respiratorDzone 1H420 - Harms public health	irritation
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Eye Irrit. 2A H319 - Causes serious eye i STOT SE 3 H335 - May cause respirator Doone 1 H420 - Harms public health i Full text of H-phrases: see section 16 2.2. Label elements 3HS-US labeling Hazard pictograms (GHS-US) Hazard statements (GHS-US)	 irritation ry irritation and the environment by destroying ozone in the upper atmosphere i variant of the environment by destroying ozone in the upper atmosphere GHS07 Warning 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 P261 - Avoid breathing fumes, 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
Eye Irrit. 2A H319 - Causes serious eye i STOT SE 3 H335 - May cause respirator Doone 1 H420 - Harms public health i Full text of H-phrases: see section 16 2.2. Label elements 3.3. CHS-US labeling Hazard pictograms (GHS-US) Hazard statements (GHS-US)	 irritation ry irritation and the environment by destroying ozone in the upper atmosphere i variant of the environment by destroying ozone in the upper atmosphere i variant of the environment of the envit of the environment of the env
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Eye Irrit. 2A H319 - Causes serious eye i STOT SE 3 H335 - May cause respirator Dzone 1 H420 - Harms public health Full text of H-phrases: see section 16 2.2. Label elements GHS-US labeling Hazard pictograms (GHS-US) Signal word (GHS-US) Hazard statements (GHS-US)	 irritation y irritation and the environment by destroying ozone in the upper atmosphere i i i i i i i i i i i i i i i i i i i
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Safety Data Sheet according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

P501 - Dispose of contents/container to an approved waste disposal plant P502 - Refer to manufacturer/supplier for information on recovery/recycling

additional information available 4. Unknown acute toxicity (GHS US) toxplicable ECTION 3: Composition/information on ingredients 1. Substance besizes type : Mono-constituent Mane Product identifier % Classification (GHS-US) Syn Im 2, 4H35 Syn I					
4. Unknown acute toxicity (GHS US) it applicable CETION 3: Composition/information on ingredients 1. Substance bistance type : Mono-constituent Xmo Product identifier % Classification (GHS-US) Column 1, 1, 3-set anharcom (C48 Ng) 117970-80-8 <= 100	2.3. Other hazards				
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ECTION 3: Composition/information on ingredients					
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Chino-1,1,3-terrefuturopropane (CAB No) 117970-90-8 c= 100 Bit Int 2, H315 STOT SE 3, H335 Ozen 1, H420 III text of H-phrases: see section 16 .	Substance type	: Monc	o-constituent		
Main constituent) Eye Intl. 24, H313 STOT 52 3, H335 Ozon 1, H420 III text of H-phrases: see section 16 . 2. Mixture ot a splicable . ECTION 44 First ald measures staid 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. staid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. If not breathing, give artificial respiration. Get medical advice/attention. staid measures after skin contact : Wash with plenty of soap and water. Get medical advice/attention. staid 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. staid measures after ingestion : Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth our with water. Get medical advice/attention. staid measures after ingestion : Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth our with wear. Get medical advice/attention. staid measures after inhalation : May cause drowsiness or dizzines. at protoms/injuries : The most important known symptoms and effects are described in the labelling (see section azy and/or in section 11. ettindicitation of any immediate medical ateterion and spec	Name				, ,
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st-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. st-aid measures after ingestion : Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth out with water. Get medical advice/attention. 2. Most important symptoms and effects, both acute and delayed mptoms/injuries : The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11. mptoms/injuries after inhalation : May cause drowsiness or diziness. 3. Indication of any immediate medical attention and special treatment needed eat symptomatically. : Alcohol resistant foam. Carbon dioxide. Dry powder. Water spray. Use extinguishing media appropriate for surrounding fire. 2. Special hazards arising from the substance or mixture re hazard : Thermal decomposition generates: Carbon oxides. Hydrogen chloride. Hydrogen fluoride. spiosion hazard : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. etighting instructions : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. otection during firefighting : Wear gas tight chemically protective clorini refer to section 8: "Exposure controls/personal protection". ECTION 6: Accidental release measures : Evacuat	First-aid measures after inhalation	respi	ration. Get medical advice/attention.		
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mouth out with water. Get medical advice/attention. 2. Most important symptoms and effects, both acute and delayed mptoms/injuries : The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11. mptoms/injuries after inhalation : May cause drowsiness or dizziness. 3. Indication of any immediate medical attention and special treatment needed eat symptomatically. ECTION 5: Firefighting measures 1. Extinguishing media iitable extinguishing media : Alcohol resistant foam. Carbon dioxide. Dry powder. Water spray. Use extinguishing media appropriate for surrounding fire. 2. Special hazards arising from the substance or mixture re hazard : Thermal decomposition generates: Carbon oxides. Hydrogen chloride. Hydrogen fluoride. rplosion hazard : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. stighting instructions : 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 appratus. For further information refer to section 8: "Exposure controls/personal protection". ECTION 6: Accidental release measures : Evacuate unnecessary personnel. Ensure adequate air ventilation. Do not breathe gas, fumes, vapor or spray. 1.1. For non-emergency personnel : Evacua		prese	ent and easy to do. Continue rinsing. Get	medical advice/	attention.
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vapor or spray. 1.1. For non-emergency personnel					
	General measures			equate air ventila	ation. Do not breathe gas, fumes,
nergency procedures : Only qualified personnel equipped with suitable protective equipment may intervene.	6.1.1. For non-emergency personnel				
	Emergency procedures	: Only	qualified personnel equipped with suitab	e protective equ	lipment may intervene.

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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. Dike for recovery or absorb with appropriate material. Methods for cleaning up : Take up large spills with purp or vacuum and finish with dry chemical absorbent. Use explosion-proof equipment. Take up small spills with dry chemical absorbent. Sweep or show 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. Reference to other sections No additional information available SECTION 7: Handling and storage : Do not handle until all safety precautions have been read and understood. Ensure good ventilation of the work station. Do not breathe fumes, 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 o smoke when using this product. Always wash hands after handling the product. 7.2. Conditions for safe storage, including any incompatibilities : Comply with applicable regulations. Storage conditions : Keep container closed when not in use. Incompatible materials : Refer to Section 10 on Incompatible Materials.	6.1.2.	For emergency responders	
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No additional information available SECTION 7: Handling and storage 7.1. Precautions for safe handling Precautions for safe handling Precautions for safe handling Subscription Hygiene measures Storage conditions	Other in	nformation	: For disposal of solid materials or residues refer to section 13 : "Disposal considerations".
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Storage conditions : Keep container closed when not in use. Incompatible materials : Refer to Section 10 on Incompatible Materials.	7.2.	Conditions for safe storage, includ	ng any incompatibilities
Incompatible materials : Refer to Section 10 on Incompatible Materials.	Technic	cal measures	: Comply with applicable regulations.
	Storage	conditions	: Keep container closed when not in use.
Storage area : Store in dry, cool, well-ventilated area.	Incomp	atible 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. 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.
Other information	: Safety shoes. 29 CFR 1910.136: Foot Protection.

SECTION 9: Ph	vsical and cl	hemical pro	perties

9.1.	Information on basic physical and	chemical properties
Physica	al state	: Liquid
Color		: No data available
Odor		: No data available
Odor th	nreshold	: No data available
рН		: No data available
Melting	l point	: No data available
Freezir	ng point	: No data available
Boiling	point	: 50 °C
Flash p	point	: No data available
Relativ	e evaporation rate (butyl acetate=1)	: No data available

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Flammability (solid, gas)	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Vapor pressure	: No data available
Relative density	: No data available
Relative vapor density at 20 °C	: No data available
Molecular mass	: 150.5 g/mol
Solubility	: No data available
Log Pow	: No data available
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	

Refractive index

: 1.395 (@ 15 °C)

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

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	: Not classified
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
Specific target organ toxicity (single exposure)	: May cause respiratory irritation.
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Symptoms/injuries after inhalation	: May cause drowsiness or dizziness.

SECTIO	DN 12: Ecological information
12.1.	Toxicity
No additi	onal information available

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12.2.	Persistence and degradability
No addit	ional information available
12.3.	Bioaccumulative potential
No addit	ional information available
12.4.	Mobility in soil
No addit	ional information available
12.5.	Other adverse effects

Other information

OFOTION

: Class II ozone-depleting substance.

SECTION 13: Disposal consideration	ns
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 Not regulated for transport

TDG

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

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

2-Chloro-1,1,1,3-tetrafluoropropane CAS No 117970-90-8 100%

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

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 and/or reproductive harm

SECTION 16: Other information

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Full text of H-phrases:	
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Ozone 1	Hazardous to the ozone layer Category 1
Skin Irrit. 2	Skin corrosion/irritation Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
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
NFPA health hazard NFPA fire hazard NFPA reactivity	 : 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given. : 1 - Must be preheated before ignition can occur. : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.
HMIS III Rating	
Health	: 1 Slight Hazard - Irritation or minor reversible injury possible
Flammability	 1 Slight Hazard - Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 F. (Class IIIB)
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.