

SAFETY DATA SHEET

Creation Date 07-December-2009

Revision Date 19-December-2025

Revision Number 7

This safety data sheet was created pursuant to the requirements of: Canada WHMIS 2015 which includes the amended Hazardous Products Act (HPA) and the Hazardous Products Regulation (HPR) - SOR 2022-272

1. Identification

Product Name Dilithium tetrachlorocuprate, 0.1 M solution in THF

Cat No. : AC407830000; AC407830250; AC407831000; AC407835000

Synonyms No information available

Recommended Use Laboratory chemicals.

Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Importer/Distributor

Fisher Scientific
112 Colonnade Road,
Ottawa, ON K2E 7L6,
Canada
Tel: 1-800-234-7437

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Manufacturer

Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99
CHEMTREC Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

2. Hazard(s) identification

Classification

WHMIS 2015 Classification

This product is hazardous in accordance with the Canada Hazardous Products Act (HPA) and Hazardous Products Regulation (HPR), as amended (SOR/2022-272)

Flammable liquids	Category 2
Acute oral toxicity	Category 4
Serious Eye Damage/Eye Irritation	Category 2
Carcinogenicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system, Central nervous system (CNS).	
Physical Hazards Not Otherwise Classified	Category 1
May form explosive peroxides	

Label Elements

Signal Word

Danger

Hazard Statements

Highly flammable liquid and vapor
 Harmful if swallowed
 Causes serious eye irritation
 May cause respiratory irritation
 May cause drowsiness and dizziness
 Suspected of causing cancer
 May form explosive peroxides

**Precautionary Statements****Prevention**

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Wear protective gloves/protective clothing/eye protection/face protection
 Keep container tightly closed
 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
 Ground and bond container and receiving equipment
 Do not breathe dust/fumes/gas/mist/vapours/spray
 Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 Use only outdoors or in a well-ventilated area
 Use non-sparking tools
 Take action to prevent static discharges

Response

IF exposed or concerned: Get medical advice/attention
 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell
 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower
 IF INHALED: Remove person to fresh air and keep comfortable for breathing
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 Rinse mouth
 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish

Storage

Store locked up
 Store in a well-ventilated place. Keep container tightly closed

Disposal

Dispose of contents/container to an approved waste disposal plant

Unknown Acute Toxicity

No information available

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Tetrahydrofuran	109-99-9	97-98
Dilithium tetrachlorocuprate	15489-27-7	2-3

4. First-aid measures

General Advice	If symptoms persist, call a physician.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.
Ingestion	Clean mouth with water and drink afterwards plenty of water.
Most important symptoms/effects	None reasonably foreseeable. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Causes central nervous system depression
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Water spray, carbon dioxide (CO ₂), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.
Unsuitable Extinguishing Media	No information available
Flash Point	-17 °C / 1.4 °F
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical

Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

Hazardous Combustion Products

Carbon monoxide (CO). Carbon dioxide (CO₂). Copper oxides. Hydrogen chloride gas.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	3	1	N/A

6. Accidental release measures

Personal Precautions	Use personal protective equipment as required. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
Environmental Precautions	Should not be released into the environment. Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7. Handling and storage

Handling

Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. If peroxide formation is suspected, do not open or move container. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

Storage.

Keep containers tightly closed in a dry, cool and well-ventilated place. Flammables area. Keep away from heat, sparks and flame. Keep under nitrogen. Shelf life 12 months. May form explosive peroxides on prolonged storage. Containers should be dated when opened and tested periodically for the presence of peroxides. Should crystals form in a peroxidizable liquid, peroxidation may have occurred and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely by professionals. Incompatible Materials. Strong oxidizing agents.

8. Exposure controls / personal protection

Exposure Guidelines

Component	Alberta	British Columbia	Ontario TWAEV	Quebec
Tetrahydrofuran	TWA: 50 ppm TWA: 147 mg/m ³ STEL: 100 ppm STEL: 295 mg/m ³ Skin	TWA: 50 ppm STEL: 100 ppm Skin	TWA: 50 ppm STEL: 100 ppm Skin	TWA: 100 ppm TWA: 300 mg/m ³

Component	Manitoba	New Brunswick	Newfoundland and Labrador	Nova Scotia
Tetrahydrofuran	TWA: 50 ppm STEL: 100 ppm Skin	TWA: 50 ppm STEL: 100 ppm Skin	TWA: 50 ppm STEL: 100 ppm Skin	TWA: 50 ppm STEL: 100 ppm Skin
Dilithium tetrachlorocuprate		TWA: 1 mg/m ³	TWA: 1 mg/m ³	TWA: 1 mg/m ³

Component	Nunavut	Prince Edward Island	Saskatchewan	Yukon
Tetrahydrofuran	TWA: 50 ppm STEL: 100 ppm Skin	TWA: 50 ppm STEKL: 100 ppm	TWA: 50 ppm STEL: 100 ppm Skin	TWA: 200 ppm TWA: 590 mg/m ³ STEL: 250 ppm STEL: 700 mg/m ³
Dilithium tetrachlorocuprate		TWA: 1 mg/m ³		

Component	ACGIH TLV	OSHA PEL	NIOSH
Tetrahydrofuran 109-99-9 (97-98)	TWA: 50 ppm STEL: 100 ppm Skin	(Vacated) TWA: 200 ppm (Vacated) TWA: 590 mg/m ³ (Vacated) STEL: 250 ppm (Vacated) STEL: 735 mg/m ³ TWA: 200 ppm TWA: 590 mg/m ³	IDLH: 2000 ppm TWA: 200 ppm TWA: 590 mg/m ³ STEL: 250 ppm STEL: 735 mg/m ³
Dilithium tetrachlorocuprate 15489-27-7 (2-3)	TWA: 1 mg/m ³		IDLH: 100 mg/m ³ REL = 1 mg/m ³ (TWA)

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures

Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment. Wherever possible, engineering control measures such as the isolation or enclosure of the

process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection Goggles
Hand Protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Glove material	Breakthrough time	Glove thickness	Glove comments
Butyl rubber	See manufacturers recommendations	-	Splash protection only

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Recommended Filter type: low boiling organic solvent Type AX Brown conforming to EN371 or Organic gases and vapours filter Type A Brown conforming to EN14387

When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls

No information available.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

9. Physical and chemical properties

Appearance

Physical State Liquid
Color Red brown
Odor No information available
Odor Threshold No information available

Property

Melting Point/Range No data available
Softening Point No data available
Boiling Point/Range No information available
Flash Point -17 °C / 1.4 °F
Flammability (liquid) Highly flammable
Flammability (solid,gas) Not applicable
Explosion Limits No data available

Remarks • Method

Method - No information available
 On basis of test data
 Liquid

Autoignition Temperature No data available
Decomposition Temperature No data available
pH No information available
Viscosity No data available
Water Solubility Miscible
Solubility in other solvents No information available
Partition Coefficient (n-octanol/water)

Component	log Pow	
Tetrahydrofuran	0.45	
Vapor Pressure	No data available	
Density / Specific Gravity	0.910	
Bulk Density	Not applicable	Liquid
Vapor Density	No data available	(Air = 1.0)
Particle characteristics	Not applicable (liquid)	

Other Information

Molecular Formula	Cl4 Cu Li2
Molecular Weight	219.24
Explosive Properties	Vapors may form explosive mixtures with air

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	May form explosive peroxides. Hygroscopic.
Conditions to Avoid	Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition. Exposure to moist air or water.
Incompatible Materials	Strong oxidizing agents
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO ₂), Copper oxides, Hydrogen chloride gas
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological information

Information on expected route of exposure

Inhalation	Irritating to respiratory system. May be harmful if inhaled. INHALATION MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS.
Ingestion	May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Eyes	Irritating to eyes.
Skin	Irritating to skin. May be harmful in contact with skin.

Toxicology data for the components

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Tetrahydrofuran	1650 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	180 mg/L (Rat) 1 h 53.9 mg/L (Rat) 4 h

Toxicologically Synergistic Products	No information available
(b) skin corrosion/irritation;	Based on available data, the classification criteria are not met
(c) serious eye damage/irritation;	Category 2
(d) respiratory or skin sensitization;	
Respiratory	Based on available data, the classification criteria are not met
Skin	Based on available data, the classification criteria are not met

Component	Test method	Test species	Study result
Tetrahydrofuran 109-99-9 (97-98)	Local Lymph Node Assay OECD Test Guideline 429	mouse	non-sensitising

(e) germ cell mutagenicity; Based on available data, the classification criteria are not met

Component	Test method	Test species	Study result
Tetrahydrofuran 109-99-9 (97-98)	OECD Test Guideline 476 Gene cell mutation	in vivo Mammalian	negative
	OECD Test Guideline 473 Chromosomal aberration assay	in vitro Mammalian	negative

(f) carcinogenicity; Category 2

The table below indicates whether each agency has listed any ingredient as a carcinogen
Limited evidence of a carcinogenic effect

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Tetrahydrofuran	109-99-9	Group 2B	Not listed	A3	X	A3
Dilithium tetrachlorocuprate	15489-27-7	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH: (American Conference of Governmental Industrial Hygienists)

A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

(g) reproductive toxicity; Based on available data, the classification criteria are not met

Component	Test method	Test species / Duration	Study result
Tetrahydrofuran 109-99-9 (97-98)	OECD Test Guideline 416	Rat 2 Generation	NOAEL = 3,000 ppm

(h) STOT-single exposure; Category 3

Results / Target organs Respiratory system, Central nervous system (CNS).

(i) STOT-repeated exposure; Based on available data, the classification criteria are not met

Target Organs None known.

(j) aspiration hazard; Based on available data, the classification criteria are not met

Other Adverse Effects The toxicological properties have not been fully investigated.

Symptoms / effects, both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. Causes central nervous system depression.

Other Adverse Effects The toxicological properties have not been fully investigated.

Endocrine Disrupting Properties This product does not contain any known or suspected endocrine disruptors.

Component	EU - Endocrine Disruptors Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Tetrahydrofuran	Group III Chemical	Not applicable	Not applicable

12. Ecological information

Ecotoxicity

Do not empty into drains. May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Tetrahydrofuran	Not listed	2160 mg/l LC50 = 96 h Pimephales promelas Leuciscus idus: LC50: 2820 mg/L/48h	Not listed	EC50 48 h 3485 mg/l EC50: >10000 mg/L/24h

Persistence and Degradability May persist based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility . Will likely be mobile in the environment due to its water solubility.

Component	log Pow
Tetrahydrofuran	0.45

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Tetrahydrofuran - 109-99-9	U213	-

14. Transport information

DOT

UN-No UN1993
 Proper Shipping Name Flammable liquid, n.o.s.
 Technical Shipping Name Tetrahydrofuran
 Hazard Class 3
 Packing Group II

TDG

UN-No UN1993
 Proper Shipping Name Flammable liquid, n.o.s.
 Technical Shipping Name Tetrahydrofuran
 Hazard Class 3
 Packing Group II

IATA

UN-No UN1993
 Proper Shipping Name Flammable liquid, n.o.s.
 Technical Shipping Name Tetrahydrofuran
 Hazard Class 3
 Packing Group II

IMDG/IMO

UN-No UN1993
 Proper Shipping Name Flammable liquid, n.o.s.
 Technical Shipping Name Tetrahydrofuran
 Hazard Class 3
 Packing Group II

15. Regulatory information

International Inventories

Component	CAS-No	DSL	NDSL	TSCA	TSCA Inventory notification -	EINECS	ELINCS	NLP

					Active-Inactive			
Tetrahydrofuran	109-99-9	X	-	X	ACTIVE	203-726-8	-	-
Dilithium tetrachlorocuprate	15489-27-7	-	-	-	-	-	-	-

Component	CAS-No	IECSC	KECL	ENCS	ISHL	TCSI	AICS	NZIoC	PICCS
Tetrahydrofuran	109-99-9	X	KE-33454	X	X	X	X	X	X
Dilithium tetrachlorocuprate	15489-27-7	-	KE-11001	-	-	X	-	X	-

Legend:

X - Listed '-' - Not listed

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances**IECSC** - Chinese Inventory of Existing Chemical Substances**KECL** - Korean Existing and Evaluated Chemical Substances**ENCS** - Japanese Existing and New Chemical Substances**AICS** - Australian Inventory of Chemical Substances**PICCS** - Philippines Inventory of Chemicals and Chemical Substances**Canada**

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and its amendments and meets the requirements of the HPR (Paragraph 13(1)(a) of the revised Hazardous Products Act (HPA)).

Component	Canada - National Pollutant Release Inventory (NPRI)	Canadian Environmental Protection Agency (CEPA) - List of Toxic Substances	Canada's Chemicals Management Plan (CEPA)
Tetrahydrofuran	Part 5, Individual Substances Part 4 Substance		
Dilithium tetrachlorocuprate	Part 1, Group A Substance		

Other International Regulations**Authorisation/Restrictions according to EU REACH**

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Tetrahydrofuran	-	Use restricted. See entry 75. (see link for restriction details)	-

REACH links<https://echa.europa.eu/substances-restricted-under-reach>**Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?**

Not applicable

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS-No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Tetrahydrofuran	109-99-9	Listed	Not applicable	Not applicable	Not applicable
Dilithium tetrachlorocuprate	15489-27-7	Not applicable	Not applicable	Not applicable	Not applicable

Component	CAS-No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)

		Notification	Requirements		
Tetrahydrofuran	109-99-9	Not applicable	Not applicable	Not applicable	Not applicable
Dilithium tetrachlorocuprate	15489-27-7	Not applicable	Not applicable	Not applicable	Annex I - Y22

16. Other information

Prepared By	Product stewardship (Regulatory Affairs) Thermo Fisher Scientific email - begel.sdsdesk@thermofisher.com
Creation Date	07-December-2009
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Revision Summary	This document has been updated to comply with the requirements of WHMIS 2015 which includes the amended Hazardous Products Act (HPA) and the Hazardous Products Regulation (HPR) to align with the Globally Harmonised System (GHS) (V7/8) for the Classification and Labelling of Chemicals.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS