

SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
US OSHA Hazard Communication Standard 2024 (29 CFR 1910.1200) and Canada Hazardous Products Act (HPA) and the
Hazardous Products Regulation (HPR), as amended

Issuing Date 06-Apr-2026

Revision date 06-Apr-2026

Revision Number 1

1. Identification

Product identifier

Product Name Rechargeable Li-ion Battery L22B3PF2 by BYD

Other means of identification

Product Code(s) 1903971

Synonyms None

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 Name Lenovo LNB laptops

Supplier Address

Songtao Road 696
shanghai
shanghai
201203
CN

Emergency telephone number

Supplier Phone Number Phone:18116118603

24 Hour Emergency Phone Number 18116118603

Emergency Telephone No information available

2. Hazard(s) identification

Classification of the substance or mixture

Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Carcinogenicity	Category 1B
Specific target organ toxicity (repeated exposure)	Category 1

Label elements



Danger

Hazard statements

Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause 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 and face protection.
Do not breathe dust.
Wash face, hands and any exposed skin thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
Do not eat, drink or smoke when using this product.

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention.
Immediately call a POISON CENTER or doctor.
Specific treatment (see supplemental first aid instructions on this label).

Eyes

Immediately call a POISON CENTER or doctor.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Skin

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
Wash contaminated clothing before reuse.
IF ON SKIN: Wash with plenty of water and soap.
If skin irritation or rash occurs: Get medical advice and attention.
Take off contaminated clothing and wash it before reuse.

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor.

Ingestion

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Precautionary Statements - Storage

Store locked up.

Precautionary Statements - Disposal

Dispose of contents and container in accordance with local, regional, national, and international regulations as applicable.

Hazards classified under paragraph (d)(1)(ii) of 1910.1200

No information available.

Other information

May be harmful if swallowed. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects. This is a battery. In case of rupture: the above hazards exist.

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 (CoLiO ₂)	12190-79-3	45	-	-
Graphite	7782-42-5	25	-	-
Propylene carbonate	108-32-7	10	-	-
Propyl propionate	106-36-5	10	-	-
Ethylene carbonate	96-49-1	10	-	-
Copper	7440-50-8	10	-	-
Phosphate(1-), hexafluoro-, lithium	21324-40-3	5	-	-
Nickel	7440-02-0	5	-	-
Aluminum	7429-90-5	5	-	-
Ci 77266	1333-86-4	2	-	-

4. First-aid measures**Description of first aid measures**

General advice	Immediate medical attention is required. Show this safety data sheet to the doctor in attendance. IF exposed or concerned: Get medical advice/attention. First aid is upon rupture of sealed battery. In case of rupture:
Inhalation	Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical attention.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical attention. May cause an allergic skin reaction.
Ingestion	Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate medical 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. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Symptoms	Burning. Burning sensation. Redness. May cause blindness. Coughing and/ or wheezing. May cause redness and tearing of the eyes. Itching. Rashes. Hives.
Effects of Exposure	May cause cancer. Causes damage to organs through prolonged or repeated exposure.

Indication of any immediate medical attention and special treatment needed

Note to physicians

Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitization in susceptible persons. Treat symptomatically.

5. Fire-fighting measures

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

Do not scatter spilled material with high pressure water streams.

Specific hazards arising from the chemical

The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. Product is or contains a sensitizer. May cause sensitization by skin contact.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Special protective equipment and precautions 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

Personal precautions

Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

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.

Prevention of secondary hazards

Clean contaminated objects and areas thoroughly observing environmental regulations.

7. Handling and storage

Precautions for safe handling

Advice on safe handling

In case of rupture: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

General hygiene considerations

Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing

and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. 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.

Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.

8. Exposure controls/personal protection

Control Parameters

Exposure Limits

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	TWA: 0.02 mg/m ³	-	-
Graphite 7782-42-5	TWA: 2 mg/m ³ respirable particulate matter all forms except graphite fibers	TWA: 15 mg/m ³ total dust synthetic TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf respirable dust natural (vacated) TWA: 2.5 mg/m ³ respirable dust natural (vacated) TWA: 10 mg/m ³ total dust synthetic (vacated) TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m ³ TWA: 2.5 mg/m ³ respirable dust
Copper 7440-50-8	TWA: 0.2 mg/m ³ fume	TWA: 0.1 mg/m ³ fume TWA: 1 mg/m ³ dust and mist (vacated) TWA: 0.1 mg/m ³ Cu dust, fume, mist	TWA: 1 mg/m ³ ; dust and mist TWA: 0.1 mg/m ³ ; fume IDLH: 100 mg/m ³ dust, fume and mist
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m ³ F	TWA: 2.5 mg/m ³ F (vacated) TWA: 2.5 mg/m ³	IDLH: 250 mg/m ³ F
Nickel 7440-02-0	TWA: 1.5 mg/m ³	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 10 mg/m ³ TWA: 0.015 mg/m ³
Aluminum 7429-90-5	TWA: 1 mg/m ³ respirable particulate matter	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 15 mg/m ³ total dust (vacated) TWA: 5 mg/m ³ respirable fraction	TWA: 10 mg/m ³ ; total dust TWA: 5 mg/m ³ ; respirable dust
Ci 77266 1333-86-4	TWA: 3 mg/m ³ inhalable particulate matter	TWA: 3.5 mg/m ³ (vacated) TWA: 3.5 mg/m ³	TWA: 3.5 mg/m ³ ; TWA: 0.1 mg/m ³ ; Carbon black in presence of Polycyclic aromatic hydrocarbons PAH IDLH: 1750 mg/m ³

Chemical name	Alberta	British Columbia	Ontario	Quebec
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable DS	TWA: 0.02 mg/m ³ ;	TWAEV: 0.02 mg/m ³ ; inhalable aerosol fraction

		RS		
Graphite 7782-42-5	TWA: 2 mg/m ³ ; respirable	TWA: 2 mg/m ³ ; respirable	TWA: 2 mg/m ³ ; respirable particulate matter	TWAEV: 2 mg/m ³ ; respirable dust
Copper 7440-50-8	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWA: 1 mg/m ³ ; dust and mist TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWAEV: 0.2 mg/m ³ ; fume TWAEV: 1 mg/m ³ ; dust and mist
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWAEV: 2.5 mg/m ³ ;
Nickel 7440-02-0	TWA: 1.5 mg/m ³ ;	TWA: 0.05 mg/m ³ ;	TWA: 1 mg/m ³ ; inhalable fraction	TWAEV: 1.5 mg/m ³ ; inhalable dust
Aluminum 7429-90-5	TWA: 10 mg/m ³ ; dust	TWA: 1.0 mg/m ³ ; respirable	TWA: 1 mg/m ³ ; respirable particulate matter	TWAEV: 10 mg/m ³ ;
Ci 77266 1333-86-4	TWA: 3.5 mg/m ³ ;	TWA: 3 mg/m ³ ; inhalable	TWA: 3 mg/m ³ ; inhalable particulate matter	TWAEV: 3 mg/m ³ ; inhalable dust

Chemical name	Manitoba	New Brunswick	Newfoundland and Labrador	Nova Scotia
Lithium Cobalt Oxide (CoLiO ₂)	TWA: 0.02 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ; inhalable particulate matter DS RS
Graphite	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable particulate matter
Copper	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume
Phosphate(1-), hexafluoro-, lithium	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;
Nickel	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable fraction	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable particulate matter
Aluminum	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 1 mg/m ³ ; respirable fraction	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 1 mg/m ³ ; respirable particulate matter
Ci 77266	TWA: 3 mg/m ³ ; inhalable particulate matter	TWA: 3 mg/m ³ ; inhalable fraction	TWA: 3 mg/m ³ ; inhalable particulate matter	TWA: 3 mg/m ³ ; inhalable particulate matter

Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
Lithium Cobalt Oxide (CoLiO ₂)	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ ; Designated substance	TWA: 0.02 mg/m ³ ; inhalable particulate matter	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ ; Designated Chemical Substance	-
Graphite	TWA: 2 mg/m ³ ; respirable fraction STEL: 4 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable fraction STEL: 4 mg/m ³ ; respirable fraction	TWA: 20 mppcf; TWA: 30 mppcf; TWA: 10 mg/m ³ ;
Copper	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist

Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
	STEL: 3 mg/m ³ ; dust and mist STEL: 0.6 mg/m ³ ; fume		STEL: 0.6 mg/m ³ ; fume STEL: 3 mg/m ³ ; dust and mist	STEL: 0.2 mg/m ³ ; fume STEL: 2 mg/m ³ ; dust and mist
Phosphate(1-), hexafluoro-, lithium	-	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ; STEL: 5 mg/m ³ ;	TWA: 2.5 mg/m ³ ; STEL: 2.5 mg/m ³ ;
Nickel	TWA: 1.5 mg/m ³ ; inhalable fraction STEL: 3 mg/m ³ ; inhalable fraction Designated substance	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable fraction STEL: 3 mg/m ³ ; inhalable fraction Designated Chemical Substance	TWA: 1 mg/m ³ ; STEL: 3 mg/m ³ ;
Aluminum	TWA: 10 mg/m ³ ; dust STEL: 20 mg/m ³ ; dust	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 10 mg/m ³ ; dust STEL: 20 mg/m ³ ; dust	-
Ci 77266	TWA: 3.5 mg/m ³ ; STEL: 7 mg/m ³ ;	TWA: 3 mg/m ³ ; inhalable particulate matter	TWA: 3.5 mg/m ³ ; STEL: 7 mg/m ³ ;	TWA: 3.5 mg/m ³ ; STEL: 7 mg/m ³ ;

Note See section 16 for terms and abbreviations.

Other information on limit values Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Biological occupational exposure limits

Chemical name	ACGIH
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	15 µg/L - urine (Cobalt) - end of shift at end of workweek
Phosphate(1-), hexafluoro-, lithium 21324-40-3	2 mg/L - urine (Fluoride) - prior to shift 3 mg/L - urine (Fluoride) - end of shift
Nickel 7440-02-0	5 µg/L - urine (Nickel) - post-shift at end of workweek

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection Face protection shield. Tight sealing safety goggles. Wear safety glasses with side shields (or goggles).

Hand protection Wear suitable gloves.

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

Respiratory protection Consult with an industrial hygienist to determine the appropriate respiratory protection for your specific use of this material. Use appropriate respiratory protection.

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Solid
Color	No information available
Odor (includes odor threshold)	Odorless
Odor threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
Melting point / freezing point	No data available	None known
Boiling point (or initial boiling point or boiling range)	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Flash point	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
SADT (°C)	No data available	None known
pH	No data available	None known
pH (as aqueous solution)	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Solubility	No data available	None known
Water solubility	No data available	None known
Partition coefficient n-octanol/water (log value)	1	None known
Vapor pressure (includes evaporation rate)	No data available	None known
Evaporation rate	No data available	None known
Density and/or relative density	No data available	None known
Bulk density	No data available	
Liquid Density	No data available	
Relative vapor density	No data available	None known
Particle characteristics		None known
Particle Size	No data available	
Particle Size Distribution	No data available	
<u>Other information</u>		
Miscible	No	

10. Stability and reactivity

Reactivity	No information available.
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	None under normal processing.
Conditions to avoid	Exposure to air or moisture over prolonged periods.
Incompatible materials	Acids. Bases. Oxidizing agent.
Hazardous decomposition products	None known based on information supplied.

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.
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In case of rupture:

Inhalation

Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal.

Eye contact

Specific test data for the substance or mixture is not available. Causes serious eye damage. (based on components). Corrosive to the eyes and may cause severe damage including blindness. May cause irreversible damage to eyes.

Skin contact

Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. May cause sensitization by skin contact. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Ingestion

Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics**Symptoms**

Burning. Burning sensation. Redness. May cause blindness. Coughing and/ or wheezing. May cause redness and tearing of the eyes. Itching. Rashes. Hives.

Acute toxicity

No information available.

Numerical measures of toxicity

The following ATE values have been calculated for the mixture

ATEmix (oral)	4,309.70 mg/kg
ATEmix (dermal)	5,782.50 mg/kg
ATEmix (inhalation-gas)	45,000.00 ppm
ATEmix (inhalation-vapor)	110.00 mg/l
ATEmix (inhalation-dust/mist)	15.00 mg/l

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/m ³ (Rat) 4 h
Propylene carbonate	= 29000 mg/kg (Rat)	> 3000 mg/kg (Rabbit)	-
Propyl propionate	= 10331 mg/kg (Rat)	= 16 mL/kg (Rabbit)	-
Ethylene carbonate	= 10 g/kg (Rat)	> 26420 mg/kg (Rabbit)	> 730 mg/m ³ (Rat) 8 h
Copper	-	-	> 5.11 mg/L (Rat) 4 h
Nickel	> 9000 mg/kg (Rat)	-	> 10.2 mg/L (Rat) 1 h
Aluminum	-	-	> 0.888 mg/L (Rat) 4 h
Ci 77266	> 10000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 4.6 mg/m ³ (Rat) 4 h

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. Causes severe skin burns and eye damage.

Serious eye damage/eye irritation

Classification based on data available for ingredients. Causes serious eye damage. Causes burns.

Respiratory or skin sensitization May cause an allergic skin reaction.

Germ cell mutagenicity No information available.

Carcinogenicity Contains a known or suspected carcinogen. Classification based on data available for ingredients. May cause cancer.

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

Chemical name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt Oxide (CoLiO ₂)	A3 - Confirmed animal carcinogen (with unknown relevance to humans)	Group 2B - Possibly carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X
Phosphate(1-), hexafluoro-, lithium	A4 - Not classifiable as a human carcinogen	-	-	-
Nickel	A5 - Not suspected as a human carcinogen	Group 2B - Possibly carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X
Aluminum	A4 - Not classifiable as a human carcinogen	-	-	-
Ci 77266	A3 - Confirmed animal carcinogen (with unknown relevance to humans)	Group 2B - Possibly carcinogenic to humans	-	X

Reproductive toxicity No information available.

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. Toxic to aquatic life with long lasting effects.

Aquatic ecotoxicity

Component Information

Chemical name	Fish	Crustacea	Algae/aquatic plants	Toxicity to microorganisms
Graphite	96h LC50: > 100 mg/L (Danio rerio)	-	-	-
Propylene carbonate	96h LC50: > 1000 mg/L (Cyprinus carpio)	48h EC50: > 500 mg/L (Daphnia magna)	72h EC50: > 500 mg/L (Desmodesmus subspicatus)	EC50 > 10000 mg/L 17 h
Ethylene carbonate	96h LC50: > 100 mg/L (Oncorhynchus mykiss)	-	-	-
Copper	96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: < 0.3 mg/L (Pimephales promelas) 96h LC50: = 0.2 mg/L	48h EC50: = 0.03 mg/L (Daphnia magna)	72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.031 - 0.054 mg/L	-

	(Pimephales promelas) 96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: = 0.3 mg/L (Cyprinus carpio) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 0.112 mg/L (Poecilia reticulata)		(Pseudokirchneriella subcapitata)	
Nickel	96h LC50: > 100 mg/L (Brachydanio rerio) 96h LC50: = 1.3 mg/L (Cyprinus carpio) 96h LC50: = 10.4 mg/L (Cyprinus carpio)	48h EC50: > 100 mg/L (Daphnia magna) 48h EC50: = 1 mg/L (Daphnia magna)	72h EC50: = 0.18 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.174 - 0.311 mg/L (Pseudokirchneriella subcapitata)	-

Persistence and degradability No information available.

Bioaccumulative potential

Chemical name	Partition coefficient	Bioconcentration factor (BCF)	Trophic magnification factor (TMF)
Propylene carbonate	0.48	-	-
Ethylene carbonate	0.11	-	-

Mobility in soil No information available.

Other adverse effects No information available.

13. Disposal considerations

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

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

Transport hazard class(es)

Reportable quantity (lbs)

Reportable quantity (lbs)

(calculated)

Reportable quantity (kg)

Reportable quantity (kg)

(calculated)

DOT Marine Pollutant

Marine pollutant

Emergency Response Guide
Number

NOT REGULATED

N/A

Copper: RQ (lb)= 5000.00, Nickel: RQ (lb)= 100.00

Copper: RQ (lb)= 50000.00, Nickel: RQ (lb)= 2000.00

(Copper: RQ (kg)= 2270.00, Nickel: RQ (kg)= 45.40)

Copper: RQ (kg)= 22700.00, Nickel: RQ (kg)= 908.00

PP

Copper

147

TDG

Not applicable

UN number or ID number

UN proper shipping name

Transport hazard class(es)

Description

Special Provisions

UN3480

LITHIUM ION BATTERIES

9

UN3480, LITHIUM ION BATTERIES, 9

A88, A99, A154, A183, A201, A213

IATA

UN number or ID number

UN proper shipping name

Transport hazard class(es)

Environmental hazards

ERG Code

Description

UN3480

LITHIUM ION BATTERIES

9

Yes

12FZ

UN3480, LITHIUM ION BATTERIES, 9

Transport hazard class(es)

Marine pollutant indicator

EmS-No.

N/A

NP

F-A, S-I

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.

DSL/NDL	Contact supplier for inventory compliance status.
EINECS/ELINCS	Contact supplier for inventory compliance status.
ENCS	Contact supplier for inventory compliance status.
IECSC	Contact supplier for inventory compliance status.
KECL	Contact supplier for inventory compliance status.
PICCS	Contact supplier for inventory compliance status.
AIIC	Contact supplier for inventory compliance status.
NZIoC	Contact supplier for inventory compliance status.
TCSI	Contact supplier for inventory compliance status.

Legend:**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory**DSL/NDL** - 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**IECSC** - China Inventory of Existing Chemical Substances**KECL** - Korean Existing Chemicals Inventory**PICCS** - Philippines Inventory of Chemicals and Chemical Substances**AIIC** - Australian Inventory of Industrial Chemicals**NZIoC** - New Zealand Inventory of Chemicals**TCSI** - Taiwan Chemical Substance Inventory**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	SARA 313 - Threshold Values %
Lithium Cobalt Oxide (CoLiO ₂)	0.1
Copper	1.0
Aluminum	1.0
Nickel	0.1

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.

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	-
Nickel	-	X	X	-

CAA (Clean Air Act)

This product contains the following substances which are regulated pollutants to the Clean Air Act (CAA).

Chemical name	Hazardous air pollutants (HAPs)	Ozone-depleting substances (ODS)
Lithium Cobalt Oxide (CoLiO ₂)	Present	-

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
Copper	5000 lb	-

Nickel	100 lb	-
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US State Regulations**California Proposition 65**

This product contains the following Proposition 65 chemicals:.

Chemical name	California Proposition 65
Nickel	Carcinogen
Ci 77266	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Lithium Cobalt Oxide (CoLiO ₂)	X	-	X
Graphite	X	X	X
Ethylene carbonate	-	X	X
Ethyl propionate	X	X	X
Propyl propionate	-	X	X
Copper	X	X	X
Phosphate(1-), hexafluoro-, lithium	X	-	-
Aluminum	X	X	X
Nickel	X	X	X
Ci 77266	X	X	X

U.S. EPA Label Information**EPA Pesticide Registration Number** Not applicable**16. Other information**

NFPA	Health hazards 1	Flammability 0	Instability 0	Special hazards -
HMIS	Health hazards 0	Flammability 0	Physical hazards 0	Personal protection X

Key or legend to abbreviations and acronyms used in the safety data sheet

List may include phrases which are not applicable to this product

ACGIH	American Conference of Governmental Industrial Hygienists
ADN	Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Europe)
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road (Europe)
AIIC	Australian Inventory of Industrial Chemicals
ATE	Acute Toxicity Estimate
ASTM	American Society for the Testing of Materials
bar	Biological Reference Values for Chemical Compounds in the Work Area
BAT	Biological tolerance values for occupational exposure
BEL	Biological exposure limits
bw	Body weight
Ceiling	Maximum limit value
CMR	Carcinogen, Mutagen or Reproductive Toxicant
DOT	Department of Transportation (United States)
DSL	Domestic Substances List (Canada)
EmS	Emergency Schedule
ENCS	Existing and New Chemical Substances (Japan)
EPA	Environmental Protection Agency
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System

IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO	International Civil Aviation Organization
IECSC	Inventory of Existing Chemical Substances in China
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Organization for Standardization
KECI	Korean Existing Chemicals Inventory
LC50	Lethal Concentration to 50% of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
n.o.s.	Not Otherwise Specified
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NOELR	No Observable Effect Loading Rate
NTP	National Toxicology Program (United States)
NZIoC	New Zealand Inventory of Chemicals
OECD	Organization for Economic Cooperation and Development
OEL	Occupational exposure limits
OSHA	Occupational Safety and Health Administration of the US Department of Labor
PBT	Persistent, Bioaccumulative and Toxic substance
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PMT	Persistent, Mobile and Toxic
PPE	Personal protective equipment
QSAR	Quantitative Structure Activity Relationship
RID	Agreement concerning the International Carriage of Dangerous Goods by Rail (Europe)
SADT	Self-Accelerating Decomposition Temperature
SAR	Structure-activity relationship
SARA	Superfund Amendments and Reauthorization Act
SDS	Safety Data Sheet
SL	Surface Limit
STEL	Short Term Exposure Limit
STOT RE	Specific target organ toxicity - Repeated exposure
STOT SE	Specific target organ toxicity - Single exposure
TCSI	Taiwan Chemical Substance Inventory
TDG	Transport of Dangerous Goods (Canada)
TSCA	Toxic Substances Control Act (United States)
TWA	Time-Weighted Average
UN	United Nations
VOC	Volatile organic compounds
vPvB	Very Persistent and Very Bioaccumulative
vPvM	Very Persistent and Very Mobile
As	Allergenic substance
DS	Dermal Sensitizer
Ot	Ototoxicant
pOt	Ototoxicant - potential to cause hearing disorders
PS	Photosensitizer
RS	Respiratory Sensitizer
S	Sensitizer
poS	Sensitizer - capable of causing occupational asthma
Sa	Simple asphyxiant
Sd	Skin designation
pSd	Skin designation - potential for cutaneous absorption

Sdv	Skin designation - vacated
Sk	Skin notation
dSk	Skin notation - danger of cutaneous absorption
pSk	Skin notation - potential for cutaneous absorption

Key literature references and sources for data used to compile the SDS

U.S. Agency for Toxic Substances and Disease Registry (ATSDR)
 U.S. Environmental Protection Agency ChemView Database
 European Food Safety Authority (EFSA)
 U.S. Environmental Protection Agency
 Acute Exposure Guideline Level(s) (AEGL(s))
 U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
 U.S. Environmental Protection Agency High Production Volume Chemicals
 Food Research Journal
 Hazardous Substance Database
 International Uniform Chemical Information Database (IUCLID)
 Japan National Institute of Technology and Evaluation (NITE)
 Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
 NIOSH (National Institute for Occupational Safety and Health)
 National Library of Medicine's ChemID Plus (NLM CIP)
 National Library of Medicine's PubMed database (NLM PUBMED)
 U.S. National Toxicology Program (NTP)
 New Zealand's Chemical Classification and Information Database (CCID)
 International Organization for Economic Co-operation and Development (OECD) Environment, Health, and Safety Publications
 International Organization for Economic Co-operation and Development (OECD) High Production Volume Chemicals Program
 International Organization for Economic Co-operation and Development (OECD) Screening Information Data Set
 United Nations World Health Organization (WHO)

Prepared By Product Stewardship
 23 British American Blvd.
 Latham, NY 12110
 1-800-572-6501.

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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

SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
US OSHA Hazard Communication Standard 2024 (29 CFR 1910.1200) and Canada Hazardous Products Act (HPA) and the
Hazardous Products Regulation (HPR), as amended

Issuing Date 09-Apr-2026

Revision date 09-Apr-2026

Revision Number 1

1. Identification

Product identifier

Product Name Rechargeable Li-ion Battery L22D3PF2 by Sunwoda

Other means of identification

Product Code(s) 1903959

Synonyms None

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 Name Lenovo LNB laptops

Supplier Address

Songtao Road 696
shanghai
shanghai
201203
CN

Emergency telephone number

Supplier Phone Number Phone:18116118603

24 Hour Emergency Phone Number 18116118603

Emergency Telephone No information available

2. Hazard(s) identification

Classification of the substance or mixture

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Vapors)	Category 3
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Carcinogenicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 1

Label elements



Danger

Hazard statements

Harmful if swallowed.
Toxic if inhaled.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause 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 and face protection.
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.
Do not breathe dust.
Contaminated work clothing should not be allowed out of the workplace.

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention.
Immediately call a POISON CENTER or doctor.
Specific treatment (see supplemental first aid instructions on this label).

Eyes

Immediately call a POISON CENTER or doctor.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Skin

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
Wash contaminated clothing before reuse.
IF ON SKIN: Wash with plenty of water and soap.
If skin irritation or rash occurs: Get medical advice and attention.
Take off contaminated clothing and wash it before reuse.

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER or doctor.
Immediately call a POISON CENTER or doctor.

Ingestion

IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
Rinse mouth.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Precautionary Statements - Storage

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

Precautionary Statements - Disposal

Dispose of contents and container in accordance with local, regional, national, and international regulations as applicable.

Unknown acute toxicity

86 % of the mixture consists of ingredient(s) of unknown acute oral toxicity.
126 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor).

Hazards classified under paragraph (d)(1)(ii) of 1910.1200

No information available.

Other information

This is a battery. In case of rupture: the above hazards exist. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

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)
Graphite	7782-42-5	30	-	-
Lithium Cobalt Oxide (CoLiO ₂)	12190-79-3	27	-	-
Cobalt lithium manganese nickel oxide	182442-95-1	18	-	-
Propylene carbonate	108-32-7	10	-	-
Ethylene carbonate	96-49-1	10	-	-
Copper	7440-50-8	10	-	-
Aluminum	7429-90-5	10	-	-
Phosphate(1-), hexafluoro-, lithium	21324-40-3	5	-	-
Nickel	7440-02-0	2	-	-
Carbon black	1333-86-4	2	-	-
Sodium carboxymethyl cellulose	9004-32-4	1	-	-
1,3-Propane sultone	1120-71-4	0.5	-	-

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. In case of rupture:
Inhalation	Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical attention.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical attention. May cause an allergic skin reaction.
Ingestion	Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate medical 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. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Symptoms Burning. Burning sensation. Redness. May cause blindness. Coughing and/ or wheezing. May cause redness and tearing of the eyes. Itching. Rashes. Hives.

Effects of Exposure May cause cancer. Causes damage to organs through prolonged or repeated exposure.

Indication of any immediate medical attention and special treatment needed

Note to physicians Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitization in susceptible persons. Treat symptomatically.

5. Fire-fighting measures

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

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

Specific hazards arising from the chemical The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. Product is or contains a sensitizer. May cause sensitization by skin contact.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Special protective equipment and precautions 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

Personal precautions Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

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.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. Handling and storage

Precautions for safe handling

Advice on safe handling

In case of rupture: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

General hygiene considerations

Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. 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.

Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Protect from moisture. Store locked up. Store away from other materials.

8. Exposure controls/personal protection

Control Parameters

Exposure Limits

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Graphite 7782-42-5	TWA: 2 mg/m ³ respirable particulate matter all forms except graphite fibers	TWA: 15 mg/m ³ total dust synthetic TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf respirable dust natural (vacated) TWA: 2.5 mg/m ³ respirable dust natural (vacated) TWA: 10 mg/m ³ total dust synthetic (vacated) TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m ³ TWA: 2.5 mg/m ³ respirable dust
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	TWA: 0.02 mg/m ³	-	-
Cobalt lithium manganese nickel oxide 182442-95-1	TWA: 0.02 mg/m ³ Co inhalable particulate matter TWA: 0.02 mg/m ³ Mn respirable particulate matter TWA: 0.1 mg/m ³ Mn inhalable particulate matter DS RS	(vacated) Ceiling: 5 mg/m ³ Ceiling: 5 mg/m ³ Mn	TWA: 1 mg/m ³ ; Mn TWA: 0.015 mg/m ³ ; except Nickel carbonyl Ni STEL: 3 mg/m ³ Mn IDLH: 500 mg/m ³ Mn IDLH: 10 mg/m ³ Ni
Copper 7440-50-8	TWA: 0.2 mg/m ³ fume	TWA: 0.1 mg/m ³ fume TWA: 1 mg/m ³ dust and mist (vacated) TWA: 0.1 mg/m ³ Cu dust, fume, mist	TWA: 1 mg/m ³ ; dust and mist TWA: 0.1 mg/m ³ ; fume IDLH: 100 mg/m ³ dust, fume and mist
Aluminum 7429-90-5	TWA: 1 mg/m ³ respirable particulate matter	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction	TWA: 10 mg/m ³ ; total dust TWA: 5 mg/m ³ ; respirable dust

		(vacated) TWA: 15 mg/m ³ total dust (vacated) TWA: 5 mg/m ³ respirable fraction	
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m ³ F	TWA: 2.5 mg/m ³ F (vacated) TWA: 2.5 mg/m ³	IDLH: 250 mg/m ³ F
Nickel 7440-02-0	TWA: 1.5 mg/m ³	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 10 mg/m ³ TWA: 0.015 mg/m ³
Carbon black 1333-86-4	TWA: 3 mg/m ³ inhalable particulate matter	TWA: 3.5 mg/m ³ (vacated) TWA: 3.5 mg/m ³	TWA: 3.5 mg/m ³ ; TWA: 0.1 mg/m ³ ; Carbon black in presence of Polycyclic aromatic hydrocarbons PAH IDLH: 1750 mg/m ³
1,3-Propane sultone 1120-71-4	Exposure by all routes should be carefully controlled to levels as low as possible	-	-

Chemical name	Alberta	British Columbia	Ontario	Quebec
Graphite 7782-42-5	TWA: 2 mg/m ³ ; respirable	TWA: 2 mg/m ³ ; respirable	TWA: 2 mg/m ³ ; respirable particulate matter	TWAEV: 2 mg/m ³ ; respirable dust
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable DS RS	TWA: 0.02 mg/m ³ ;	TWAEV: 0.02 mg/m ³ ; inhalable aerosol fraction
Cobalt lithium manganese nickel oxide 182442-95-1	TWA: 0.02 mg/m ³ ; TWA: 0.2 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable TWA: 0.02 mg/m ³ ; respirable TWA: 0.1 mg/m ³ ; inhalable Adverse reproductive effect DS RS	TWA: 0.02 mg/m ³ ; TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter	TWAEV: 0.2 mg/m ³ ; inhalable aerosol fraction TWAEV: 0.05 mg/m ³ ; respirable aerosol fraction TWAEV: 0.02 mg/m ³ ; inhalable aerosol fraction
Copper 7440-50-8	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWA: 1 mg/m ³ ; dust and mist TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWAEV: 0.2 mg/m ³ ; fume TWAEV: 1 mg/m ³ ; dust and mist
Aluminum 7429-90-5	TWA: 10 mg/m ³ ; dust	TWA: 1.0 mg/m ³ ; respirable	TWA: 1 mg/m ³ ; respirable particulate matter	TWAEV: 10 mg/m ³ ;
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWAEV: 2.5 mg/m ³ ;
Nickel 7440-02-0	TWA: 1.5 mg/m ³ ;	TWA: 0.05 mg/m ³ ;	TWA: 1 mg/m ³ ; inhalable fraction	TWAEV: 1.5 mg/m ³ ; inhalable dust
Carbon black 1333-86-4	TWA: 3.5 mg/m ³ ;	TWA: 3 mg/m ³ ; inhalable	TWA: 3 mg/m ³ ; inhalable particulate matter	TWAEV: 3 mg/m ³ ; inhalable dust
1,3-Propane sultone 1120-71-4	-	: ;	: ;	: ;

Chemical name	Manitoba	New Brunswick	Newfoundland and Labrador	Nova Scotia
Graphite	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable particulate matter

Chemical name	Manitoba	New Brunswick	Newfoundland and Labrador	Nova Scotia
Lithium Cobalt Oxide (CoLiO ₂)	TWA: 0.02 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ; inhalable particulate matter DS RS
Cobalt lithium manganese nickel oxide	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ; TWA: 0.02 mg/m ³ ; respirable fraction TWA: 0.1 mg/m ³ ; inhalable fraction	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter DS RS
Copper	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume
Aluminum	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 1 mg/m ³ ; respirable fraction	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 1 mg/m ³ ; respirable particulate matter
Phosphate(1-), hexafluoro-, lithium	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;
Nickel	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable fraction	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable particulate matter
Carbon black	TWA: 3 mg/m ³ ; inhalable particulate matter	TWA: 3 mg/m ³ ; inhalable fraction	TWA: 3 mg/m ³ ; inhalable particulate matter	TWA: 3 mg/m ³ ; inhalable particulate matter

Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
Graphite	TWA: 2 mg/m ³ ; respirable fraction STEL: 4 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable fraction STEL: 4 mg/m ³ ; respirable fraction	TWA: 20 mppcf; TWA: 30 mppcf; TWA: 10 mg/m ³ ;
Lithium Cobalt Oxide (CoLiO ₂)	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ ; Designated substance	TWA: 0.02 mg/m ³ ; inhalable particulate matter	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ ; Designated Chemical Substance	-
Cobalt lithium manganese nickel oxide	TWA: 0.02 mg/m ³ ; TWA: 0.2 mg/m ³ ; STEL: 0.06 mg/m ³ ; STEL: 0.6 mg/m ³ ; Designated substance	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter	TWA: 0.02 mg/m ³ ; TWA: 0.2 mg/m ³ ; STEL: 0.06 mg/m ³ ; STEL: 0.6 mg/m ³ ; Designated Chemical Substance	Ceiling: 5 mg/m ³ ;
Copper	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist STEL: 3 mg/m ³ ; dust and mist STEL: 0.6 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist STEL: 0.6 mg/m ³ ; fume STEL: 3 mg/m ³ ; dust and mist	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist STEL: 0.2 mg/m ³ ; fume STEL: 2 mg/m ³ ; dust and mist
Aluminum	TWA: 10 mg/m ³ ; dust STEL: 20 mg/m ³ ; dust	TWA: 1 mg/m ³ ; respirable particulate	TWA: 10 mg/m ³ ; dust STEL: 20 mg/m ³ ; dust	-

Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
		matter		
Phosphate(1-), hexafluoro-, lithium	-	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ; STEL: 5 mg/m ³ ;	TWA: 2.5 mg/m ³ ; STEL: 2.5 mg/m ³ ;
Nickel	TWA: 1.5 mg/m ³ ; inhalable fraction STEL: 3 mg/m ³ ; inhalable fraction Designated substance	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable fraction STEL: 3 mg/m ³ ; inhalable fraction Designated Chemical Substance	TWA: 1 mg/m ³ ; STEL: 3 mg/m ³ ;
Carbon black	TWA: 3.5 mg/m ³ ; STEL: 7 mg/m ³ ;	TWA: 3 mg/m ³ ; inhalable particulate matter	TWA: 3.5 mg/m ³ ; STEL: 7 mg/m ³ ;	TWA: 3.5 mg/m ³ ; STEL: 7 mg/m ³ ;
1,3-Propane sultone	Designated substance	-	Designated Chemical Substance	-

Note See section 16 for terms and abbreviations.

Other information on limit values Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Biological occupational exposure limits

Chemical name	ACGIH
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	15 µg/L - urine (Cobalt) - end of shift at end of workweek
Cobalt lithium manganese nickel oxide 182442-95-1	15 µg/L - urine (Cobalt) - end of shift at end of workweek
Phosphate(1-), hexafluoro-, lithium 21324-40-3	2 mg/L - urine (Fluoride) - prior to shift 3 mg/L - urine (Fluoride) - end of shift
Nickel 7440-02-0	5 µg/L - urine (Nickel) - post-shift at end of workweek

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). Face protection shield. Tight sealing safety goggles.

Hand protection Wear suitable gloves.

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

Respiratory protection Use appropriate respiratory protection. Consult with an industrial hygienist to determine the appropriate respiratory protection for your specific use of this material.

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state Solid

Color	No information available
Odor (includes odor threshold)	Odorless
Odor threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
Melting point / freezing point	No data available	None known
Boiling point (or initial boiling point or boiling range)	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Flash point	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
SADT (°C)	No data available	None known
pH	No data available	None known
pH (as aqueous solution)	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Solubility	No data available	None known
Water solubility	Insoluble in water	None known
Partition coefficient n-octanol/water (log value)	1	None known
Vapor pressure (includes evaporation rate)	No data available	None known
Evaporation rate	No data available	None known
Density and/or relative density	No data available	None known
Bulk density	No data available	
Liquid Density	No data available	
Relative vapor density	No data available	None known
Particle characteristics		None known
Particle Size	No data available	
Particle Size Distribution	No data available	
<u>Other information</u>		
Miscible	No	

10. Stability and reactivity

Reactivity	No information available.
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	None under normal processing.
Conditions to avoid	Exposure to air or moisture over prolonged periods.
Incompatible materials	Acids. Bases. Oxidizing agent.
Hazardous decomposition products	None known based on information supplied.

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. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal.
Eye contact	Specific test data for the substance or mixture is not available. Causes serious eye damage. (based on components). Corrosive to the eyes and may cause severe damage including blindness. May cause irreversible damage to eyes.
Skin contact	Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. May cause sensitization by skin contact. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
Ingestion	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Burning. Burning sensation. Redness. May cause blindness. Coughing and/ or wheezing. May cause redness and tearing of the eyes. Itching. Rashes. Hives.

Acute toxicity Toxic by inhalation. Harmful if swallowed.

Numerical measures of toxicity

The following ATE values have been calculated for the mixture

ATEmix (oral)	1,234.00 mg/kg
ATEmix (dermal)	99,999.000 mg/kg
ATEmix (inhalation-gas)	99,999.00 ppm
ATEmix (inhalation-vapor)	2.78 mg/l
ATEmix (inhalation-dust/mist)	99,999.00 mg/l

Unknown acute toxicity

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

126 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Graphite	-	-	> 2000 mg/m ³ (Rat) 4 h
Lithium Cobalt Oxide (CoLiO ₂)	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rat)	> 5.05 mg/L (Rat) 4 h
Propylene carbonate	= 29000 mg/kg (Rat)	> 3000 mg/kg (Rabbit)	-
Ethylene carbonate	= 10 g/kg (Rat)	> 26420 mg/kg (Rabbit)	> 730 mg/m ³ (Rat) 8 h
Copper	-	-	> 5.11 mg/L (Rat) 4 h
Aluminum	-	-	> 0.888 mg/L (Rat) 4 h
Nickel	> 9000 mg/kg (Rat)	-	> 10.2 mg/L (Rat) 1 h
Carbon black	> 10000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 4.6 mg/m ³ (Rat) 4 h
Sodium carboxymethyl cellulose	= 27000 mg/kg (Rat)	-	> 5800 mg/m ³ (Rat) 4 h
1,3-Propane sultone	= 157 mg/kg (Rat)	-	-

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. Causes severe skin burns and eye damage.

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

Respiratory or skin sensitization May cause an allergic skin reaction.

Germ cell mutagenicity No information available.

Carcinogenicity Contains a known or suspected carcinogen. Classification based on data available for ingredients. May cause cancer.

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

Chemical name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt Oxide (CoLiO ₂)	A3 - Confirmed animal carcinogen (with unknown relevance to humans)	Group 2B - Possibly carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X
Cobalt lithium manganese nickel oxide	A3 - Confirmed animal carcinogen (with unknown relevance to humans) A4 - Not classifiable as a human carcinogen	Group 1 - Carcinogenic to humans Group 2B - Possibly carcinogenic to humans	Known human carcinogen Reasonably anticipated to be a human carcinogen	X
Aluminum	A4 - Not classifiable as a human carcinogen	-	-	-
Phosphate(1-), hexafluoro-, lithium	A4 - Not classifiable as a human carcinogen	-	-	-
Nickel	A5 - Not suspected as a human carcinogen	Group 2B - Possibly carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X
Carbon black	A3 - Confirmed animal carcinogen (with unknown relevance to humans)	Group 2B - Possibly carcinogenic to humans	-	X
1,3-Propane sultone	A3 - Confirmed animal carcinogen (with unknown relevance to humans)	Group 2A - Probably carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X

Reproductive toxicity No information available.

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. Toxic to aquatic life with long lasting effects.

Aquatic ecotoxicity

Component Information

Chemical name	Fish	Crustacea	Algae/aquatic plants	Toxicity to microorganisms
---------------	------	-----------	----------------------	----------------------------

Graphite	96h LC50: > 100 mg/L (Danio rerio)	-	-	-
Propylene carbonate	96h LC50: > 1000 mg/L (Cyprinus carpio)	48h EC50: > 500 mg/L (Daphnia magna)	72h EC50: > 500 mg/L (Desmodesmus subspicatus)	EC50 > 10000 mg/L 17 h
Ethylene carbonate	96h LC50: > 100 mg/L (Oncorhynchus mykiss)	-	-	-
Copper	96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: < 0.3 mg/L (Pimephales promelas) 96h LC50: = 0.2 mg/L (Pimephales promelas) 96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: = 0.3 mg/L (Cyprinus carpio) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 0.112 mg/L (Poecilia reticulata)	48h EC50: = 0.03 mg/L (Daphnia magna)	72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.031 - 0.054 mg/L (Pseudokirchneriella subcapitata)	-
Nickel	96h LC50: > 100 mg/L (Brachydanio rerio) 96h LC50: = 1.3 mg/L (Cyprinus carpio) 96h LC50: = 10.4 mg/L (Cyprinus carpio)	48h EC50: > 100 mg/L (Daphnia magna) 48h EC50: = 1 mg/L (Daphnia magna)	72h EC50: = 0.18 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.174 - 0.311 mg/L (Pseudokirchneriella subcapitata)	-

Persistence and degradability No information available.

Bioaccumulative potential

Chemical name	Partition coefficient	Bioconcentration factor (BCF)	Trophic magnification factor (TMF)
Propylene carbonate	0.48	-	-
Ethylene carbonate	0.11	-	-

Mobility in soil No information available.

Other adverse effects No information available.

13. Disposal considerations

Disposal 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 information

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

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

Transport hazard class(es)
Reportable quantity (lbs)
Reportable quantity (lbs)
(calculated)
Reportable quantity (kg)
Reportable quantity (kg)
(calculated)
DOT Marine Pollutant
Marine pollutant
Emergency Response Guide
Number

N/A
Copper: RQ (lb)= 5000.00, Nickel: RQ (lb)= 100.00, 1,3-Propane sultone: RQ (lb)= 10.00
Copper: RQ (lb)= 50000.00, Nickel: RQ (lb)= 5000.00, 1,3-Propane sultone: RQ (lb)= 2000.00
(Copper: RQ (kg)= 2270.00, Nickel: RQ (kg)= 45.40, 1,3-Propane sultone: RQ (kg)= 4.54)
Copper: RQ (kg)= 22700.00, Nickel: RQ (kg)= 2270.00, 1,3-Propane sultone: RQ (kg)= 908.00
PP
Copper
147

TDG

Not applicable

MEX

Not applicable

ICAO (air)

UN number or ID number
UN proper shipping name
Transport hazard class(es)
Description
Special Provisions

UN3480
LITHIUM ION BATTERIES
9
UN3480, LITHIUM ION BATTERIES, 9
A88, A99, A154, A183, A201, A213

IATA

UN number or ID number
UN proper shipping name
Transport hazard class(es)
Environmental hazards
ERG Code
Description

UN3480
LITHIUM ION BATTERIES
9
Yes
12FZ
UN3480, LITHIUM ION BATTERIES, 9

IMDG

Not applicable

Transport hazard class(es)
Marine pollutant indicator
EmS-No.

N/A
NP
F-A, S-I

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.

DSL/NDSL Contact supplier for inventory compliance status.

EINECS/ELINCS Contact supplier for inventory compliance status.

ENCS Contact supplier for inventory compliance status.

IECSC Contact supplier for inventory compliance status.

KECL Contact supplier for inventory compliance status.

PICCS Contact supplier for inventory compliance status.

AIIC Contact supplier for inventory compliance status.

NZIoC Contact supplier for inventory compliance status.

TCSI Contact supplier for inventory compliance status.

Legend:

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

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing Chemicals Inventory

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AIIC - Australian Inventory of Industrial Chemicals

NZIoC - New Zealand Inventory of Chemicals

TCSI - Taiwan Chemical Substance Inventory

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	SARA 313 - Threshold Values %
Lithium Cobalt Oxide (CoLiO ₂)	0.1
Aluminum	1.0
Copper	1.0
Nickel	0.1
1,3-Propane sultone	0.1

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.

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
Cobalt lithium manganese nickel oxide	-	X	-	-
Copper	-	X	X	-
Nickel	-	X	X	-

CAA (Clean Air Act)

This product contains the following substances which are regulated pollutants to the Clean Air Act (CAA).

Chemical name	Hazardous air pollutants (HAPs)	Ozone-depleting substances (ODS)
Lithium Cobalt Oxide (CoLiO2)	Present	-
Cobalt lithium manganese nickel oxide	Present	-

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
Copper	5000 lb	-
Nickel	100 lb	-

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals:.

Chemical name	California Proposition 65
Cobalt lithium manganese nickel oxide	Carcinogen
Nickel	Carcinogen
Carbon black	Carcinogen
1,3-Propane sultone	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Graphite	X	X	X
Lithium Cobalt Oxide (CoLiO2)	X	-	X
Cobalt lithium manganese nickel oxide	X	-	X
Aluminum	X	X	X
Diethyl carbonate	X	X	X
Ethylene carbonate	-	X	X
Copper	X	X	X
Phosphate(1-), hexafluoro-, lithium	X	-	-
Nickel	X	X	X
Carbon black	X	X	X
1,3-Propane sultone	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA	Health hazards 1	Flammability 0	Instability 0	Special hazards -
HMIS	Health hazards 0	Flammability 0	Physical hazards 0	Personal protection X

Key or legend to abbreviations and acronyms used in the safety data sheet

List may include phrases which are not applicable to this product

ACGIH	American Conference of Governmental Industrial Hygienists
ADN	Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Europe)
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road (Europe)
AIIC	Australian Inventory of Industrial Chemicals
ATE	Acute Toxicity Estimate
ASTM	American Society for the Testing of Materials
bar	Biological Reference Values for Chemical Compounds in the Work Area
BAT	Biological tolerance values for occupational exposure
BEL	Biological exposure limits
bw	Body weight
Ceiling	Maximum limit value
CMR	Carcinogen, Mutagen or Reproductive Toxicant
DOT	Department of Transportation (United States)
DSL	Domestic Substances List (Canada)
EmS	Emergency Schedule
ENCS	Existing and New Chemical Substances (Japan)
EPA	Environmental Protection Agency
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO	International Civil Aviation Organization
IECSC	Inventory of Existing Chemical Substances in China
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Organization for Standardization
KECI	Korean Existing Chemicals Inventory
LC50	Lethal Concentration to 50% of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
n.o.s.	Not Otherwise Specified
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NOELR	No Observable Effect Loading Rate
NTP	National Toxicology Program (United States)
NZIoC	New Zealand Inventory of Chemicals
OECD	Organization for Economic Cooperation and Development
OEL	Occupational exposure limits
OSHA	Occupational Safety and Health Administration of the US Department of Labor
PBT	Persistent, Bioaccumulative and Toxic substance
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PMT	Persistent, Mobile and Toxic
PPE	Personal protective equipment
QSAR	Quantitative Structure Activity Relationship
RID	Agreement concerning the International Carriage of Dangerous Goods by Rail (Europe)
SADT	Self-Accelerating Decomposition Temperature
SAR	Structure-activity relationship
SARA	Superfund Amendments and Reauthorization Act
SDS	Safety Data Sheet

SL	Surface Limit
STEL	Short Term Exposure Limit
STOT RE	Specific target organ toxicity - Repeated exposure
STOT SE	Specific target organ toxicity - Single exposure
TCSI	Taiwan Chemical Substance Inventory
TDG	Transport of Dangerous Goods (Canada)
TSCA	Toxic Substances Control Act (United States)
TWA	Time-Weighted Average
UN	United Nations
VOC	Volatile organic compounds
vPvB	Very Persistent and Very Bioaccumulative
vPvM	Very Persistent and Very Mobile
As	Allergenic substance
DS	Dermal Sensitizer
Ot	Ototoxicant
pOt	Ototoxicant - potential to cause hearing disorders
PS	Photosensitizer
RS	Respiratory Sensitizer
S	Sensitizer
poS	Sensitizer - capable of causing occupational asthma
Sa	Simple asphyxiant
Sd	Skin designation
pSd	Skin designation - potential for cutaneous absorption
Sdv	Skin designation - vacated
Sk	Skin notation
dSk	Skin notation - danger of cutaneous absorption
pSk	Skin notation - potential for cutaneous absorption

Key literature references and sources for data used to compile the SDS

U.S. Agency for Toxic Substances and Disease Registry (ATSDR)
 U.S. Environmental Protection Agency ChemView Database
 European Food Safety Authority (EFSA)
 U.S. Environmental Protection Agency
 Acute Exposure Guideline Level(s) (AEGL(s))
 U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
 U.S. Environmental Protection Agency High Production Volume Chemicals
 Food Research Journal
 Hazardous Substance Database
 International Uniform Chemical Information Database (IUCLID)
 Japan National Institute of Technology and Evaluation (NITE)
 Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
 NIOSH (National Institute for Occupational Safety and Health)
 National Library of Medicine's ChemID Plus (NLM CIP)
 National Library of Medicine's PubMed database (NLM PUBMED)
 U.S. National Toxicology Program (NTP)
 New Zealand's Chemical Classification and Information Database (CCID)
 International Organization for Economic Co-operation and Development (OECD) Environment, Health, and Safety Publications
 International Organization for Economic Co-operation and Development (OECD) High Production Volume Chemicals Program
 International Organization for Economic Co-operation and Development (OECD) Screening Information Data Set
 United Nations World Health Organization (WHO)

Prepared By Product Stewardship
 23 British American Blvd.
 Latham, NY 12110
 1-800-572-6501.

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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

SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
US OSHA Hazard Communication Standard 2024 (29 CFR 1910.1200) and Canada Hazardous Products Act (HPA) and the
Hazardous Products Regulation (HPR), as amended

Issuing Date 06-Apr-2026

Revision date 06-Apr-2026

Revision Number 1

1. Identification

Product identifier

Product Name Rechargeable Li-ion Battery L22M3PF2 by Vendor - by Simple

Other means of identification

Product Code(s) 1903985

Synonyms None

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 Name Lenovo LNB laptops

Supplier Address

Songtao Road 696
shanghai
shanghai
201203
CN

Emergency telephone number

Supplier Phone Number Phone:18116118603

24 Hour Emergency Phone Number 18116118603

Emergency Telephone No information available

2. Hazard(s) identification

Classification of the substance or mixture

Acute toxicity - Inhalation (Vapors)	Category 2
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Skin sensitization	Category 1
Carcinogenicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 1

Label elements



Danger

Hazard statements

Fatal if inhaled.
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
May cause 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 and face protection.
Do not breathe dust.
Use only outdoors or in a well-ventilated area.
Wear respiratory protection.
Wash face, hands and any exposed skin thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
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).
Specific treatment is urgent (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 and attention.

Skin

IF ON SKIN: Wash with plenty of water and soap.
Take off contaminated clothing and wash it before reuse.
If skin irritation or rash occurs: Get medical advice and attention.

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor.

Precautionary Statements - Storage

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

Precautionary Statements - Disposal

Dispose of contents and container in accordance with local, regional, national, and international regulations as applicable.

Unknown acute toxicity

79.4 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor).

Hazards classified under paragraph (d)(1)(ii) of 1910.1200

No information available.

Other information

Very toxic to aquatic life. Toxic to aquatic life with long lasting effects. This is a battery. In case of rupture: the above hazards exist.

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 (CoLiO ₂)	12190-79-3	27.77	-	-
Graphite	7782-42-5	24.66	-	-
Cobalt lithium manganese nickel oxide	182442-95-1	18.36	-	-
Copper	7440-50-8	6.86	-	-
Aluminum	7429-90-5	4.97	-	-
Propylene carbonate	108-32-7	2.29	-	-
Ethylene carbonate	96-49-1	2.29	-	-
Phosphate(1-), hexafluoro-, lithium	21324-40-3	0.89	-	-
Nickel	7440-02-0	0.41	-	-
1,3-Propane sultone	1120-71-4	0.38	-	-

4. First-aid measures

Description of first aid measures

General advice	Show this safety data sheet to the doctor in attendance. IF exposed or concerned: Get medical advice/attention. First aid is upon rupture of sealed battery. In case of rupture:
Inhalation	Remove to fresh air. Get medical attention immediately if symptoms occur.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.
Skin contact	May cause an allergic skin reaction. In the case of skin irritation or allergic reactions see a physician. Wash off immediately with soap and plenty of water for at least 15 minutes.
Ingestion	Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician.
Self-protection of the first aider	Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Symptoms	Itching. Rashes. Hives. Erythema (skin redness). May cause redness and tearing of the eyes. Burning sensation.
Effects of Exposure	May cause cancer. Causes damage to organs through prolonged or repeated exposure.

Indication of any immediate medical attention and special treatment needed

Note to physicians	May cause sensitization in susceptible persons. Treat symptomatically.
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5. Fire-fighting measures

<u>Suitable Extinguishing Media</u>	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.
<u>Specific hazards arising from the chemical</u>	Product is or contains a sensitizer. May cause sensitization by skin contact.
<u>Explosion data</u>	
Sensitivity to mechanical impact	None.
Sensitivity to static discharge	None.
<u>Special protective equipment and precautions for fire-fighters</u>	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

Personal precautions	Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
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.
Prevention of secondary hazards	Clean contaminated objects and areas thoroughly observing environmental regulations.

7. Handling and storage

Precautions for safe handling

Advice on safe handling	In case of rupture: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.
General hygiene considerations	Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Wear suitable gloves and eye/face protection. Avoid contact with skin, eyes or clothing. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep containers tightly closed in a dry, cool and well-ventilated place.
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8. Exposure controls/personal protection

Control Parameters

Exposure Limits

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	TWA: 0.02 mg/m ³	-	-
Graphite 7782-42-5	TWA: 2 mg/m ³ respirable particulate matter all forms except graphite fibers	TWA: 15 mg/m ³ total dust synthetic TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf respirable dust natural (vacated) TWA: 2.5 mg/m ³ respirable dust natural (vacated) TWA: 10 mg/m ³ total dust synthetic (vacated) TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m ³ TWA: 2.5 mg/m ³ respirable dust
Cobalt lithium manganese nickel oxide 182442-95-1	TWA: 0.02 mg/m ³ Co inhalable particulate matter TWA: 0.02 mg/m ³ Mn respirable particulate matter TWA: 0.1 mg/m ³ Mn inhalable particulate matter DS RS	(vacated) Ceiling: 5 mg/m ³ Ceiling: 5 mg/m ³ Mn	TWA: 1 mg/m ³ ; Mn TWA: 0.015 mg/m ³ ; except Nickel carbonyl Ni STEL: 3 mg/m ³ Mn IDLH: 500 mg/m ³ Mn IDLH: 10 mg/m ³ Ni
Copper 7440-50-8	TWA: 0.2 mg/m ³ fume	TWA: 0.1 mg/m ³ fume TWA: 1 mg/m ³ dust and mist (vacated) TWA: 0.1 mg/m ³ Cu dust, fume, mist	TWA: 1 mg/m ³ ; dust and mist TWA: 0.1 mg/m ³ ; fume IDLH: 100 mg/m ³ dust, fume and mist
Aluminum 7429-90-5	TWA: 1 mg/m ³ respirable particulate matter	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 15 mg/m ³ total dust (vacated) TWA: 5 mg/m ³ respirable fraction	TWA: 10 mg/m ³ ; total dust TWA: 5 mg/m ³ ; respirable dust
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m ³ F	TWA: 2.5 mg/m ³ F (vacated) TWA: 2.5 mg/m ³	IDLH: 250 mg/m ³ F
Nickel 7440-02-0	TWA: 1.5 mg/m ³	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 10 mg/m ³ TWA: 0.015 mg/m ³
1,3-Propane sultone 1120-71-4	Exposure by all routes should be carefully controlled to levels as low as possible	-	-

Chemical name	Alberta	British Columbia	Ontario	Quebec
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable DS RS	TWA: 0.02 mg/m ³ ;	TWAEV: 0.02 mg/m ³ ; inhalable aerosol fraction
Graphite 7782-42-5	TWA: 2 mg/m ³ ; respirable	TWA: 2 mg/m ³ ; respirable	TWA: 2 mg/m ³ ; respirable particulate matter	TWAEV: 2 mg/m ³ ; respirable dust
Cobalt lithium manganese nickel oxide 182442-95-1	TWA: 0.02 mg/m ³ ; TWA: 0.2 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable TWA: 0.02 mg/m ³ ; respirable TWA: 0.1 mg/m ³ ;	TWA: 0.02 mg/m ³ ; TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ;	TWAEV: 0.2 mg/m ³ ; inhalable aerosol fraction TWAEV: 0.05 mg/m ³ ; respirable aerosol

		inhalable Adverse reproductive effect DS RS	inhalable particulate matter	fraction TWA EV: 0.02 mg/m ³ ; inhalable aerosol fraction
Copper 7440-50-8	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWA: 1 mg/m ³ ; dust and mist TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWA EV: 0.2 mg/m ³ ; fume TWA EV: 1 mg/m ³ ; dust and mist
Aluminum 7429-90-5	TWA: 10 mg/m ³ ; dust	TWA: 1.0 mg/m ³ ; respirable	TWA: 1 mg/m ³ ; respirable particulate matter	TWA EV: 10 mg/m ³ ;
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA EV: 2.5 mg/m ³ ;
Nickel 7440-02-0	TWA: 1.5 mg/m ³ ;	TWA: 0.05 mg/m ³ ;	TWA: 1 mg/m ³ ; inhalable fraction	TWA EV: 1.5 mg/m ³ ; inhalable dust
1,3-Propane sultone 1120-71-4	-	: ;	: ;	: ;

Chemical name	Manitoba	New Brunswick	Newfoundland and Labrador	Nova Scotia
Lithium Cobalt Oxide (CoLiO ₂)	TWA: 0.02 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ; inhalable particulate matter DS RS
Graphite	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable particulate matter
Cobalt lithium manganese nickel oxide	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ; TWA: 0.02 mg/m ³ ; respirable fraction TWA: 0.1 mg/m ³ ; inhalable fraction	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter DS RS
Copper	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume
Aluminum	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 1 mg/m ³ ; respirable fraction	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 1 mg/m ³ ; respirable particulate matter
Phosphate(1-), hexafluoro-, lithium	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;
Nickel	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable fraction	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable particulate matter

Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
Lithium Cobalt Oxide (CoLiO ₂)	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ ; Designated substance	TWA: 0.02 mg/m ³ ; inhalable particulate matter	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ ; Designated Chemical Substance	-

Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
Graphite	TWA: 2 mg/m ³ ; respirable fraction STEL: 4 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable fraction STEL: 4 mg/m ³ ; respirable fraction	TWA: 20 mppcf; TWA: 30 mppcf; TWA: 10 mg/m ³ ;
Cobalt lithium manganese nickel oxide	TWA: 0.02 mg/m ³ ; TWA: 0.2 mg/m ³ ; STEL: 0.06 mg/m ³ ; STEL: 0.6 mg/m ³ ; Designated substance	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter	TWA: 0.02 mg/m ³ ; TWA: 0.2 mg/m ³ ; STEL: 0.06 mg/m ³ ; STEL: 0.6 mg/m ³ ; Designated Chemical Substance	Ceiling: 5 mg/m ³ ;
Copper	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist STEL: 3 mg/m ³ ; dust and mist STEL: 0.6 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist STEL: 0.6 mg/m ³ ; fume STEL: 3 mg/m ³ ; dust and mist	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist STEL: 0.2 mg/m ³ ; fume STEL: 2 mg/m ³ ; dust and mist
Aluminum	TWA: 10 mg/m ³ ; dust STEL: 20 mg/m ³ ; dust	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 10 mg/m ³ ; dust STEL: 20 mg/m ³ ; dust	-
Phosphate(1-), hexafluoro-, lithium	-	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ; STEL: 5 mg/m ³ ;	TWA: 2.5 mg/m ³ ; STEL: 2.5 mg/m ³ ;
Nickel	TWA: 1.5 mg/m ³ ; inhalable fraction STEL: 3 mg/m ³ ; inhalable fraction Designated substance	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable fraction STEL: 3 mg/m ³ ; inhalable fraction Designated Chemical Substance	TWA: 1 mg/m ³ ; STEL: 3 mg/m ³ ;
1,3-Propane sultone	Designated substance	-	Designated Chemical Substance	-

Note See section 16 for terms and abbreviations.

Other information on limit values Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Biological occupational exposure limits

Chemical name	ACGIH
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	15 µg/L - urine (Cobalt) - end of shift at end of workweek
Cobalt lithium manganese nickel oxide 182442-95-1	15 µg/L - urine (Cobalt) - end of shift at end of workweek
Phosphate(1-), hexafluoro-, lithium 21324-40-3	2 mg/L - urine (Fluoride) - prior to shift 3 mg/L - urine (Fluoride) - end of shift
Nickel 7440-02-0	5 µg/L - urine (Nickel) - post-shift at end of workweek

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

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

Hand protection	Wear suitable gloves.
Skin and body protection	Wear suitable protective clothing. Long sleeved clothing.
Respiratory protection	Use appropriate respiratory protection. Consult with an industrial hygienist to determine the appropriate respiratory protection for your specific use of this material. No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Solid
Color	No information available
Odor (includes odor threshold)	Odorless
Odor threshold	No information available

Property	Values	Remarks • Method
Melting point / freezing point	No data available	None known
Boiling point (or initial boiling point or boiling range)	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Flash point	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
SADT (°C)	No data available	None known
pH	No data available	None known
pH (as aqueous solution)	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Solubility	No data available	None known
Water solubility	No data available	None known
Partition coefficient n-octanol/water (log value)	1	None known
Vapor pressure (includes evaporation rate)	No data available	None known
Evaporation rate	No data available	None known
Density and/or relative density	No data available	None known
Bulk density	No data available	
Liquid Density	No data available	
Relative vapor density	No data available	None known
Particle characteristics		None known
Particle Size	No data available	
Particle Size Distribution	No data available	

Other information

Miscible	No
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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.
Conditions to avoid	None known based on information supplied.
Incompatible materials	Strong acids. Strong bases. Strong oxidizing agents.
Hazardous decomposition products	None known based on information supplied.

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. Causes serious eye irritation. (based on components). May cause redness, itching, and pain.
Skin contact	Specific test data for the substance or mixture is not available. May cause sensitization by skin contact. Causes skin irritation. (based on components). Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
Ingestion	Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms	Itching. Rashes. Hives. Erythema (skin redness). May cause redness and tearing of the eyes. Burning sensation.
Acute toxicity	Fatal if inhaled.

Numerical measures of toxicity

The following ATE values have been calculated for the mixture

ATEmix (oral)	83,801.60 mg/kg
ATEmix (dermal)	99,999.00 mg/kg
ATEmix (inhalation-gas)	99,999.00 ppm
ATEmix (inhalation-vapor)	0.562 mg/l
ATEmix (inhalation-dust/mist)	99,999.00 mg/l

Unknown acute toxicity

79.4 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)

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/m ³ (Rat) 4 h
Copper	-	-	> 5.11 mg/L (Rat) 4 h
Aluminum	-	-	> 0.888 mg/L (Rat) 4 h
Propylene carbonate	= 29000 mg/kg (Rat)	> 3000 mg/kg (Rabbit)	-
Ethylene carbonate	= 10 g/kg (Rat)	> 26420 mg/kg (Rabbit)	> 730 mg/m ³ (Rat) 8 h

Nickel	> 9000 mg/kg (Rat)	-	> 10.2 mg/L (Rat) 1 h
1,3-Propane sultone	= 157 mg/kg (Rat)	-	-

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. Causes skin irritation.

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

Respiratory or skin sensitization May cause an allergic skin reaction.

Germ cell mutagenicity No information available.

Carcinogenicity Contains a known or suspected carcinogen. Classification based on data available for ingredients. May cause cancer.

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

Chemical name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt Oxide (CoLiO ₂)	A3 - Confirmed animal carcinogen (with unknown relevance to humans)	Group 2B - Possibly carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X
Cobalt lithium manganese nickel oxide	A3 - Confirmed animal carcinogen (with unknown relevance to humans) A4 - Not classifiable as a human carcinogen	Group 1 - Carcinogenic to humans Group 2B - Possibly carcinogenic to humans	Known human carcinogen Reasonably anticipated to be a human carcinogen	X
Aluminum	A4 - Not classifiable as a human carcinogen	-	-	-
Phosphate(1-), hexafluoro-, lithium	A4 - Not classifiable as a human carcinogen	-	-	-
Nickel	A5 - Not suspected as a human carcinogen	Group 2B - Possibly carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X
1,3-Propane sultone	A3 - Confirmed animal carcinogen (with unknown relevance to humans)	Group 2A - Probably carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X

Reproductive toxicity No information available.

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. Toxic to aquatic life with long lasting effects.

Aquatic ecotoxicity

Component Information

Chemical name	Fish	Crustacea	Algae/aquatic plants	Toxicity to
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				microorganisms
Graphite	96h LC50: > 100 mg/L (Danio rerio)	-	-	-
Copper	96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: < 0.3 mg/L (Pimephales promelas) 96h LC50: = 0.2 mg/L (Pimephales promelas) 96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: = 0.3 mg/L (Cyprinus carpio) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 0.112 mg/L (Poecilia reticulata)	48h EC50: = 0.03 mg/L (Daphnia magna)	72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.031 - 0.054 mg/L (Pseudokirchneriella subcapitata)	-
Propylene carbonate	96h LC50: > 1000 mg/L (Cyprinus carpio)	48h EC50: > 500 mg/L (Daphnia magna)	72h EC50: > 500 mg/L (Desmodesmus subspicatus)	EC50 > 10000 mg/L 17 h
Ethylene carbonate	96h LC50: > 100 mg/L (Oncorhynchus mykiss)	-	-	-
Nickel	96h LC50: > 100 mg/L (Brachydanio rerio) 96h LC50: = 1.3 mg/L (Cyprinus carpio) 96h LC50: = 10.4 mg/L (Cyprinus carpio)	48h EC50: > 100 mg/L (Daphnia magna) 48h EC50: = 1 mg/L (Daphnia magna)	72h EC50: = 0.18 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.174 - 0.311 mg/L (Pseudokirchneriella subcapitata)	-

Persistence and degradability No information available.

Bioaccumulative potential

Chemical name	Partition coefficient	Bioconcentration factor (BCF)	Trophic magnification factor (TMF)
Propylene carbonate	0.48	-	-
Ethylene carbonate	0.11	-	-

Mobility in soil No information available.

Other adverse effects No information available.

13. Disposal considerations

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

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 passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard 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
Transport hazard class(es)	N/A
Reportable quantity (lbs)	Nickel: RQ (lb)= 100.00, 1,3-Propane sultone: RQ (lb)= 10.00
Reportable quantity (lbs) (calculated)	Nickel: RQ (lb)= 24390.00, 1,3-Propane sultone: RQ (lb)= 2632.00
Reportable quantity (kg)	(Nickel: RQ (kg)= 45.40, 1,3-Propane sultone: RQ (kg)= 4.54)
Reportable quantity (kg) (calculated)	Nickel: RQ (kg)= 11073.17, 1,3-Propane sultone: RQ (kg)= 1194.74
DOT Marine Pollutant	PP
Marine pollutant	Copper
Emergency Response Guide Number	147
TDG	Not applicable
MEX	Not applicable
ICAO (air)	
UN number or ID number	UN3480
UN proper shipping name	LITHIUM ION BATTERIES
Transport hazard class(es)	9
Description	UN3480, LITHIUM ION BATTERIES, 9
Special Provisions	A88, A99, A154, A183, A201, A213
IATA	
UN number or ID number	UN3480
UN proper shipping name	LITHIUM ION BATTERIES
Transport hazard class(es)	9
Environmental hazards	Yes
ERG Code	12FZ
Description	UN3480, LITHIUM ION BATTERIES, 9
IMDG	Not applicable
Transport hazard class(es)	N/A
Marine pollutant indicator	NP
EmS-No.	F-A, S-I

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.

DSL/NDSL Contact supplier for inventory compliance status.
EINECS/ELINCS Contact supplier for inventory compliance status.
ENCS Contact supplier for inventory compliance status.
IECSC Contact supplier for inventory compliance status.
KECL Contact supplier for inventory compliance status.
PICCS Contact supplier for inventory compliance status.
AIIC Contact supplier for inventory compliance status.
NZIoC Contact supplier for inventory compliance status.
TCSI Contact supplier for inventory compliance status.

Legend:

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

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing Chemicals Inventory

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AIIC - Australian Inventory of Industrial Chemicals

NZIoC - New Zealand Inventory of Chemicals

TCSI - Taiwan Chemical Substance Inventory

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	SARA 313 - Threshold Values %
Lithium Cobalt Oxide (CoLiO2)	0.1
Copper	1.0
Aluminum	1.0
Nickel	0.1
1,3-Propane sultone	0.1

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.

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
Cobalt lithium manganese nickel oxide	-	X	-	-
Copper	-	X	X	-

CAA (Clean Air Act)

This product contains the following substances which are regulated pollutants to the Clean Air Act (CAA).

Chemical name	Hazardous air pollutants (HAPs)	Ozone-depleting substances (ODS)
Lithium Cobalt Oxide (CoLiO ₂)	Present	-
Cobalt lithium manganese nickel oxide	Present	-

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
Copper	5000 lb	-

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals:.

Chemical name	California Proposition 65
Cobalt lithium manganese nickel oxide	Carcinogen
Nickel	Carcinogen
1,3-Propane sultone	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Lithium Cobalt Oxide (CoLiO ₂)	X	-	X
Graphite	X	X	X
Cobalt lithium manganese nickel oxide	X	-	X
Copper	X	X	X
Aluminum	X	X	X
Dimethyl carbonate	X	X	X
Diethyl carbonate	X	X	X
Ethylene carbonate	-	X	X
Phosphate(1-), hexafluoro-, lithium	X	-	-
Nickel	X	X	X
1,3-Propane sultone	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA	Health hazards 1	Flammability 0	Instability 0	Special hazards -
HMIS	Health hazards 0	Flammability 0	Physical hazards 0	Personal protection X

Key or legend to abbreviations and acronyms used in the safety data sheet

List may include phrases which are not applicable to this product

ACGIH	American Conference of Governmental Industrial Hygienists
ADN	Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Europe)
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road (Europe)
AIIC	Australian Inventory of Industrial Chemicals
ATE	Acute Toxicity Estimate
ASTM	American Society for the Testing of Materials
bar	Biological Reference Values for Chemical Compounds in the Work Area
BAT	Biological tolerance values for occupational exposure
BEL	Biological exposure limits
bw	Body weight
Ceiling	Maximum limit value
CMR	Carcinogen, Mutagen or Reproductive Toxicant
DOT	Department of Transportation (United States)
DSL	Domestic Substances List (Canada)
EmS	Emergency Schedule
ENCS	Existing and New Chemical Substances (Japan)
EPA	Environmental Protection Agency
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO	International Civil Aviation Organization
IECSC	Inventory of Existing Chemical Substances in China
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Organization for Standardization
KECI	Korean Existing Chemicals Inventory
LC50	Lethal Concentration to 50% of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
n.o.s.	Not Otherwise Specified
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NOELR	No Observable Effect Loading Rate
NTP	National Toxicology Program (United States)
NZIoC	New Zealand Inventory of Chemicals
OECD	Organization for Economic Cooperation and Development
OEL	Occupational exposure limits
OSHA	Occupational Safety and Health Administration of the US Department of Labor
PBT	Persistent, Bioaccumulative and Toxic substance
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PMT	Persistent, Mobile and Toxic
PPE	Personal protective equipment
QSAR	Quantitative Structure Activity Relationship
RID	Agreement concerning the International Carriage of Dangerous Goods by Rail (Europe)
SADT	Self-Accelerating Decomposition Temperature
SAR	Structure-activity relationship
SARA	Superfund Amendments and Reauthorization Act
SDS	Safety Data Sheet
SL	Surface Limit
STEL	Short Term Exposure Limit

STOT RE	Specific target organ toxicity - Repeated exposure
STOT SE	Specific target organ toxicity - Single exposure
TCSI	Taiwan Chemical Substance Inventory
TDG	Transport of Dangerous Goods (Canada)
TSCA	Toxic Substances Control Act (United States)
TWA	Time-Weighted Average
UN	United Nations
VOC	Volatile organic compounds
vPvB	Very Persistent and Very Bioaccumulative
vPvM	Very Persistent and Very Mobile
As	Allergenic substance
DS	Dermal Sensitizer
Ot	Ototoxicant
pOt	Ototoxicant - potential to cause hearing disorders
PS	Photosensitizer
RS	Respiratory Sensitizer
S	Sensitizer
poS	Sensitizer - capable of causing occupational asthma
Sa	Simple asphyxiant
Sd	Skin designation
pSd	Skin designation - potential for cutaneous absorption
Sdv	Skin designation - vacated
Sk	Skin notation
dSk	Skin notation - danger of cutaneous absorption
pSk	Skin notation - potential for cutaneous absorption

Key literature references and sources for data used to compile the SDS

U.S. Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
U.S. Environmental Protection Agency
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan National Institute of Technology and Evaluation (NITE)
Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
U.S. National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
International Organization for Economic Co-operation and Development (OECD) Environment, Health, and Safety Publications
International Organization for Economic Co-operation and Development (OECD) High Production Volume Chemicals Program
International Organization for Economic Co-operation and Development (OECD) Screening Information Data Set
United Nations World Health Organization (WHO)

Prepared By Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501.

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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

SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
US OSHA Hazard Communication Standard 2024 (29 CFR 1910.1200) and Canada Hazardous Products Act (HPA) and the
Hazardous Products Regulation (HPR), as amended

Issuing Date 06-Apr-2026

Revision date 06-Apr-2026

Revision Number 1

1. Identification

Product identifier

Product Name Rechargeable Li-ion Battery L23D3PF0 by Sunwoda

Other means of identification

Product Code(s) 1903974

Synonyms None

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 Name Lenovo LNB laptops

Supplier Address

Songtao Road 696
shanghai
shanghai
201203
CN

Emergency telephone number

Supplier Phone Number Phone:18116118603

24 Hour Emergency Phone Number 18116118603

Emergency Telephone No information available

2. Hazard(s) identification

Classification of the substance or mixture

Acute toxicity - Oral	Category 3
Acute toxicity - Inhalation (Vapors)	Category 2
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Carcinogenicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 1

Label elements



Danger

Hazard statements

Toxic if swallowed.
Fatal if inhaled.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause 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 and face protection.
Wash face, hands and any exposed skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Do not breathe dust.
Use only outdoors or in a well-ventilated area.
Wear respiratory protection.
Contaminated work clothing should not be allowed out of the workplace.

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention.
Immediately call a POISON CENTER or doctor.
Specific treatment (see supplemental first aid instructions on this label).
Specific treatment is urgent (see supplemental first aid instructions on this label).

Eyes

Immediately call a POISON CENTER or doctor.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Skin

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
Wash contaminated clothing before reuse.
IF ON SKIN: Wash with plenty of water and soap.
If skin irritation or rash occurs: Get medical advice and attention.
Take off contaminated clothing and wash it before reuse.

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor.

Ingestion

IF SWALLOWED: Immediately call a POISON CENTER or doctor.
Rinse mouth.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Precautionary Statements - Storage

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

Precautionary Statements - Disposal

Dispose of contents and container in accordance with local, regional, national, and international regulations as applicable.

Unknown acute toxicity

99 % of the mixture consists of ingredient(s) of unknown acute oral toxicity.
140 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor).

Hazards classified under paragraph (d)(1)(ii) of 1910.1200

No information available.

Other information

Very toxic to aquatic life. Toxic to aquatic life with long lasting effects. This is a battery. In case of rupture: the above hazards exist.

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 (CoLiO ₂)	12190-79-3	35	-	-
Graphite	7782-42-5	30	-	-
Cobalt lithium manganese nickel oxide	182442-95-1	25	-	-
Copper	7440-50-8	15	-	-
Propylene carbonate	108-32-7	10	-	-
Ethylene carbonate	96-49-1	10	-	-
Aluminum	7429-90-5	10	-	-
Phosphate(1-), hexafluoro-, lithium	21324-40-3	5	-	-
Nickel	7440-02-0	2	-	-
Carbon black	1333-86-4	2	-	-
Sodium carboxymethyl cellulose	9004-32-4	1	-	-
1,3-Propane sultone	1120-71-4	0.5	-	-

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. In case of rupture:

Inhalation

Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical attention.

Skin contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical attention. May cause an allergic skin reaction.

Ingestion

Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate medical 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. Avoid contact with skin, eyes or

clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Symptoms Burning. Burning sensation. Redness. May cause blindness. Coughing and/ or wheezing. May cause redness and tearing of the eyes. Itching. Rashes. Hives.

Effects of Exposure May cause cancer. Causes damage to organs through prolonged or repeated exposure.

Indication of any immediate medical attention and special treatment needed

Note to physicians Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitization in susceptible persons. Treat symptomatically.

5. Fire-fighting measures

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

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

Specific hazards arising from the chemical The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. Product is or contains a sensitizer. May cause sensitization by skin contact.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Special protective equipment and precautions 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

Personal precautions Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

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.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. Handling and storage

Precautions for safe handling

Advice on safe handling

In case of rupture: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

General hygiene considerations

Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. 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.

Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Protect from moisture. Store locked up. Store away from other materials.

8. Exposure controls/personal protection

Control Parameters

Exposure Limits

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	TWA: 0.02 mg/m ³	-	-
Graphite 7782-42-5	TWA: 2 mg/m ³ respirable particulate matter all forms except graphite fibers	TWA: 15 mg/m ³ total dust synthetic TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf respirable dust natural (vacated) TWA: 2.5 mg/m ³ respirable dust natural (vacated) TWA: 10 mg/m ³ total dust synthetic (vacated) TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m ³ TWA: 2.5 mg/m ³ respirable dust
Cobalt lithium manganese nickel oxide 182442-95-1	TWA: 0.02 mg/m ³ Co inhalable particulate matter TWA: 0.02 mg/m ³ Mn respirable particulate matter TWA: 0.1 mg/m ³ Mn inhalable particulate matter DS RS	(vacated) Ceiling: 5 mg/m ³ Ceiling: 5 mg/m ³ Mn	TWA: 1 mg/m ³ ; Mn TWA: 0.015 mg/m ³ ; except Nickel carbonyl Ni STEL: 3 mg/m ³ Mn IDLH: 500 mg/m ³ Mn IDLH: 10 mg/m ³ Ni
Copper 7440-50-8	TWA: 0.2 mg/m ³ fume	TWA: 0.1 mg/m ³ fume TWA: 1 mg/m ³ dust and mist (vacated) TWA: 0.1 mg/m ³ Cu dust, fume, mist	TWA: 1 mg/m ³ ; dust and mist TWA: 0.1 mg/m ³ ; fume IDLH: 100 mg/m ³ dust, fume and mist
Aluminum 7429-90-5	TWA: 1 mg/m ³ respirable particulate matter	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable	TWA: 10 mg/m ³ ; total dust TWA: 5 mg/m ³ ; respirable

		fraction (vacated) TWA: 15 mg/m ³ total dust (vacated) TWA: 5 mg/m ³ respirable fraction	dust
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m ³ F	TWA: 2.5 mg/m ³ F (vacated) TWA: 2.5 mg/m ³	IDLH: 250 mg/m ³ F
Nickel 7440-02-0	TWA: 1.5 mg/m ³	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 10 mg/m ³ TWA: 0.015 mg/m ³
Carbon black 1333-86-4	TWA: 3 mg/m ³ inhalable particulate matter	TWA: 3.5 mg/m ³ (vacated) TWA: 3.5 mg/m ³	TWA: 3.5 mg/m ³ ; TWA: 0.1 mg/m ³ ; Carbon black in presence of Polycyclic aromatic hydrocarbons PAH IDLH: 1750 mg/m ³
1,3-Propane sultone 1120-71-4	Exposure by all routes should be carefully controlled to levels as low as possible	-	-

Chemical name	Alberta	British Columbia	Ontario	Quebec
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable DS RS	TWA: 0.02 mg/m ³ ;	TWAEV: 0.02 mg/m ³ ; inhalable aerosol fraction
Graphite 7782-42-5	TWA: 2 mg/m ³ ; respirable	TWA: 2 mg/m ³ ; respirable	TWA: 2 mg/m ³ ; respirable particulate matter	TWAEV: 2 mg/m ³ ; respirable dust
Cobalt lithium manganese nickel oxide 182442-95-1	TWA: 0.02 mg/m ³ ; TWA: 0.2 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable TWA: 0.02 mg/m ³ ; respirable TWA: 0.1 mg/m ³ ; inhalable Adverse reproductive effect DS RS	TWA: 0.02 mg/m ³ ; TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter	TWAEV: 0.2 mg/m ³ ; inhalable aerosol fraction TWAEV: 0.05 mg/m ³ ; respirable aerosol fraction TWAEV: 0.02 mg/m ³ ; inhalable aerosol fraction
Copper 7440-50-8	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWA: 1 mg/m ³ ; dust and mist TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWAEV: 0.2 mg/m ³ ; fume TWAEV: 1 mg/m ³ ; dust and mist
Aluminum 7429-90-5	TWA: 10 mg/m ³ ; dust	TWA: 1.0 mg/m ³ ; respirable	TWA: 1 mg/m ³ ; respirable particulate matter	TWAEV: 10 mg/m ³ ;
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWAEV: 2.5 mg/m ³ ;
Nickel 7440-02-0	TWA: 1.5 mg/m ³ ;	TWA: 0.05 mg/m ³ ;	TWA: 1 mg/m ³ ; inhalable fraction	TWAEV: 1.5 mg/m ³ ; inhalable dust
Carbon black 1333-86-4	TWA: 3.5 mg/m ³ ;	TWA: 3 mg/m ³ ; inhalable	TWA: 3 mg/m ³ ; inhalable particulate matter	TWAEV: 3 mg/m ³ ; inhalable dust
1,3-Propane sultone 1120-71-4	-	: ;	: ;	: ;

Chemical name	Manitoba	New Brunswick	Newfoundland and Labrador	Nova Scotia
Lithium Cobalt Oxide (CoLiO2)	TWA: 0.02 mg/m ³ ; inhalable particulate	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable particulate	TWA: 0.02 mg/m ³ ; inhalable particulate

Chemical name	Manitoba	New Brunswick	Newfoundland and Labrador	Nova Scotia
	matter DS RS		matter DS RS	matter DS RS
Graphite	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable particulate matter
Cobalt lithium manganese nickel oxide	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ; TWA: 0.02 mg/m ³ ; respirable fraction TWA: 0.1 mg/m ³ ; inhalable fraction	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter DS RS
Copper	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume
Aluminum	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 1 mg/m ³ ; respirable fraction	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 1 mg/m ³ ; respirable particulate matter
Phosphate(1-), hexafluoro-, lithium	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;
Nickel	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable fraction	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable particulate matter
Carbon black	TWA: 3 mg/m ³ ; inhalable particulate matter	TWA: 3 mg/m ³ ; inhalable fraction	TWA: 3 mg/m ³ ; inhalable particulate matter	TWA: 3 mg/m ³ ; inhalable particulate matter

Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
Lithium Cobalt Oxide (CoLiO2)	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ ; Designated substance	TWA: 0.02 mg/m ³ ; inhalable particulate matter	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ ; Designated Chemical Substance	-
Graphite	TWA: 2 mg/m ³ ; respirable fraction STEL: 4 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable fraction STEL: 4 mg/m ³ ; respirable fraction	TWA: 20 mppcf; TWA: 30 mppcf; TWA: 10 mg/m ³ ;
Cobalt lithium manganese nickel oxide	TWA: 0.02 mg/m ³ ; TWA: 0.2 mg/m ³ ; STEL: 0.06 mg/m ³ ; STEL: 0.6 mg/m ³ ; Designated substance	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter	TWA: 0.02 mg/m ³ ; TWA: 0.2 mg/m ³ ; STEL: 0.06 mg/m ³ ; STEL: 0.6 mg/m ³ ; Designated Chemical Substance	Ceiling: 5 mg/m ³ ;
Copper	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist STEL: 3 mg/m ³ ; dust and mist STEL: 0.6 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist STEL: 0.6 mg/m ³ ; fume STEL: 3 mg/m ³ ; dust and mist	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist STEL: 0.2 mg/m ³ ; fume STEL: 2 mg/m ³ ; dust and mist
Aluminum	TWA: 10 mg/m ³ ; dust	TWA: 1 mg/m ³ ;	TWA: 10 mg/m ³ ; dust	-

Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
	STEL: 20 mg/m ³ ; dust	respirable particulate matter	STEL: 20 mg/m ³ ; dust	
Phosphate(1-), hexafluoro-, lithium	-	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ; STEL: 5 mg/m ³ ;	TWA: 2.5 mg/m ³ ; STEL: 2.5 mg/m ³ ;
Nickel	TWA: 1.5 mg/m ³ ; inhalable fraction STEL: 3 mg/m ³ ; inhalable fraction Designated substance	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable fraction STEL: 3 mg/m ³ ; inhalable fraction Designated Chemical Substance	TWA: 1 mg/m ³ ; STEL: 3 mg/m ³ ;
Carbon black	TWA: 3.5 mg/m ³ ; STEL: 7 mg/m ³ ;	TWA: 3 mg/m ³ ; inhalable particulate matter	TWA: 3.5 mg/m ³ ; STEL: 7 mg/m ³ ;	TWA: 3.5 mg/m ³ ; STEL: 7 mg/m ³ ;
1,3-Propane sultone	Designated substance	-	Designated Chemical Substance	-

Note See section 16 for terms and abbreviations.

Other information on limit values Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Biological occupational exposure limits

Chemical name	ACGIH
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	15 µg/L - urine (Cobalt) - end of shift at end of workweek
Cobalt lithium manganese nickel oxide 182442-95-1	15 µg/L - urine (Cobalt) - end of shift at end of workweek
Phosphate(1-), hexafluoro-, lithium 21324-40-3	2 mg/L - urine (Fluoride) - prior to shift 3 mg/L - urine (Fluoride) - end of shift
Nickel 7440-02-0	5 µg/L - urine (Nickel) - post-shift at end of workweek

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). Face protection shield. Tight sealing safety goggles.

Hand protection Wear suitable gloves.

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

Respiratory protection Use appropriate respiratory protection. Consult with an industrial hygienist to determine the appropriate respiratory protection for your specific use of this material.

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Solid
Color	No information available
Odor (includes odor threshold)	Odorless
Odor threshold	No information available

Property	Values	Remarks • Method
Melting point / freezing point	No data available	None known
Boiling point (or initial boiling point or boiling range)	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Flash point	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
SADT (°C)	No data available	None known
pH	No data available	None known
pH (as aqueous solution)	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Solubility	No data available	None known
Water solubility	No data available	None known
Partition coefficient n-octanol/water (log value)	1	None known
Vapor pressure (includes evaporation rate)	No data available	None known
Evaporation rate	No data available	None known
Density and/or relative density	No data available	None known
Bulk density	No data available	
Liquid Density	No data available	
Relative vapor density	No data available	None known
Particle characteristics		None known
Particle Size	No data available	
Particle Size Distribution	No data available	

Other information

Miscible	No
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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.
Conditions to avoid	Exposure to air or moisture over prolonged periods.
Incompatible materials	Acids. Bases. Oxidizing agent.
Hazardous decomposition products	None known based on information supplied.

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. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal.
Eye contact	Specific test data for the substance or mixture is not available. Causes serious eye damage. (based on components). Corrosive to the eyes and may cause severe damage including blindness. May cause irreversible damage to eyes.
Skin contact	Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. May cause sensitization by skin contact. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
Ingestion	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms	Burning. Burning sensation. Redness. May cause blindness. Coughing and/ or wheezing. May cause redness and tearing of the eyes. Itching. Rashes. Hives.
Acute toxicity	Fatal if inhaled. Toxic if swallowed.

Numerical measures of toxicity

The following ATE values have been calculated for the mixture

ATEmix (oral)	88.10 mg/kg
ATEmix (dermal)	99,999.000 mg/kg
ATEmix (inhalation-gas)	99,999.00 ppm
ATEmix (inhalation-vapor)	2.00 mg/l
ATEmix (inhalation-dust/mist)	99,999.00 mg/l

Unknown acute toxicity

- 99 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
- 140 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)

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/m ³ (Rat) 4 h
Copper	-	-	> 5.11 mg/L (Rat) 4 h
Propylene carbonate	= 29000 mg/kg (Rat)	> 3000 mg/kg (Rabbit)	-
Ethylene carbonate	= 10 g/kg (Rat)	> 26420 mg/kg (Rabbit)	> 730 mg/m ³ (Rat) 8 h
Aluminum	-	-	> 0.888 mg/L (Rat) 4 h
Nickel	> 9000 mg/kg (Rat)	-	> 10.2 mg/L (Rat) 1 h
Carbon black	> 10000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 4.6 mg/m ³ (Rat) 4 h
Sodium carboxymethyl cellulose	= 27000 mg/kg (Rat)	-	> 5800 mg/m ³ (Rat) 4 h
1,3-Propane sultone	= 157 mg/kg (Rat)	-	-

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. Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Classification based on data available for ingredients. Causes serious eye damage. Causes burns.
Respiratory or skin sensitization	May cause an allergic skin reaction.
Germ cell mutagenicity	No information available.
Carcinogenicity	Contains a known or suspected carcinogen. Classification based on data available for ingredients. May cause cancer.

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

Chemical name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt Oxide (CoLiO2)	A3 - Confirmed animal carcinogen (with unknown relevance to humans)	Group 2B - Possibly carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X
Cobalt lithium manganese nickel oxide	A3 - Confirmed animal carcinogen (with unknown relevance to humans) A4 - Not classifiable as a human carcinogen	Group 1 - Carcinogenic to humans Group 2B - Possibly carcinogenic to humans	Known human carcinogen Reasonably anticipated to be a human carcinogen	X
Aluminum	A4 - Not classifiable as a human carcinogen	-	-	-
Phosphate(1-), hexafluoro-, lithium	A4 - Not classifiable as a human carcinogen	-	-	-
Nickel	A5 - Not suspected as a human carcinogen	Group 2B - Possibly carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X
Carbon black	A3 - Confirmed animal carcinogen (with unknown relevance to humans)	Group 2B - Possibly carcinogenic to humans	-	X
1,3-Propane sultone	A3 - Confirmed animal carcinogen (with unknown relevance to humans)	Group 2A - Probably carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X

Reproductive toxicity	No information available.
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. Toxic to aquatic life with long lasting effects.

Aquatic ecotoxicity

Component Information

Chemical name	Fish	Crustacea	Algae/aquatic plants	Toxicity to microorganisms
Graphite	96h LC50: > 100 mg/L (Danio rerio)	-	-	-
Copper	96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: < 0.3 mg/L (Pimephales promelas) 96h LC50: = 0.2 mg/L (Pimephales promelas) 96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: = 0.3 mg/L (Cyprinus carpio) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 0.112 mg/L (Poecilia reticulata)	48h EC50: = 0.03 mg/L (Daphnia magna)	72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.031 - 0.054 mg/L (Pseudokirchneriella subcapitata)	-
Propylene carbonate	96h LC50: > 1000 mg/L (Cyprinus carpio)	48h EC50: > 500 mg/L (Daphnia magna)	72h EC50: > 500 mg/L (Desmodesmus subspicatus)	EC50 > 10000 mg/L 17 h
Ethylene carbonate	96h LC50: > 100 mg/L (Oncorhynchus mykiss)	-	-	-
Nickel	96h LC50: > 100 mg/L (Brachydanio rerio) 96h LC50: = 1.3 mg/L (Cyprinus carpio) 96h LC50: = 10.4 mg/L (Cyprinus carpio)	48h EC50: > 100 mg/L (Daphnia magna) 48h EC50: = 1 mg/L (Daphnia magna)	72h EC50: = 0.18 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.174 - 0.311 mg/L (Pseudokirchneriella subcapitata)	-

Persistence and degradability No information available.

Bioaccumulative potential

Chemical name	Partition coefficient	Bioconcentration factor (BCF)	Trophic magnification factor (TMF)
Propylene carbonate	0.48	-	-
Ethylene carbonate	0.11	-	-

Mobility in soil No information available.

Other adverse effects No information available.

13. Disposal considerations

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

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 passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard 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"
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DOT	NOT REGULATED
Transport hazard class(es)	N/A
Reportable quantity (lbs)	Copper: RQ (lb)= 5000.00, Nickel: RQ (lb)= 100.00, 1,3-Propane sultone: RQ (lb)= 10.00
Reportable quantity (lbs) (calculated)	Copper: RQ (lb)= 33333.00, Nickel: RQ (lb)= 5000.00, 1,3-Propane sultone: RQ (lb)= 2000.00
Reportable quantity (kg)	(Copper: RQ (kg)= 2270.00, Nickel: RQ (kg)= 45.40, 1,3-Propane sultone: RQ (kg)= 4.54)
Reportable quantity (kg) (calculated)	Copper: RQ (kg)= 15133.33, Nickel: RQ (kg)= 2270.00, 1,3-Propane sultone: RQ (kg)= 908.00
DOT Marine Pollutant	PP
Marine pollutant	Copper
Emergency Response Guide Number	147

TDG	Not applicable
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UN number or ID number	UN3480
UN proper shipping name	LITHIUM ION BATTERIES
Transport hazard class(es)	9
Description	UN3480, LITHIUM ION BATTERIES, 9
Special Provisions	A88, A99, A154, A183, A201, A213

IATA	
UN number or ID number	UN3480
UN proper shipping name	LITHIUM ION BATTERIES
Transport hazard class(es)	9
Environmental hazards	Yes
ERG Code	12FZ
Description	UN3480, LITHIUM ION BATTERIES, 9
Transport hazard class(es)	N/A
Marine pollutant indicator	NP
EmS-No.	F-A, S-I

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.

DSL/NDL Contact supplier for inventory compliance status.
EINECS/ELINCS Contact supplier for inventory compliance status.
ENCS Contact supplier for inventory compliance status.
IECSC Contact supplier for inventory compliance status.
KECL Contact supplier for inventory compliance status.
PICCS Contact supplier for inventory compliance status.
AIIC Contact supplier for inventory compliance status.
NZIoC Contact supplier for inventory compliance status.
TCSI Contact supplier for inventory compliance status.

Legend:

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

DSL/NDL - 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

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing Chemicals Inventory

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AIIC - Australian Inventory of Industrial Chemicals

NZIoC - New Zealand Inventory of Chemicals

TCSI - Taiwan Chemical Substance Inventory

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	SARA 313 - Threshold Values %
Lithium Cobalt Oxide (CoLiO2)	0.1
Copper	1.0
Aluminum	1.0
Nickel	0.1
1,3-Propane sultone	0.1

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.

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	CWA - Toxic Pollutants	CWA - Priority	CWA - Hazardous
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	Quantities		Pollutants	Substances
Cobalt lithium manganese nickel oxide	-	X	-	-
Copper	-	X	X	-
Nickel	-	X	X	-

CAA (Clean Air Act)

This product contains the following substances which are regulated pollutants to the Clean Air Act (CAA).

Chemical name	Hazardous air pollutants (HAPs)	Ozone-depleting substances (ODS)
Lithium Cobalt Oxide (CoLiO2)	Present	-
Cobalt lithium manganese nickel oxide	Present	-

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
Copper	5000 lb	-
Nickel	100 lb	-

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals:.

Chemical name	California Proposition 65
Cobalt lithium manganese nickel oxide	Carcinogen
Nickel	Carcinogen
Carbon black	Carcinogen
1,3-Propane sultone	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Lithium Cobalt Oxide (CoLiO2)	X	-	X
Graphite	X	X	X
Cobalt lithium manganese nickel oxide	X	-	X
Copper	X	X	X
Ethylene carbonate	-	X	X
Aluminum	X	X	X
Diethyl carbonate	X	X	X
Phosphate(1-), hexafluoro-, lithium	X	-	-
Nickel	X	X	X
Carbon black	X	X	X
1,3-Propane sultone	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA	Health hazards 1	Flammability 0	Instability 0	Special hazards -
HMIS	Health hazards 0	Flammability 0	Physical hazards 0	Personal protection X

Key or legend to abbreviations and acronyms used in the safety data sheet

List may include phrases which are not applicable to this product

ACGIH	American Conference of Governmental Industrial Hygienists
ADN	Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Europe)
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road (Europe)
AIIC	Australian Inventory of Industrial Chemicals
ATE	Acute Toxicity Estimate
ASTM	American Society for the Testing of Materials
bar	Biological Reference Values for Chemical Compounds in the Work Area
BAT	Biological tolerance values for occupational exposure
BEL	Biological exposure limits
bw	Body weight
Ceiling	Maximum limit value
CMR	Carcinogen, Mutagen or Reproductive Toxicant
DOT	Department of Transportation (United States)
DSL	Domestic Substances List (Canada)
EmS	Emergency Schedule
ENCS	Existing and New Chemical Substances (Japan)
EPA	Environmental Protection Agency
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO	International Civil Aviation Organization
IECSC	Inventory of Existing Chemical Substances in China
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Organization for Standardization
KECI	Korean Existing Chemicals Inventory
LC50	Lethal Concentration to 50% of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
n.o.s.	Not Otherwise Specified
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NOELR	No Observable Effect Loading Rate
NTP	National Toxicology Program (United States)
NZIoC	New Zealand Inventory of Chemicals
OECD	Organization for Economic Cooperation and Development
OEL	Occupational exposure limits
OSHA	Occupational Safety and Health Administration of the US Department of Labor
PBT	Persistent, Bioaccumulative and Toxic substance
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PMT	Persistent, Mobile and Toxic
PPE	Personal protective equipment
QSAR	Quantitative Structure Activity Relationship
RID	Agreement concerning the International Carriage of Dangerous Goods by Rail (Europe)
SADT	Self-Accelerating Decomposition Temperature
SAR	Structure-activity relationship
SARA	Superfund Amendments and Reauthorization Act
SDS	Safety Data Sheet
SL	Surface Limit

STEL	Short Term Exposure Limit
STOT RE	Specific target organ toxicity - Repeated exposure
STOT SE	Specific target organ toxicity - Single exposure
TCSI	Taiwan Chemical Substance Inventory
TDG	Transport of Dangerous Goods (Canada)
TSCA	Toxic Substances Control Act (United States)
TWA	Time-Weighted Average
UN	United Nations
VOC	Volatile organic compounds
vPvB	Very Persistent and Very Bioaccumulative
vPvM	Very Persistent and Very Mobile
As	Allergenic substance
DS	Dermal Sensitizer
Ot	Ototoxicant
pOt	Ototoxicant - potential to cause hearing disorders
PS	Photosensitizer
RS	Respiratory Sensitizer
S	Sensitizer
poS	Sensitizer - capable of causing occupational asthma
Sa	Simple asphyxiant
Sd	Skin designation
pSd	Skin designation - potential for cutaneous absorption
Sdv	Skin designation - vacated
Sk	Skin notation
dSk	Skin notation - danger of cutaneous absorption
pSk	Skin notation - potential for cutaneous absorption

Key literature references and sources for data used to compile the SDS

U.S. Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
U.S. Environmental Protection Agency
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan National Institute of Technology and Evaluation (NITE)
Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
U.S. National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
International Organization for Economic Co-operation and Development (OECD) Environment, Health, and Safety Publications
International Organization for Economic Co-operation and Development (OECD) High Production Volume Chemicals Program
International Organization for Economic Co-operation and Development (OECD) Screening Information Data Set
United Nations World Health Organization (WHO)

Prepared By Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501.

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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

SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
US OSHA Hazard Communication Standard 2024 (29 CFR 1910.1200) and Canada Hazardous Products Act (HPA) and the
Hazardous Products Regulation (HPR), as amended

Issuing Date 06-Apr-2026

Revision date 06-Apr-2026

Revision Number 1

1. Identification

Product identifier

Product Name Rechargeable Li-ion Battery L22X3PF2 by CosMX

Other means of identification

Product Code(s) 1903964

Synonyms None

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 Name Lenovo LNB laptops

Supplier Address

Songtao Road 696
shanghai
shanghai
201203
CN

Emergency telephone number

Supplier Phone Number Phone:18116118603

24 Hour Emergency Phone Number 18116118603

Emergency Telephone No information available

2. Hazard(s) identification

Classification of the substance or mixture

Acute toxicity - Dermal	Category 4
Acute toxicity - Inhalation (Vapors)	Category 2
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Skin sensitization	Category 1
Carcinogenicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 1

Label elements



Danger

Hazard statements

Harmful in contact with skin.
Fatal if inhaled.
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
May cause 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 and face protection.
Do not breathe dust.
Use only outdoors or in a well-ventilated area.
Wear respiratory protection.
Wash face, hands and any exposed skin thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
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).
Specific treatment is urgent (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 and attention.

Skin

IF ON SKIN: Wash with plenty of water and soap.
Call a POISON CENTER or doctor if you feel unwell.
Take off contaminated clothing and wash it before reuse.
If skin irritation or rash occurs: Get medical advice and attention.

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor.

Precautionary Statements - Storage

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

Precautionary Statements - Disposal

Dispose of contents and container in accordance with local, regional, national, and international regulations as applicable.

Unknown acute toxicity

93.27 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity.
84.26 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor).

Hazards classified under paragraph (d)(1)(ii) of 1910.1200

No information available.

Other information

Very toxic to aquatic life. Toxic to aquatic life with long lasting effects. This is a battery. In case of rupture: the above hazards exist.

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 (CoLiO ₂)	12190-79-3	29.65	-	-
Graphite	7782-42-5	19.3	-	-
Cobalt lithium manganese nickel oxide	182442-95-1	12.91	-	-
Copper	7440-50-8	12.3	-	-
Aluminum	7429-90-5	8.98	-	-
Ethylene carbonate	96-49-1	2.56	-	-
Nickel	7440-02-0	2.12	-	-
Phosphate(1-), hexafluoro-, lithium	21324-40-3	1.34	-	-
1,3-Propane sultone	1120-71-4	0.35	-	-

4. First-aid measures

Description of first aid measures

General advice	Show this safety data sheet to the doctor in attendance. IF exposed or concerned: Get medical advice/attention. First aid is upon rupture of sealed battery. In case of rupture:
Inhalation	Remove to fresh air. Get medical attention immediately if symptoms occur.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.
Skin contact	May cause an allergic skin reaction. Wash off immediately with soap and plenty of water for at least 15 minutes. If symptoms persist, call a physician.
Ingestion	Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician.
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 contact with skin, eyes or clothing.

Most important symptoms and effects, both acute and delayed

Symptoms	Itching. Rashes. Hives. Erythema (skin redness). May cause redness and tearing of the eyes. Burning sensation.
Effects of Exposure	May cause cancer. Causes damage to organs through prolonged or repeated exposure.

Indication of any immediate medical attention and special treatment needed

Note to physicians	May cause sensitization in susceptible persons. Treat symptomatically.
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5. Fire-fighting measures

<u>Suitable Extinguishing Media</u>	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<u>Unsuitable extinguishing media</u>	Do not scatter spilled material with high pressure water streams.
<u>Specific hazards arising from the chemical</u>	Product is or contains a sensitizer. May cause sensitization by skin contact.
<u>Explosion data</u>	
Sensitivity to mechanical impact	None.
Sensitivity to static discharge	None.
<u>Special protective equipment and precautions for fire-fighters</u>	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

<u>Personal precautions</u>	Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
<u>Other information</u>	Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up

<u>Methods for containment</u>	Prevent further leakage or spillage if safe to do so.
<u>Methods for cleaning up</u>	Pick up and transfer to properly labeled containers.
<u>Prevention of secondary hazards</u>	Clean contaminated objects and areas thoroughly observing environmental regulations.

7. Handling and storage

Precautions for safe handling

<u>Advice on safe handling</u>	In case of rupture: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.
<u>General hygiene considerations</u>	Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

<u>Storage Conditions</u>	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 TLV	OSHA PEL	NIOSH
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	TWA: 0.02 mg/m ³	-	-
Graphite 7782-42-5	TWA: 2 mg/m ³ respirable particulate matter all forms except graphite fibers	TWA: 15 mg/m ³ total dust synthetic TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf respirable dust natural (vacated) TWA: 2.5 mg/m ³ respirable dust natural (vacated) TWA: 10 mg/m ³ total dust synthetic (vacated) TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m ³ TWA: 2.5 mg/m ³ respirable dust
Cobalt lithium manganese nickel oxide 182442-95-1	TWA: 0.02 mg/m ³ Co inhalable particulate matter TWA: 0.02 mg/m ³ Mn respirable particulate matter TWA: 0.1 mg/m ³ Mn inhalable particulate matter DS RS	(vacated) Ceiling: 5 mg/m ³ Ceiling: 5 mg/m ³ Mn	TWA: 1 mg/m ³ ; Mn TWA: 0.015 mg/m ³ ; except Nickel carbonyl Ni STEL: 3 mg/m ³ Mn IDLH: 500 mg/m ³ Mn IDLH: 10 mg/m ³ Ni
Copper 7440-50-8	TWA: 0.2 mg/m ³ fume	TWA: 0.1 mg/m ³ fume TWA: 1 mg/m ³ dust and mist (vacated) TWA: 0.1 mg/m ³ Cu dust, fume, mist	TWA: 1 mg/m ³ ; dust and mist TWA: 0.1 mg/m ³ ; fume IDLH: 100 mg/m ³ dust, fume and mist
Aluminum 7429-90-5	TWA: 1 mg/m ³ respirable particulate matter	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 15 mg/m ³ total dust (vacated) TWA: 5 mg/m ³ respirable fraction	TWA: 10 mg/m ³ ; total dust TWA: 5 mg/m ³ ; respirable dust
Nickel 7440-02-0	TWA: 1.5 mg/m ³	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 10 mg/m ³ TWA: 0.015 mg/m ³
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m ³ F	TWA: 2.5 mg/m ³ F (vacated) TWA: 2.5 mg/m ³	IDLH: 250 mg/m ³ F
1,3-Propane sultone 1120-71-4	Exposure by all routes should be carefully controlled to levels as low as possible	-	-

Chemical name	Alberta	British Columbia	Ontario	Quebec
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable DS RS	TWA: 0.02 mg/m ³ ;	TWAEV: 0.02 mg/m ³ ; inhalable aerosol fraction
Graphite 7782-42-5	TWA: 2 mg/m ³ ; respirable	TWA: 2 mg/m ³ ; respirable	TWA: 2 mg/m ³ ; respirable particulate matter	TWAEV: 2 mg/m ³ ; respirable dust
Cobalt lithium manganese nickel	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ;	TWAEV: 0.2 mg/m ³ ;

oxide 182442-95-1	TWA: 0.2 mg/m ³ ;	inhalable TWA: 0.02 mg/m ³ ; respirable TWA: 0.1 mg/m ³ ; inhalable Adverse reproductive effect DS RS	TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter	inhalable aerosol fraction TWA _{EV} : 0.05 mg/m ³ ; respirable aerosol fraction TWA _{EV} : 0.02 mg/m ³ ; inhalable aerosol fraction
Copper 7440-50-8	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWA: 1 mg/m ³ ; dust and mist TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWA _{EV} : 0.2 mg/m ³ ; fume TWA _{EV} : 1 mg/m ³ ; dust and mist
Aluminum 7429-90-5	TWA: 10 mg/m ³ ; dust	TWA: 1.0 mg/m ³ ; respirable	TWA: 1 mg/m ³ ; respirable particulate matter	TWA _{EV} : 10 mg/m ³ ;
Nickel 7440-02-0	TWA: 1.5 mg/m ³ ;	TWA: 0.05 mg/m ³ ;	TWA: 1 mg/m ³ ; inhalable fraction	TWA _{EV} : 1.5 mg/m ³ ; inhalable dust
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA _{EV} : 2.5 mg/m ³ ;
1,3-Propane sultone 1120-71-4	-	: ;	: ;	: ;

Chemical name	Manitoba	New Brunswick	Newfoundland and Labrador	Nova Scotia
Lithium Cobalt Oxide (CoLiO ₂)	TWA: 0.02 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ; inhalable particulate matter DS RS
Graphite	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable particulate matter
Cobalt lithium manganese nickel oxide	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ; TWA: 0.02 mg/m ³ ; respirable fraction TWA: 0.1 mg/m ³ ; inhalable fraction	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter DS RS	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter DS RS
Copper	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume
Aluminum	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 1 mg/m ³ ; respirable fraction	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 1 mg/m ³ ; respirable particulate matter
Nickel	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable fraction	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable particulate matter
Phosphate(1-), hexafluoro-, lithium	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ;

Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
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Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
Lithium Cobalt Oxide (CoLiO ₂)	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ ; Designated substance	TWA: 0.02 mg/m ³ ; inhalable particulate matter	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ ; Designated Chemical Substance	-
Graphite	TWA: 2 mg/m ³ ; respirable fraction STEL: 4 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ; respirable particulate matter	TWA: 2 mg/m ³ ; respirable fraction STEL: 4 mg/m ³ ; respirable fraction	TWA: 20 mppcf; TWA: 30 mppcf; TWA: 10 mg/m ³ ;
Cobalt lithium manganese nickel oxide	TWA: 0.02 mg/m ³ ; TWA: 0.2 mg/m ³ ; STEL: 0.06 mg/m ³ ; STEL: 0.6 mg/m ³ ; Designated substance	TWA: 0.02 mg/m ³ ; inhalable particulate matter TWA: 0.02 mg/m ³ ; respirable particulate matter TWA: 0.1 mg/m ³ ; inhalable particulate matter	TWA: 0.02 mg/m ³ ; TWA: 0.2 mg/m ³ ; STEL: 0.06 mg/m ³ ; STEL: 0.6 mg/m ³ ; Designated Chemical Substance	Ceiling: 5 mg/m ³ ;
Copper	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist STEL: 3 mg/m ³ ; dust and mist STEL: 0.6 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist STEL: 0.6 mg/m ³ ; fume STEL: 3 mg/m ³ ; dust and mist	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist STEL: 0.2 mg/m ³ ; fume STEL: 2 mg/m ³ ; dust and mist
Aluminum	TWA: 10 mg/m ³ ; dust STEL: 20 mg/m ³ ; dust	TWA: 1 mg/m ³ ; respirable particulate matter	TWA: 10 mg/m ³ ; dust STEL: 20 mg/m ³ ; dust	-
Nickel	TWA: 1.5 mg/m ³ ; inhalable fraction STEL: 3 mg/m ³ ; inhalable fraction Designated substance	TWA: 1.5 mg/m ³ ; inhalable particulate matter	TWA: 1.5 mg/m ³ ; inhalable fraction STEL: 3 mg/m ³ ; inhalable fraction Designated Chemical Substance	TWA: 1 mg/m ³ ; STEL: 3 mg/m ³ ;
Phosphate(1-), hexafluoro-, lithium	-	TWA: 2.5 mg/m ³ ;	TWA: 2.5 mg/m ³ ; STEL: 5 mg/m ³ ;	TWA: 2.5 mg/m ³ ; STEL: 2.5 mg/m ³ ;
1,3-Propane sultone	Designated substance	-	Designated Chemical Substance	-

Note See section 16 for terms and abbreviations.

Other information on limit values Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Biological occupational exposure limits

Chemical name	ACGIH
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	15 µg/L - urine (Cobalt) - end of shift at end of workweek
Cobalt lithium manganese nickel oxide 182442-95-1	15 µg/L - urine (Cobalt) - end of shift at end of workweek
Nickel 7440-02-0	5 µg/L - urine (Nickel) - post-shift at end of workweek
Phosphate(1-), hexafluoro-, lithium 21324-40-3	2 mg/L - urine (Fluoride) - prior to shift 3 mg/L - urine (Fluoride) - end of shift

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles).
Hand protection	Wear suitable gloves.
Skin and body protection	Wear suitable protective clothing. Long sleeved clothing.
Respiratory protection	Use appropriate respiratory protection. Consult with an industrial hygienist to determine the appropriate respiratory protection for your specific use of this material. No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

9. Physical and chemical properties**Information on basic physical and chemical properties**

Physical state	Solid
Color	No information available
Odor (includes odor threshold)	Odorless
Odor threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
Melting point / freezing point	No data available	None known
Boiling point (or initial boiling point or boiling range)	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Flash point	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
SADT (°C)	No data available	None known
pH	No data available	None known
pH (as aqueous solution)	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Solubility	No data available	None known
Water solubility	No data available	None known
Partition coefficient n-octanol/water (log value)	1	None known
Vapor pressure (includes evaporation rate)	No data available	None known
Evaporation rate	No data available	None known
Density and/or relative density	No data available	None known
Bulk density	No data available	
Liquid Density	No data available	
Relative vapor density	No data available	None known
Particle characteristics		None known
Particle Size	No data available	
Particle Size Distribution	No data available	

Other information

Miscible	No
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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.
Conditions to avoid	None known based on information supplied.
Incompatible materials	Strong acids. Strong bases. Strong oxidizing agents.
Hazardous decomposition products	None known based on information supplied.

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. Causes serious eye irritation. (based on components). May cause redness, itching, and pain.
Skin contact	May cause sensitization by skin contact. Specific test data for the substance or mixture is not available. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. (based on components). Causes skin irritation.
Ingestion	Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms	Itching. Rashes. Hives. Erythema (skin redness). May cause redness and tearing of the eyes. Burning sensation.
Acute toxicity	Fatal if inhaled. Harmful by skin contact.

Numerical measures of toxicity

The following ATE values have been calculated for the mixture

ATEmix (oral)	13,927.10 mg/kg
ATEmix (dermal)	1,506.70 mg/kg
ATEmix (inhalation-gas)	99,999.00 ppm
ATEmix (inhalation-vapor)	0.611 mg/l
ATEmix (inhalation-dust/mist)	99,999.000 mg/l

Unknown acute toxicity

93.27 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity

84.26 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)

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/m ³ (Rat) 4 h
Copper	-	-	> 5.11 mg/L (Rat) 4 h
Aluminum	-	-	> 0.888 mg/L (Rat) 4 h
Ethylene carbonate	= 10 g/kg (Rat)	> 26420 mg/kg (Rabbit)	> 730 mg/m ³ (Rat) 8 h
Nickel	> 9000 mg/kg (Rat)	-	> 10.2 mg/L (Rat) 1 h
1,3-Propane sultone	= 157 mg/kg (Rat)	-	-

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. Causes skin irritation.

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

Respiratory or skin sensitization May cause an allergic skin reaction.

Germ cell mutagenicity No information available.

Carcinogenicity Contains a known or suspected carcinogen. Classification based on data available for ingredients. May cause cancer.

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

Chemical name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt Oxide (CoLiO ₂)	A3 - Confirmed animal carcinogen (with unknown relevance to humans)	Group 2B - Possibly carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X
Cobalt lithium manganese nickel oxide	A3 - Confirmed animal carcinogen (with unknown relevance to humans) A4 - Not classifiable as a human carcinogen	Group 1 - Carcinogenic to humans Group 2B - Possibly carcinogenic to humans	Known human carcinogen Reasonably anticipated to be a human carcinogen	X
Aluminum	A4 - Not classifiable as a human carcinogen	-	-	-
Nickel	A5 - Not suspected as a human carcinogen	Group 2B - Possibly carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X
Phosphate(1-), hexafluoro-, lithium	A4 - Not classifiable as a human carcinogen	-	-	-
1,3-Propane sultone	A3 - Confirmed animal carcinogen (with unknown relevance to humans)	Group 2A - Probably carcinogenic to humans	Reasonably anticipated to be a human carcinogen	X

Reproductive toxicity No information available.

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. Toxic to aquatic life with long lasting effects.

Aquatic ecotoxicity

Component Information

Chemical name	Fish	Crustacea	Algae/aquatic plants	Toxicity to microorganisms
Graphite	96h LC50: > 100 mg/L (Danio rerio)	-	-	-
Copper	96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: < 0.3 mg/L (Pimephales promelas) 96h LC50: = 0.2 mg/L (Pimephales promelas) 96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: = 0.3 mg/L (Cyprinus carpio) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 0.112 mg/L (Poecilia reticulata)	48h EC50: = 0.03 mg/L (Daphnia magna)	72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.031 - 0.054 mg/L (Pseudokirchneriella subcapitata)	-
Ethylene carbonate	96h LC50: > 100 mg/L (Oncorhynchus mykiss)	-	-	-
Nickel	96h LC50: > 100 mg/L (Brachydanio rerio) 96h LC50: = 1.3 mg/L (Cyprinus carpio) 96h LC50: = 10.4 mg/L (Cyprinus carpio)	48h EC50: > 100 mg/L (Daphnia magna) 48h EC50: = 1 mg/L (Daphnia magna)	72h EC50: = 0.18 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.174 - 0.311 mg/L (Pseudokirchneriella subcapitata)	-

Persistence and degradability No information available.

Bioaccumulative potential

Chemical name	Partition coefficient	Bioconcentration factor (BCF)	Trophic magnification factor (TMF)
Ethylene carbonate	0.11	-	-

Mobility in soil No information available.

Other adverse effects No information available.

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

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 passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard 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
Transport hazard class(es) N/A
Reportable quantity (lbs) Copper: RQ (lb)= 5000.00, Nickel: RQ (lb)= 100.00, 1,3-Propane sultone: RQ (lb)= 10.00
Reportable quantity (lbs) Copper: RQ (lb)= 40650.00, Nickel: RQ (lb)= 4717.00, 1,3-Propane sultone: RQ (lb)=
(calculated) 2857.00
Reportable quantity (kg) (Copper: RQ (kg)= 2270.00, Nickel: RQ (kg)= 45.40, 1,3-Propane sultone: RQ (kg)= 4.54)
Reportable quantity (kg) Copper: RQ (kg)= 18455.28, Nickel: RQ (kg)= 2141.51, 1,3-Propane sultone: RQ (kg)=
(calculated) 1297.14
DOT Marine Pollutant PP
Marine pollutant Copper
Emergency Response Guide Number 147

TDG Not applicable

UN number or ID number UN3480
UN proper shipping name LITHIUM ION BATTERIES
Transport hazard class(es) 9
Description UN3480, LITHIUM ION BATTERIES, 9
Special Provisions A88, A99, A154, A183, A201, A213

IATA
UN number or ID number UN3480
UN proper shipping name LITHIUM ION BATTERIES
Transport hazard class(es) 9
Environmental hazards Yes
ERG Code 12FZ
Description UN3480, LITHIUM ION BATTERIES, 9

Transport hazard class(es) N/A
Marine pollutant indicator NP
EmS-No. F-A, S-I

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.

DSL/NDSL Contact supplier for inventory compliance status.
 EINECS/ELINCS Contact supplier for inventory compliance status.
 ENCS Contact supplier for inventory compliance status.
 IECSC Contact supplier for inventory compliance status.
 KECL Contact supplier for inventory compliance status.
 PICCS Contact supplier for inventory compliance status.
 AIIC Contact supplier for inventory compliance status.
 NZIoC Contact supplier for inventory compliance status.
 TCSI Contact supplier for inventory compliance status.

Legend:

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
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing Chemicals Inventory
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AIIC - Australian Inventory of Industrial Chemicals
NZIoC - New Zealand Inventory of Chemicals
TCSI - Taiwan Chemical Substance Inventory

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	SARA 313 - Threshold Values %
Lithium Cobalt Oxide (CoLiO2)	0.1
Copper	1.0
Aluminum	1.0
Nickel	0.1
1,3-Propane sultone	0.1

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.

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

Cobalt lithium manganese nickel oxide	-	X	-	-
Copper	-	X	X	-
Nickel	-	X	X	-

CAA (Clean Air Act)

This product contains the following substances which are regulated pollutants to the Clean Air Act (CAA).

Chemical name	Hazardous air pollutants (HAPs)	Ozone-depleting substances (ODS)
Lithium Cobalt Oxide (CoLiO2)	Present	-
Cobalt lithium manganese nickel oxide	Present	-

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
Copper	5000 lb	-
Nickel	100 lb	-

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals:.

Chemical name	California Proposition 65
Cobalt lithium manganese nickel oxide	Carcinogen
Nickel	Carcinogen
1,3-Propane sultone	Carcinogen
Carbon black	Carcinogen
Titanium dioxide	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Lithium Cobalt Oxide (CoLiO2)	X	-	X
Graphite	X	X	X
Cobalt lithium manganese nickel oxide	X	-	X
Copper	X	X	X
Aluminum	X	X	X
Ethylene carbonate	-	X	X
Diethyl carbonate	X	X	X
Nickel	X	X	X
Phosphate(1-), hexafluoro-, lithium	X	-	-
Aluminum oxide	X	X	X
1,3-Propane sultone	X	X	X
Carbon black	X	X	X
Tin	X	X	X
Acrylic acid	X	X	X
Titanium dioxide	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA	Health hazards 1	Flammability 0	Instability 0	Special hazards -
HMIS	Health hazards 0	Flammability 0	Physical hazards 0	Personal protection X

Key or legend to abbreviations and acronyms used in the safety data sheet

List may include phrases which are not applicable to this product

ACGIH	American Conference of Governmental Industrial Hygienists
ADN	Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Europe)
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road (Europe)
AIIC	Australian Inventory of Industrial Chemicals
ATE	Acute Toxicity Estimate
ASTM	American Society for the Testing of Materials
bar	Biological Reference Values for Chemical Compounds in the Work Area
BAT	Biological tolerance values for occupational exposure
BEL	Biological exposure limits
bw	Body weight
Ceiling	Maximum limit value
CMR	Carcinogen, Mutagen or Reproductive Toxicant
DOT	Department of Transportation (United States)
DSL	Domestic Substances List (Canada)
EmS	Emergency Schedule
ENCS	Existing and New Chemical Substances (Japan)
EPA	Environmental Protection Agency
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO	International Civil Aviation Organization
IECSC	Inventory of Existing Chemical Substances in China
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Organization for Standardization
KECI	Korean Existing Chemicals Inventory
LC50	Lethal Concentration to 50% of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
n.o.s.	Not Otherwise Specified
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NOELR	No Observable Effect Loading Rate
NTP	National Toxicology Program (United States)
NZIoC	New Zealand Inventory of Chemicals
OECD	Organization for Economic Cooperation and Development
OEL	Occupational exposure limits
OSHA	Occupational Safety and Health Administration of the US Department of Labor
PBT	Persistent, Bioaccumulative and Toxic substance
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PMT	Persistent, Mobile and Toxic
PPE	Personal protective equipment
QSAR	Quantitative Structure Activity Relationship
RID	Agreement concerning the International Carriage of Dangerous Goods by Rail (Europe)
SADT	Self-Accelerating Decomposition Temperature
SAR	Structure-activity relationship

SARA	Superfund Amendments and Reauthorization Act
SDS	Safety Data Sheet
SL	Surface Limit
STEL	Short Term Exposure Limit
STOT RE	Specific target organ toxicity - Repeated exposure
STOT SE	Specific target organ toxicity - Single exposure
TCSI	Taiwan Chemical Substance Inventory
TDG	Transport of Dangerous Goods (Canada)
TSCA	Toxic Substances Control Act (United States)
TWA	Time-Weighted Average
UN	United Nations
VOC	Volatile organic compounds
vPvB	Very Persistent and Very Bioaccumulative
vPvM	Very Persistent and Very Mobile
As	Allergenic substance
DS	Dermal Sensitizer
Ot	Ototoxicant
pOt	Ototoxicant - potential to cause hearing disorders
PS	Photosensitizer
RS	Respiratory Sensitizer
S	Sensitizer
poS	Sensitizer - capable of causing occupational asthma
Sa	Simple asphyxiant
Sd	Skin designation
pSd	Skin designation - potential for cutaneous absorption
Sdv	Skin designation - vacated
Sk	Skin notation
dSk	Skin notation - danger of cutaneous absorption
pSk	Skin notation - potential for cutaneous absorption

Key literature references and sources for data used to compile the SDS

U.S. Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
U.S. Environmental Protection Agency
Acute Exposure Guideline Level(s) (AEGl(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan National Institute of Technology and Evaluation (NITE)
Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
U.S. National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
International Organization for Economic Co-operation and Development (OECD) Environment, Health, and Safety Publications
International Organization for Economic Co-operation and Development (OECD) High Production Volume Chemicals Program
International Organization for Economic Co-operation and Development (OECD) Screening Information Data Set
United Nations World Health Organization (WHO)

Prepared By Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501.

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End of Safety Data Sheet