SAFETY DATA SHEET

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

Issuing Date 22-Aug-2025 **Revision date** 22-Aug-2025 **Revision Number** 1

1. Identification

Product identifier

Product Name Rechargeable Li-ion Battery L24X3PG3 by CosMX

Other means of identification

Product Code(s) 1870827

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.
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.
Wear protective gloves.
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 (CoLiO2)	12190-79-3	50	-	-
Graphite	7782-42-5	25	-	-
Copper	7440-50-8	10	-	-
Aluminum	7429-90-5	10	-	-
Phosphate(1-), hexafluoro-, lithium	21324-40-3	5	-	-
Ethylene carbonate	96-49-1	5	-	-
Glass, oxide	65997-17-3	3	-	-
Nickel	7440-02-0	2	-	-
Carbon black	1333-86-4	2	-	-
Poly(acrylic acid)	9003-01-4	1.5	-	-
1,3-Propane sultone	1120-71-4	0.5	-	-
Acrylic acid	79-10-7	0.2	-	-
Titanium dioxide	13463-67-7	0.1	-	-
Oxirane, 2,2`-4-butylidenebisphenyleneoxymethylene (DGEBA)	25085-99-8	0.1	-	-

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 sensation. 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 (CoLiO2) 12190-79-3	TWA: 0.02 mg/m³	-	-
Graphite 7782-42-5	TWA: 2 mg/m³ respirable particulate matter all forms except graphite fibers	TWA: 15 mg/m³ total dust synthetic TWA: 5 mg/m³ respirable fraction synthetic TWA: 15 mppcf respirable dust natural (vacated) TWA: 2.5 mg/m³ respirable dust natural (vacated) TWA: 10 mg/m³ total dust synthetic (vacated) TWA: 5 mg/m³ respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m³ TWA: 2.5 mg/m³ respirable dust
Copper 7440-50-8	TWA: 0.2 mg/m³ fume	TWA: 0.1 mg/m³ fume TWA: 1 mg/m³ dust and mist (vacated) TWA: 0.1 mg/m³ Cu dust, fume, mist	TWA: 1 mg/m³; dust and mist TWA: 0.1 mg/m³; fume IDLH: 100 mg/m³ dust, fume and mist
Aluminum 7429-90-5	TWA: 1 mg/m³ respirable particulate matter	TWA: 15 mg/m³ total dust TWA: 5 mg/m³ respirable fraction (vacated) TWA: 15 mg/m³ total dust (vacated) TWA: 5 mg/m³ respirable fraction	TWA: 10 mg/m³; total dust TWA: 5 mg/m³; respirable dust
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m³ F	TWA: 2.5 mg/m³ F (vacated) TWA: 2.5 mg/m³	IDLH: 250 mg/m³ F
Glass, oxide 65997-17-3	TWA: 1 fiber/cm3 respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination	-	-

	TWA: 5 mg/m³ inhalable fraction		
Nickel 7440-02-0	TWA: 1.5 mg/m³	TWA: 1 mg/m³ (vacated) TWA: 1 mg/m³	IDLH: 10 mg/m³ TWA: 0.015 mg/m³
Carbon black 1333-86-4	TWA: 3 mg/m³ inhalable particulate matter	TWA: 3.5 mg/m³ (vacated) TWA: 3.5 mg/m³	TWA: 3.5 mg/m³; TWA: 0.1 mg/m³; Carbon black in presence of Polycyclic aromatic hydrocarbons PAH IDLH: 1750 mg/m³
1,3-Propane sultone 1120-71-4	Exposure by all routes should be carefully controlled to levels as low as possible	-	-
Acrylic acid 79-10-7	TWA: 2 ppm pSk	(vacated) TWA: 10 ppm (vacated) TWA: 30 mg/m³ Sdv	TWA: 2 ppm; TWA: 6 mg/m³;
Titanium dioxide 13463-67-7	TWA: 10 mg/m³	TWA: 15 mg/m³ total dust (vacated) TWA: 10 mg/m³ total dust	IDLH: 5000 mg/m³

Chemical name	Alberta	British Columbia	Ontario	Quebec
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	TWA: 0.02 mg/m³;	TWA: 0.02 mg/m³; inhalable DS RS	TWA: 0.02 mg/m³;	TWAEV: 0.02 mg/m³; inhalable aerosol fraction
Graphite 7782-42-5	TWA: 2 mg/m³; respirable	TWA: 2 mg/m³; respirable	TWA: 2 mg/m³; respirable particulate matter	TWAEV: 2 mg/m³; respirable dust
Copper 7440-50-8	TWA: 0.2 mg/m³; fume TWA: 1 mg/m³; dust and mist	TWA: 1 mg/m³; dust and mist TWA: 0.2 mg/m³; fume	TWA: 0.2 mg/m³; fume TWA: 1 mg/m³; dust and mist	TWAEV: 0.2 mg/m³; fume TWAEV: 1 mg/m³; dust and mist
Aluminum 7429-90-5	TWA: 10 mg/m³; dust	TWA: 1.0 mg/m³; respirable	TWA: 1 mg/m³; respirable particulate matter	TWAEV: 10 mg/m³;
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m³;	TWA: 2.5 mg/m³;	TWA: 2.5 mg/m³;	TWAEV: 2.5 mg/m³;
Glass, oxide 65997-17-3	TWA: 5 mg/m³; total particulate TWA: 1 fibre/cm3;	TWA: 1 fibre/cm3; TWA: 5 mg/m³; inhalable	TWA: 1 fibre/cm3; respirable TWA: 5 mg/m³; inhalable fraction	TWAEV: 1 fibre/cm3; respirable TWAEV: 5 mg/m³; inhalable aerosol fraction
Nickel 7440-02-0	TWA: 1.5 mg/m³;	TWA: 0.05 mg/m³;	TWA: 1 mg/m³; inhalable fraction	TWAEV: 1.5 mg/m³; inhalable dust
Carbon black 1333-86-4	TWA: 3.5 mg/m³;	TWA: 3 mg/m³; inhalable	TWA: 3 mg/m³; inhalable particulate matter	TWAEV: 3 mg/m³; inhalable dust
1,3-Propane sultone 1120-71-4	-	: ;	: ;	: ;
Acrylic acid 79-10-7	TWA: 2 ppm; TWA: 5.9 mg/m³; pSk	TWA: 2 ppm; Adverse reproductive effect Sk	TWA: 2 ppm; dSk	TWAEV: 2 ppm; TWAEV: 5.9 mg/m³; Sd
Titanium dioxide 13463-67-7	TWA: 10 mg/m³;	TWA: 10 mg/m³; total dust TWA: 3 mg/m³; respirable fraction	TWA: 10 mg/m³;	TWAEV: 10 mg/m³; total dust

Chemical name	Manitoba	New Brunswick	Newfoundland and Labrador	Nova Scotia
Lithium Cobalt Oxide (CoLiO2)	TWA: 0.02 mg/m³; inhalable particulate matter DS RS	TWA: 0.02 mg/m³;	TWA: 0.02 mg/m³; inhalable particulate matter DS RS	TWA: 0.02 mg/m³; inhalable particulate matter DS RS
Graphite	TWA: 2 mg/m³; respirable particulate matter	TWA: 2 mg/m³; respirable fraction	TWA: 2 mg/m³; respirable particulate matter	TWA: 2 mg/m³; respirable particulate matter
Copper	TWA: 0.2 mg/m³; fume	TWA: 0.2 mg/m³; fume	TWA: 0.2 mg/m³; fume	TWA: 0.2 mg/m³; fume
Aluminum	TWA: 1 mg/m³; respirable particulate matter	TWA: 1 mg/m³; respirable fraction	TWA: 1 mg/m³; respirable particulate matter	TWA: 1 mg/m³; respirable particulate matter
Phosphate(1-), hexafluoro-, lithium	TWA: 2.5 mg/m³;	TWA: 2.5 mg/m³;	TWA: 2.5 mg/m³;	TWA: 2.5 mg/m³;
Glass, oxide	TWA: 1 fiber/cm3; respirable fibers TWA: 5 mg/m³; inhalable particulate matter	TWA: 1 fiber/cm3; respirable fibers TWA: 5 mg/m³; inhalable fraction	TWA: 1 fiber/cm3; respirable fibers TWA: 5 mg/m³; inhalable particulate matter	TWA: 1 fiber/cm3; respirable fibers TWA: 5 mg/m³; inhalable particulate matter
Nickel	TWA: 1.5 mg/m³; inhalable particulate matter	TWA: 1.5 mg/m³; inhalable fraction	TWA: 1.5 mg/m³; inhalable particulate matter	TWA: 1.5 mg/m³; inhalable particulate matter
Carbon black	TWA: 3 mg/m³; inhalable particulate matter	TWA: 3 mg/m³; inhalable fraction	TWA: 3 mg/m³; inhalable particulate matter	TWA: 3 mg/m³; inhalable particulate matter
Acrylic acid	TWA: 2 ppm; pSk	TWA: 2 ppm; pSk	TWA: 2 ppm; pSk	TWA: 2 ppm; pSk
Titanium dioxide	TWA: 0.2 mg/m³; nanoscale respirable particulate matter TWA: 2.5 mg/m³; finescale respirable particulate matter	TWA: 10 mg/m³;	TWA: 0.2 mg/m³; nanoscale respirable particulate matter TWA: 2.5 mg/m³; finescale respirable particulate matter	TWA: 0.2 mg/m³; nanoscale respirable particulate matter TWA: 2.5 mg/m³; finescale respirable particulate matter

Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
Lithium Cobalt Oxide (CoLiO2)	TWA: 0.02 mg/m³; STEL: 0.06 mg/m³; Designated substance	TWA: 0.02 mg/m³; inhalable particulate matter	TWA: 0.02 mg/m³; STEL: 0.06 mg/m³; Designated Chemical Substance	-
Graphite	TWA: 2 mg/m³; respirable fraction STEL: 4 mg/m³; respirable fraction	TWA: 2 mg/m³; respirable particulate matter	TWA: 2 mg/m³; respirable fraction STEL: 4 mg/m³; respirable fraction	TWA: 20 mppcf; TWA: 30 mppcf; TWA: 10 mg/m³;
Copper	TWA: 0.2 mg/m³; fume TWA: 1 mg/m³; dust and mist STEL: 3 mg/m³; dust and mist STEL: 0.6 mg/m³; fume	TWA: 0.2 mg/m³; fume	TWA: 0.2 mg/m³; fume TWA: 1 mg/m³; dust and mist STEL: 0.6 mg/m³; fume STEL: 3 mg/m³; dust and mist	TWA: 0.2 mg/m³; fume TWA: 1 mg/m³; dust and mist STEL: 0.2 mg/m³; fume STEL: 2 mg/m³; dust and mist
Aluminum	TWA: 10 mg/m³; dust STEL: 20 mg/m³; dust	TWA: 1 mg/m³; respirable particulate matter	TWA: 10 mg/m³; dust STEL: 20 mg/m³; dust	-
Phosphate(1-), hexafluoro-, lithium	-	TWA: 2.5 mg/m³;	TWA: 2.5 mg/m³; STEL: 5 mg/m³;	TWA: 2.5 mg/m³; STEL: 2.5 mg/m³;
Glass, oxide	TWA: 1 fibre/cm3;	TWA: 1 fiber/cm3;	TWA: 5 mg/m³;	TWA: 30 mppcf; dust or

Chemical name	Nunavut	Prince Edward Island	Saskatchewan	Yukon
	respirable fibres TWA: 5 mg/m³; inhalable fraction STEL: 3 fibre/cm3; respirable fibres STEL: 10 mg/m³; inhalable fraction	respirable fibers TWA: 5 mg/m³; inhalable particulate matter	inhalable fraction TWA: 1 fibre/cm3; respirable fibres STEL: 3 fibre/cm3; respirable fibres STEL: 10 mg/m³; inhalable fraction	fibrous TWA: 10 mg/m³; dust or fibrous
Nickel	TWA: 1.5 mg/m³; inhalable fraction STEL: 3 mg/m³; inhalable fraction Designated substance	TWA: 1.5 mg/m³; inhalable particulate matter	TWA: 1.5 mg/m³; inhalable fraction STEL: 3 mg/m³; inhalable fraction Designated Chemical Substance	TWA: 1 mg/m³; STEL: 3 mg/m³;
Carbon black	TWA: 3.5 mg/m³; STEL: 7 mg/m³;	TWA: 3 mg/m³; inhalable particulate matter	TWA: 3.5 mg/m³; STEL: 7 mg/m³;	TWA: 3.5 mg/m³; STEL: 7 mg/m³;
1,3-Propane sultone	Designated substance	-	Designated Chemical Substance	-
Acrylic acid	TWA: 2 ppm; STEL: 4 ppm; Sk	TWA: 2 ppm;	TWA: 2 ppm; STEL: 4 ppm; pSd	-
Titanium dioxide	TWA: 10 mg/m³; STEL: 20 mg/m³;	TWA: 0.2 mg/m³; nanoscale respirable particulate matter TWA: 2.5 mg/m³; finescale respirable particulate matter	TWA: 10 mg/m³; STEL: 20 mg/m³;	TWA: 30 mppcf; TWA: 10 mg/m³; STEL: 20 mg/m³;

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 (CoLiO2) 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 Tight sealing safety goggles. Face protection shield.

Hand protection Wear suitable gloves. Impervious gloves.

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

Respiratory protection Appropriate respiratory protection should be selected and used according to the chemical

nature, hazards and use of this product and safety requirements of the local jurisdiction. 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

Appearance	Black
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	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	

Other information

Miscible	No
Heat of combustion	3.415

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 Redness. Burning. May cause blindness. Coughing and/ or wheezing. Itching. Rashes. Hives.

Acute toxicity No information available.

Numerical measures of toxicity

The following ATE values have been calculated for the mixture

ATEmix (oral)	3,333.30 mg/kg
ATEmix (dermal)	6,000.00 mg/kg
ATEmix (inhalation-gas)	99,999.00 ppm
ATEmix (inhalation-vapor)	99,999.00 mg/l
ATEmix (inhalation-dust/mist)	99,999.00 mg/l

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rat)	> 5.05 mg/L (Rat) 4 h
Graphite 7782-42-5	-	-	> 2000 mg/m³ (Rat) 4 h
Copper 7440-50-8	-	-	> 5.11 mg/L (Rat) 4 h
Aluminum	-	-	> 0.888 mg/L (Rat) 4 h

7429-90-5			
Ethylene carbonate 96-49-1	= 10 g/kg (Rat)	> 26420 mg/kg (Rabbit)	> 730 mg/m³ (Rat) 8 h
Nickel 7440-02-0	> 9000 mg/kg (Rat)	-	> 10.2 mg/L (Rat) 1 h
Carbon black 1333-86-4	> 10000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 4.6 mg/m³ (Rat) 4 h
Poly(acrylic acid) 9003-01-4	= 2500 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.1 mg/L (Rat) 4 h
1,3-Propane sultone 1120-71-4	= 157 mg/kg (Rat)	-	-
Acrylic acid 79-10-7	= 1500 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	= 3.6 mg/L (Rat) 4 h = 11.1 mg/L (Rat) 1 h
Titanium dioxide 13463-67-7	> 2000 mg/kg (Rat)	-	> 5.09 mg/L (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. This product contains titanium dioxide in a non-respirable form. Inhalation of titanium dioxide is unlikely to occur from exposure to this product.

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

Chemical name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	A3 A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans	Group 2B	Reasonably Anticipated	X
Aluminum 7429-90-5	A4 - Not Classifiable as a Human Carcinogen	-	-	-
Phosphate(1-), hexafluoro-, lithium 21324-40-3	A4 - Not Classifiable as a Human Carcinogen	-	-	-
Glass, oxide 65997-17-3	A4 - Not Classifiable as a Human Carcinogen (listed under Synthetic vitreous fibers)	Group 3	-	-
Nickel 7440-02-0	A5 - Not Suspected as a Human Carcinogen	Group 2B	Reasonably Anticipated	X
Carbon black 1333-86-4	A3 A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans	Group 2B	-	X
Poly(acrylic acid)	-	Group 3	-	-

9003-01-4				
1,3-Propane sultone 1120-71-4	A3 A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans	Group 2A	Reasonably Anticipated	X
Acrylic acid 79-10-7	A4 - Not Classifiable as a Human Carcinogen	Group 3	-	-
Titanium dioxide 13463-67-7	A3 A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans	Group 2B	-	X

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)
A3 - Animal Carcinogen
A4 - Not classifiable as a human carcinogen
IARC (International Agency for Research on Cancer)
Group 2A - Probably carcinogenic to humans
Group 2B - Possibly carcinogenic to humans
Group 3 - Not classifiable as to carcinogenicity in humans
NTP (National Toxicology Program)
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
Occupational Safety and Health Administration of the US Department of Labor
X - Present

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.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Graphite 7782-42-5	-	96h LC50: > 100 mg/L (Danio rerio)	-	-
Copper 7440-50-8	72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.031 - 0.054 mg/L (Pseudokirchneriella subcapitata)	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	-	48h EC50: = 0.03 mg/L (Daphnia magna)

		(Cyprinus carpio) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 0.112 mg/L (Poecilia reticulata)		
Ethylene carbonate 96-49-1	-	96h LC50: > 100 mg/L (Oncorhynchus mykiss)	-	-
Nickel 7440-02-0	72h EC50: = 0.18 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.174 - 0.311 mg/L (Pseudokirchneriella subcapitata)	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)
Poly(acrylic acid) 9003-01-4	-	96h LC50: = 580 mg/L (Lepomis macrochirus)	-	-
Acrylic acid 79-10-7	96h EC50: = 0.17 mg/L (Pseudokirchneriella subcapitata) 72h EC50: = 0.04 mg/L (Desmodesmus subspicatus)	96h LC50: = 222 mg/L (Brachydanio rerio)	-	48h EC50: = 95 mg/L (Daphnia magna)

Persistence and degradability No information available.

Bioaccumulation

Component Information

Chemical name	Partition coefficient
Ethylene carbonate 96-49-1	0.11
Poly(acrylic acid) 9003-01-4	0.27
Acrylic acid 79-10-7	0.46

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

Hazard Class	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)= 50000.00, Nickel: RQ (lb)= 5000.00, 1,3-Propane sultone: RQ (lb)= 2000.00
Reportable Quantity (RQ)	(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)= 22700.00, 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

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.
KECI	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) - 12190-79-3	0.1
Aluminum - 7429-90-5	1.0
Copper - 7440-50-8	1.0
Nickel - 7440-02-0	0.1
1,3-Propane sultone - 1120-71-4	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 7440-50-8	-	X	X	-
Nickel 7440-02-0	-	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) 12190-79-3	Present	-
1,3-Propane sultone 1120-71-4	Present	-
Acrylic acid 79-10-7	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	Reportable Quantity (RQ)
Copper 7440-50-8	5000 lb	-	RQ 5000 lb final RQ RQ 2270 kg final RQ
Nickel 7440-02-0	100 lb	-	RQ 100 lb final RQ RQ 45.4 kg final RQ
1,3-Propane sultone 1120-71-4	10 lb	-	RQ 10 lb final RQ RQ 4.54 kg final RQ
Acrylic acid 79-10-7	5000 lb	-	RQ 5000 lb final RQ RQ 2270 kg final RQ

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals:.

Chemical name	California Proposition 65
Carbon black - 1333-86-4	Carcinogen
Nickel - 7440-02-0	Carcinogen
1,3-Propane sultone - 1120-71-4	Carcinogen
Titanium dioxide - 13463-67-7	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	X	-	X
Graphite 7782-42-5	X	X	X
Aluminum 7429-90-5	X	X	X
Copper 7440-50-8	X	X	X
Phosphate(1-), hexafluoro-, lithium 21324-40-3	X	-	-
Diethyl carbonate 105-58-8	X	X	X
Ethylene carbonate 96-49-1	-	X	X
Carbon black 1333-86-4	X	X	X
Nickel 7440-02-0	X	X	X
1,3-Propane sultone 1120-71-4	X	X	X
Acrylic acid 79-10-7	X	X	X
Titanium dioxide	X	X	X

13463-67-7			
Tin 7440-31-5	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

Legend

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

Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
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)
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)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
World Health Organization

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End of Safety Data Sheet