SAFETY DATA SHEET

Issuing Date 03-Aug-2020

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Revision Number 2

NGHS / English



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1. IDENTIFICATION

Product identifier

Product Name Li-Polymer battery 602530

Other means of identification

Product Code(s) 1594925

Recommended use of the chemical and restrictions on use

Recommended Use Lithium Ion Battery

Restrictions on use No information available

Details of the supplier of the safety data sheet

Supplier Identification Clio Designs Inc

Address 1000 Highland Ave

Needham MA 02494 US

Telephone Phone:781-449-9500

Fax:617-507-5653

E-mail blamontagne@cliodesigns.com

Emergency telephone number

Company Emergency Phone

617-447-4256

Number

2. HAZARDS IDENTIFICATION

Classification

Acute toxicity - Dermal	Category 3
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A



Carcinogenicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 1

This is a battery. In case of rupture: the above hazards exist.

Appearance Solid Physical state Solid Odor No information available

GHS Label elements, including precautionary statements

Danger

Hazard statements

Toxic in contact with skin
Causes skin irritation
Causes serious eye irritation
Suspected of causing cancer
Causes damage to organs through prolonged or repeated exposure



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

Wash face, hands and any exposed skin thoroughly after handling

Do not breathe dust/fume/gas/mist/vapors/spray

Do not eat, drink or smoke when using this product

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention

Specific treatment (see supplemental first aid instructions on this label)

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing If eye irritation persists: Get medical advice/attention

Skin

IF ON SKIN: Wash with plenty of water and soap

Call a POISON CENTER or doctor if you feel unwell

Take off immediately all contaminated clothing and wash it before reuse

If skin irritation occurs: Get medical advice/attention

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Other information

May be harmful if swallowed. Very toxic to aquatic life with long lasting effects.

Unknown acute toxicity 98 % of the mixture consists of ingredient(s) of unknown toxicity

86 % of the mixture consists of ingredient(s) of unknown acute oral toxicity



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96 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity

98 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)

98 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)

98 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not applicable.

Mixture

Chemical name	CAS No.	Weight-%	Hazardous Material Information Review Act registry number (HMIRA registry #)	Date HMIRA filed and date exemption granted (if applicable)
Lithium Cobalt Oxide (CoLiO2)	12190-79-3	32	-	-
Graphite	7782-42-5	30	-	-
Copper	7440-50-8	11	-	-
Ethylene carbonate	96-49-1	9	-	-
Aluminum	7429-90-5	7	-	-
Phosphate(1-), hexafluoro-, lithium	21324-40-3	2	-	-
Propylene carbonate	108-32-7	1	-	-

4. FIRST AID MEASURES

Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is

required. IF exposed or concerned: Get medical advice/attention. First aid is upon rupture of

sealed battery.

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur.

Eye contact Get immediate medical advice/attention. Rinse immediately with plenty of water, also under

the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact

lenses, if present and easy to do. Continue rinsing. Do not rub affected area.

Skin contactGet immediate medical advice/attention. Wash off immediately with soap and plenty of

water while removing all contaminated clothes and shoes.

Ingestion Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water.

Never give anything by mouth to an unconscious person. Get immediate medical

advice/attention.

Self-protection of the first aider Ensure that medical personnel are aware of the material(s) involved, take precautions to

protect themselves and prevent spread of contamination. Wear personal protective clothing

(see section 8). Avoid direct contact with skin. Use barrier to give mouth-to-mouth

resuscitation. Avoid contact with skin, eyes or clothing.

Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation.



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Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the

surrounding environment.

Large Fire CAUTION: Use of water spray when fighting fire may be inefficient.

Unsuitable extinguishing media Do not scatter spilled material with high pressure water streams.

Specific hazards arising from the

chemical

No information available.

Hazardous Combustion Products Carbon oxides.

Explosion Data

Sensitivity to Mechanical Impact None. Sensitivity to Static Discharge

Special protective equipment for

fire-fighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout

gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal Personal precautions

protective equipment as required. Evacuate personnel to safe areas.

Other Information Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with Advice on safe handling

skin, eyes or clothing. Ensure adequate ventilation. Take off contaminated clothing and wash before reuse. Do not eat, drink or smoke when using this product. In case of rupture.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up.



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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits

Chemical name		ACGIH T	LV	0:	SHA PEL		NIOSH IDLH
Lithium Cobalt Oxide (CoLi	O2)	TWA: 0.02 r	mg/m³		-		
12190-79-3							
Graphite		TWA: 2 mg/m³ respirable		TWA: 15 mg/m³ total dust			IDLH: 1250 mg/m ³
7782-42-5		particulate matte			synthetic	TWA:	2.5 mg/m³ respirable
		except graphit	te fibers		ng/m³ respirable		dust
					on synthetic		
					TWA: 2.5 mg/m ³		
					le dust natural VA: 10 mg/m³ total		
					t synthetic		
) TWA: 5 mg/m ³		
					fraction synthetic		
					5 mppcf natural		
Copper		TWA: 0.2 mg/n	n³ fume		1 mg/m³ fume	IDLH:	100 mg/m ³ dust, fume
7440-50-8					/m³ dust and mist		and mist
				(vacated) T	WA: 0.1 mg/m ³ Cu	TWA:	1 mg/m ³ dust and mist
					, fume, mist		'A: 0.1 mg/m ³ fume
Aluminum		TWA: 1 mg/m ³ ı		TWA: 15 mg/m³ total dust			: 10 mg/m³ total dust
7429-90-5		particulate r	matter	TWA: 5 mg/m³ respirable		TWA: 5	mg/m³ respirable dust
				fraction (vacated) TWA: 15 mg/m³ total			
				(vacated) IV	•		
				(veceted	dust) TWA: 5 mg/m³		
					able fraction		
Phosphate(1-), hexafluore	n-	TWA: 2.5 mg	g/m³ F		2.5 mg/m ³ F	1	DLH: 250 mg/m ³ F
lithium	,	1777 2.10 1115	9,		TWA: 2.5 mg/m ³		22. 1. 200 mg/m 1
21324-40-3				(,	- 3		
Chemical name		Alberta	British C	Columbia	Ontario TWAE	V	Quebec
Lithium Cobalt Oxide	ΤV	VA: 0.02 mg/m ³	TWA: 0.0	02 mg/m ³	TWA: 0.02 mg/	m³	TWA: 0.02 mg/m ³
(CoLiO2)							-
12190-79-3							
Graphite	7	ΓWA: 2 mg/m³	TWA: 2	2 mg/m³	TWA: 2 mg/m	3	TWA: 2 mg/m ³
7782-42-5							
Copper		WA: 0.2 mg/m ³		l mg/m³	TWA: 0.2 mg/r		TWA: 0.2 mg/m ³
7440-50-8		ΓWA: 1 mg/m ³		.2 mg/m ³	TWA: 1 mg/m		TWA: 1 mg/m ³
Aluminum	I	WA: 10 mg/m ³	I WA: 1.	.0 mg/m ³	TWA: 1 mg/m	3	TWA: 10 mg/m ³
7429-90-5	-	MA . O. F/2	T)4/4 0	5 / 2	T\\\\\ \. \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	- 2	TMA: 0.5/ 2
Phosphate(1-), hexafluoro-, lithium	1,	WA: 2.5 mg/m ³	IWA: 2.	.5 mg/m ³	TWA: 2.5 mg/r	n ^o	TWA: 2.5 mg/m ³
21324-40-3							
21024-40-0			1		l		

Other Exposure Guidelines

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962

(11th Cir., 1992). See section 15 for national exposure control parameters.

Appropriate engineering controls

Engineering controls

Showers

Eyewash stations Ventilation systems.

Individual protection measures, such as personal protective equipment



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Wear safety glasses with side shields (or goggles). Eye/face protection

Hand protection Wear suitable gloves. Impervious gloves.

Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron. Skin and body protection

No protective equipment is needed under normal use conditions. If exposure limits are Respiratory protection

exceeded or irritation is experienced, ventilation and evacuation may be required.

Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do General hygiene considerations

not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state Solid Solid **Appearance**

Odor No information available Color No information available **Odor Threshold** No information available

Property Values Remarks Method

No data available Hq None known None known Melting / freezing point No data available Boiling point / boiling range No data available None known Flash Point No data available None known No data available **Evaporation Rate** None known Flammability (solid, gas) No data available None known None known

Flammability Limit in Air

Upper flammability limit No data available Lower flammability limit No data available

Vapor pressure No data available None known Vapor density No data available None known Relative density No data available None known

Water Solubility Insoluble in water Solubility(ies) No data available

None known

Partition coefficient: n-octanol/waterN/A

Autoignition temperature No data available None known **Decomposition temperature** No data available None known Kinematic viscosity No data available None known Dynamic viscosity No data available None known

Other Information

No information available **Explosive properties Oxidizing properties** No information available **Softening Point** No information available **Molecular Weight** No information available **VOC Content (%)** No information available **Liquid Density** No information available **Bulk Density** No information available **Particle Size** No information available **Particle Size Distribution** No information available



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10. STABILITY AND REACTIVITY

Reactivity No information available.

Chemical stability Stable under normal conditions.

Possibility of Hazardous Reactions None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to avoid None known based on information supplied.

Incompatible materials Strong acids. Strong bases. Strong oxidizing agents.

Hazardous Decomposition Products Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information Product does not present an acute toxicity hazard based on known or supplied information

In case of rupture

Inhalation Specific test data for the substance or mixture is not available. May cause irritation of

respiratory tract.

Eye contact Specific test data for the substance or mixture is not available. Irritating to eyes. (based on

components). Causes serious eye irritation.

Skin contact Specific test data for the substance or mixture is not available. Causes skin irritation. (based

on components). Toxic in contact with skin.

Ingestion Specific test data for the substance or mixture is not available. Ingestion may cause

gastrointestinal irritation, nausea, vomiting and diarrhea. May be harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Redness. May cause redness and tearing of the eyes.

Numerical measures of toxicity

Acute Toxicity

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral) 2,837.20 mg/kg ATEmix (dermal) 600.00 mg/kg

Unknown acute toxicity 98 % of the mixture consists of ingredient(s) of unknown toxicity

86 % of the mixture consists of ingredient(s) of unknown acute oral toxicity

96 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity

98 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas) 98 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)

98 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Lithium Cobalt Oxide (CoLiO2)	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rat)	> 5.05 mg/L (Rat) 4 h



Graphite	-	-	> 2000 mg/m³ (Rat) 4 h
Ethylene carbonate	= 10 g/kg (Rat)	-	> 730 mg/m³(Rat)8 h
Propylene carbonate	= 29000 mg/kg (Rat)	> 3000 mg/kg (Rabbit)	-

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Classification based on data available for ingredients. Irritating to skin.

Serious eye damage/eye irritation Classification based on data available for ingredients. Causes serious eye irritation.

No information available. Respiratory or skin sensitization No information available. Germ cell mutagenicity

Carcinogenicity Contains a known or suspected carcinogen. Classification based on data available for

ingredients. Suspected of causing cancer.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

	Chemical name	ACGIH	IARC	NTP	OSHA
	Lithium Cobalt Oxide	A3	Group 2B	Reasonably Anticipated	Χ
	(CoLiO2)				
1	12190-79-3				ļ

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)

A3 - Animal Carcinogen

IARC (International Agency for Research on Cancer)

Group 2B - Possibly Carcinogenic to Humans

NTP (National Toxicology Program)

Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - Present

No information available. Reproductive toxicity

STOT - single exposure No information available.

STOT - repeated exposure Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
0 1.7		001 1 050 400 #	Microorganisms	i iea)
Graphite	-	96h LC50: > 100 mg/L	-	-
		(Danio rerio)		
Copper	96h EC50: 0.031 - 0.054	96h LC50: 0.0068 -	-	48h EC50: = 0.03 mg/L
	mg/L	0.0156 mg/L (Pimephales		(Daphnia magna)
	(Pseudokirchneriella	promelas) 96h LC50: <		, ,
	subcapitata) 72h EC50:	0.3 mg/L (Pimephales		
	0.0426 - 0.0535 mg/L	promelas) 96h LC50: =		
	(Pseudokirchneriella	0.052 mg/L		
	` subcapitata)	(Oncorhynchus mykiss)		
		96h LC50: = 0.112 mg/L		



		(Poecilia reticulata) 96h		
		LC50: = 0.2 mg/L		
		(Pimephales promelas)		
		96h LC50: = 0.3 mg/L		
		(Cyprinus carpio) 96h		
		LC50: = 0.8 mg/L		
		(Cyprinus carpio) 96h		
		LC50: = 1.25 mg/L		
		(Lepomis macrochirus)		
Ethylene carbonate	-	96h LC50: > 100 mg/L	-	-
		(Oncorhynchus mykiss)		
Propylene carbonate	72h EC50: > 500 mg/L	96h LC50: > 1000 mg/L	EC50 > 10000 mg/L 17 h	48h EC50: > 500 mg/L
	(Desmodesmus	(Cyprinus carpio)		(Daphnia magna)

Persistence and Degradability

No information available.

subspicatus)

Bioaccumulation

Component Information

Chemical name	Log Pow
Propylene carbonate	0.48

Mobility

No information available.

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused

products

Dispose of in accordance with local regulations. Dispose of waste in accordance with

environmental legislation.

Contaminated packaging Do not reuse empty containers.

California Waste Codes 141

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical name	California Hazardous Waste
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	Toxic
Aluminum 7429-90-5	Ignitable powder

14. TRANSPORT INFORMATION

Note:

The transportation of primary lithium cells and batteries is regulated by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code and the US Department of Transportation. The batteries must meet the following criteria for shipment: 1. Air shipments must meet the requirements listed in Special Provision A45 of the International Air Transport Association Dangerous Goods Regulations. 2. Meet the requirements for the US Department of Transportation listed in 49 CFR 173.185. 3. The transport of primary lithium batteries is prohibited aboard



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passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard Research Figs. Bulg)

Passenger Aircraft; Final Rule)

Lithium batteries shipped as "Lithium batteries", "Lithium batteries packed with equipment", or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "special provision A45 of IATA-DGR" or "special provision 188 of IMO-IMDG Code"

DOT NOT REGULATED

Proper Shipping Name NON-REGULATED

Hazard Class Emergency Response Guide

Number

N/A 147

TDG Not regulated

MEX Not regulated

ICAO Not regulated

Not regulated

Proper Shipping Name NON REGULATED

Hazard Class N/A ERG Code 9F

IMDG/IMO Not regulated

Hazard Class N/A EmS-No. F-A, S-I

RID Not regulated

ADR Not regulated

Tunnel restriction code (E)

ADN Not regulated

15. REGULATORY INFORMATION

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

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

International Inventories

TSCA

Contact supplier for inventory compliance status.

<u>Legend</u>

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory



DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	CAS No.	Weight-%	SARA 313 - Threshold Values %
Lithium Cobalt Oxide (CoLiO2) - 12190-79-3	12190-79-3	32	0.1
Copper - 7440-50-8	7440-50-8	11	1.0
Aluminum - 7429-90-5	7429-90-5	7	1.0

SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications. Under the amended regulations at 40 CFR 370, EPCRA 311/312 Tier II reporting for the 2017 calendar year will need to be consistent with updated hazard classifications.

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Copper		X	X	
7440-50-8				

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Copper	5000 lb		RQ 5000 lb final RQ
7440-50-8			RQ 2270 kg final RQ

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations.

Chemical name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Lithium Cobalt Oxide	X		X	X	X
(CoLiO2)					
12190-79-3					
Graphite	X	X	X		
7782-42-5					
Copper	X	X	X	X	Χ



7440-50-8					
Ethylene carbonate 96-49-1		Х	X		
Aluminum 7429-90-5	Х	Х	X	Х	
Phosphate(1-), hexafluoro-, lithium 21324-40-3	Х				

16. OTHER INFORMATION

NFPA Health hazards 1 Flammability 0 Instability 0 Physical and Chemical

Properties -

HMIS Health hazards 0 Flammability 0 Physical hazards 0 Personal Protection X

Prepared By Product Stewardship

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Revision Note No information available

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 Safety Data Sheet

