

Paslode - STOCKade Lithium Ion Battery Cell

Paslode - STOCKade

Chemwatch Hazard Alert Code: 0

Chemwatch: 4776-72

Issue Date: 13/08/2016

Version No: 3.1.1.1

Print Date: 17/08/2016

Safety Data Sheet according to WHS and ADG requirements

S.GHS.AUS.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

Product name	Paslode - STOCKade Lithium Ion Battery Cell
Synonyms	Part numbers B20543A, ST4IBAT
Proper shipping name	LITHIUM ION BATTERIES (including lithium ion polymer batteries)
Other means of identification	Not Available

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	SDS are intended for use in the workplace. For domestic-use products, refer to consumer labels. Battery. NOTE: Chemical materials are stored in sealed case. The toxic properties of the electrode materials are hazardous only if the materials are released by damaging the cell or if exposed to fire. The sealed battery is not hazardous in normal use. The chemical hazards are related to the leaked battery contents. If Transport Code Special Provision 188 applies the batteries will be unregulated for transport.
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Details of the supplier of the safety data sheet

Registered company name	Paslode - STOCKade
Address	47-55 Williamson Road Ingleburn NSW 2565 Australia
Telephone	+61 2 9829 4000
Fax	+61 2 9829 7788
Website	www.paslode.com.au
Email	cust.sales.au@paslodeanz.com

Emergency telephone number

Association / Organisation	Poisons Information Centre (AU)
Emergency telephone numbers	13 11 26
Other emergency telephone numbers	Not Available

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

DANGEROUS GOODS. NON-HAZARDOUS CHEMICAL. According to the WHS Regulations and the ADG Code.

Poisons Schedule	Not Applicable
Classification	Not Applicable

Label elements

GHS label elements	Not Applicable
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SIGNAL WORD	NOT APPLICABLE
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Hazard statement(s)

Continued...

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Not Applicable

Precautionary statement(s) Prevention

Not Applicable

Precautionary statement(s) Response

Not Applicable

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

Not Applicable

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
		sealed metal case containing
		lithium transition metal oxidate as
12190-79-3	NotSpec.	<u>lithium cobaltate</u>
12057-17-9	NotSpec.	<u>lithium manganate</u>
182442-95-1	NotSpec.	<u>cobalt lithium manganese nickelate</u>
7439-89-6	NotSpec.	<u>iron</u>
7429-90-5	NotSpec.	<u>aluminium</u>
7782-42-5	NotSpec.	<u>graphite, natural</u>
7440-44-0	NotSpec.	<u>carbon, non-activated</u>
7440-50-8	NotSpec.	<u>copper</u>
Not Available	NotSpec.	electrolyte, organic
		NOTE: Not every product includes all of these ingredients

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact	<ul style="list-style-type: none"> ▶ Generally not applicable. <p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> ▶ Wash out immediately with fresh running water. ▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ▶ Seek medical attention without delay; if pain persists or recurs seek medical attention. ▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	<ul style="list-style-type: none"> ▶ Generally not applicable. <p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> ▶ Flush skin and hair with running water (and soap if available). ▶ Seek medical attention in event of irritation.
Inhalation	<ul style="list-style-type: none"> ▶ Generally not applicable. <p>Remove patient to fresh air and seek medical attention.</p>
Ingestion	<p>Not considered a normal route of entry.</p> <ul style="list-style-type: none"> ▶ If swallowed do NOT induce vomiting. ▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▶ Observe the patient carefully. ▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▶ Seek medical advice.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).
- ▶ Carbon dioxide.

Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.
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Advice for firefighters

Fire Fighting	<ul style="list-style-type: none"> ▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ Wear breathing apparatus plus protective gloves in the event of a fire. ▶ Prevent, by any means available, spillage from entering drains or water courses. ▶ Use fire fighting procedures suitable for surrounding area. ▶ DO NOT approach containers suspected to be hot. ▶ Cool fire exposed containers with water spray from a protected location. ▶ If safe to do so, remove containers from path of fire.
Fire/Explosion Hazard	<ul style="list-style-type: none"> ▶ Non combustible. ▶ Not considered to be a significant fire risk. ▶ Heating may cause expansion or decomposition leading to violent rupture of containers. ▶ May emit acrid smoke. May emit corrosive and poisonous fumes. <p>Decomposes on heating and produces toxic fumes of; carbon monoxide (CO), carbon dioxide (CO₂), hydrogen fluoride. If heated above 125 deg C, cell(s) can explode/vent. Internal organic material will burn if the cell is incinerated.</p>

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	<p>Clean up all spills immediately. Avoid contact with skin and eyes. Place in suitable containers for disposal.</p>
Major Spills	<ul style="list-style-type: none"> ▶ Clean up all spills immediately. ▶ Wear protective clothing, safety glasses, dust mask, gloves. ▶ Secure load if safe to do so. Bundle/collect recoverable product. ▶ Use dry clean up procedures and avoid generating dust. ▶ Vacuum up (consider explosion-proof machines designed to be grounded during storage and use). ▶ Water may be used to prevent dusting.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	<p>Use good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this SDS. Avoid physical damage to containers. Avoid short circuiting the cell. Avoid mechanical damage of the cell. Do not open or disassemble. Do not connect the positive terminal to the negative terminal with electrical wire or chain. Avoid polarity reverse connection when installing the battery to an instrument. Do not wet the battery with water, seawater or acid; or expose to strong oxidizer. Keep the battery away from heat and fire. Do not disassemble or reconstruct the battery; or solder the battery directly. Do not give a mechanical shock or deform. Do not use unauthorized charger or other charging method. Terminate charging when the charging process does not end within specified time.</p>
Other information	<ul style="list-style-type: none"> ▶ Store in original containers. ▶ Keep containers securely sealed. ▶ Store in a cool, dry, well-ventilated area. ▶ Store away from incompatible materials and foodstuff containers.

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- ▶ Protect containers against physical damage and check regularly for leaks.
 - ▶ Observe manufacturer's storage and handling recommendations contained within this SDS.
 - ▶ Keep dry.
 - ▶ Store under cover.
 - ▶ Protect containers against physical damage.
 - ▶ Observe manufacturer's storage and handling recommendations contained within this SDS.
- Keep out of reach of children.
Store out of direct sunlight
- ▶ Store away from incompatible materials.
- |Store at room temperature - approx. 20 deg C.

Conditions for safe storage, including any incompatibilities

Suitable container	Store in original containers.
Storage incompatibility	▶ Avoid strong acids, acid chlorides, acid anhydrides and chloroformates.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	lithium manganate	Manganese, dust & compounds (as Mn)	1 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	cobalt lithium manganese nickelate	Manganese, dust & compounds (as Mn)	1 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	iron	Fume (thermally generated) (respirable dust)	2 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	aluminium	Aluminium (metal dust) / Aluminium (welding fumes) (as Al) / Aluminium, pyro powders (as Al)	10 mg/m3 / 5 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	graphite, natural	Graphite (all forms except fibres) (respirable dust)(natural & synthetic)	3 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	carbon, non-activated	Fume (thermally generated) (respirable dust)	2 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	copper	Copper (fume) / Copper, dusts & mists (as Cu)	0.2 mg/m3 / 1 mg/m3	Not Available	Not Available	Not Available


EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
iron	Iron	1 mg/m3	11 mg/m3	110 mg/m3
aluminium	Aluminum	3 mg/m3	33 mg/m3	200 mg/m3
graphite, natural	Graphite; (Mineral carbon)	2 mg/m3	2 mg/m3	95 mg/m3
carbon, non-activated	Carbon; (Graphite, synthetic)	6 mg/m3	16 mg/m3	95 mg/m3
copper	Copper	1 mg/m3	1 mg/m3	45 mg/m3

Ingredient	Original IDLH	Revised IDLH
lithium cobaltate	Not Available	Not Available
lithium manganate	N.E. mg/m3 / N.E. ppm	500 mg/m3
cobalt lithium manganese nickelate	N.E. mg/m3 / N.E. ppm	500 mg/m3 / 10 mg/m3
iron	Not Available	Not Available
aluminium	Not Available	Not Available
graphite, natural	N.E. mg/m3 / N.E. ppm	1,250 mg/m3
carbon, non-activated	Not Available	Not Available
copper	N.E. mg/m3 / N.E. ppm	100 mg/m3
electrolyte, organic	Not Available	Not Available

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Exposure controls

Appropriate engineering controls	General exhaust is adequate under normal operating conditions.
Personal protection	
Eye and face protection	None under normal operating conditions. OTHERWISE: ▶ Safety glasses.
Skin protection	See Hand protection below
Hands/feet protection	None under normal operating conditions. OTHERWISE: ▶ Rubber Gloves
Body protection	See Other protection below
Other protection	No special equipment needed when handling small quantities
Thermal hazards	Not Available

Respiratory protection

Type AX Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Metallic or black coloured ; cylindrical/ prismatic/ prismatic (laminated) solid with no odour; insoluble in water.		
Physical state	Manufactured	Relative density (Water = 1)	Not Applicable
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Applicable
pH (as supplied)	Not Applicable	Decomposition temperature	Not Available
Melting point / freezing point (°C)	Not Applicable	Viscosity (cSt)	Not Applicable
Initial boiling point and boiling range (°C)	Not Applicable	Molecular weight (g/mol)	Not Applicable
Flash point (°C)	Not Applicable	Taste	Not Available
Evaporation rate	Not Applicable	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Applicable	Surface Tension (dyn/cm or mN/m)	Not Applicable
Lower Explosive Limit (%)	Not Applicable	Volatile Component (%vol)	Not Applicable
Vapour pressure (kPa)	Not Applicable	Gas group	Not Available
Solubility in water (g/L)	Immiscible	pH as a solution (1%)	Not Applicable
Vapour density (Air = 1)	Not Applicable	VOC g/L	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	Product is considered stable and hazardous polymerisation will not occur. May form hydrofluoric acid if electrolyte comes into contact with water.

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Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	Not normally a hazard due to physical form of product. Vapors or fumes may cause respiratory tract irritation.
Ingestion	Not normally a hazard due to physical form of product. Accidental ingestion of the material may be damaging to the health of the individual.
Skin Contact	Not normally a hazard due to physical form of product. The electrolyte may cause skin irritation.
Eye	Not normally a hazard due to physical form of product. The electrolyte may cause eye irritation and damage.
Chronic	The chemicals in this product are contained in a sealed case and exposure does not occur during normal handling and use.

Paslode - STOCKade Lithium Ion Battery Cell	TOXICITY	IRRITATION
	Oral (Rat) LD50: >2000 mg/kg ^[2]	Not Available
lithium cobaltate	TOXICITY	IRRITATION
	Not Available	Not Available
lithium manganate	TOXICITY	IRRITATION
	Not Available	Not Available
cobalt lithium manganese nickelate	TOXICITY	IRRITATION
	Not Available	Not Available
iron	TOXICITY	IRRITATION
	Oral (rat) LD50: 7500 mg/kg ^[1]	Nil reported [Patty]
aluminium	TOXICITY	IRRITATION
	Oral (rat) LD50: >2000 mg/kg ^[1]	Not Available
graphite, natural	TOXICITY	IRRITATION
	Inhalation (rat) LC50: >2 mg/L/4hr ^[1]	Eye (rabbit): non-irritant *
	Oral (rat) LD50: >2000 mg/kg ^[2]	Eye : Not irritating
		Skin (rabbit): 4 h non-irritant *
		Skin : Not irritating
carbon, non-activated	TOXICITY	IRRITATION
	Not Available	Nil reported
copper	TOXICITY	IRRITATION
	dermal (rat) LD50: >2000 mg/kg ^[1]	Nil Reported
	Inhalation (rat) LC50: 0.733 mg/l/4hr ^[1]	
	Inhalation (rat) LC50: 1.03 mg/l/4hr ^[1]	
	Inhalation (rat) LC50: 1.67 mg/l/4hr ^[1]	
	Oral (rat) LD50: 300-500 mg/kg ^[1]	
Legend:	1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. * Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances	

<p>COBALT LITHIUM MANGANESE NICKELATE</p>	<p>The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.</p>
<p>GRAPHITE, NATURAL</p>	<p>Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.</p> <p>* Timcal MSDS</p>
<p>CARBON, NON-ACTIVATED</p>	<p>Substance has been investigated as a reproductive effector.</p>
<p>COPPER</p>	<p>for copper and its compounds (typically copper chloride):</p> <p>Acute toxicity: There are no reliable acute oral toxicity results available. In an acute dermal toxicity study (OECD TG 402), one group of 5 male rats and 5 groups of 5 female rats received doses of 1000, 1500 and 2000 mg/kg bw via dermal application for 24 hours. The LD50 values of copper monochloride were 2,000 mg/kg bw or greater for male (no deaths observed) and 1,224 mg/kg bw for female. Four females died at both 1500 and 2000 mg/kg bw, and one at 1,000 mg/kg bw. Symptom of the hardness of skin, an exudation of hardness site, the formation of scar and reddish changes were observed on application sites in all treated animals. Skin inflammation and injury were also noted. In addition, a reddish or black urine was observed in females at 2,000, 1,500 and 1,000 mg/kg bw. Female rats appeared to be more sensitive than male based on mortality and clinical signs.</p> <p>No reliable skin/eye irritation studies were available. The acute dermal study with copper monochloride suggests that it has a potential to cause skin irritation.</p> <p>Repeat dose toxicity: In repeated dose toxicity study performed according to OECD TG 422, copper monochloride was given orally (gavage) to Sprague-Dawley rats for 30 days to males and for 39 - 51 days to females at concentrations of 0, 1.3, 5.0, 20, and 80 mg/kg bw/day. The NOAEL value was 5 and 1.3 mg/kg bw/day for male and female rats, respectively. No deaths were observed in male rats. One treatment-related death was observed in female rats in the high dose group. Erythropoietic toxicity (anaemia) was seen in both sexes at the 80 mg/kg bw/day. The frequency of squamous cell hyperplasia of the forestomach was increased in a dose-dependent manner in male and female rats at all treatment groups, and was statistically significant in males at doses of =20 mg/kg bw/day and in females at doses of =5 mg/kg bw/day doses. The observed effects are considered to be local, non-systemic effect on the forestomach which result from oral (gavage) administration of copper monochloride.</p> <p>Genotoxicity: An in vitro genotoxicity study with copper monochloride showed negative results in a bacterial reverse mutation test with Salmonella typhimurium strains (TA 98, TA 100, TA 1535, and TA 1537) with and without S9 mix at concentrations of up to 1,000 ug/plate. An in vitro test for chromosome aberration in Chinese hamster lung (CHL) cells showed that copper monochloride induced structural and numerical aberrations at the concentration of 50, 70 and 100 ug/mL without S9 mix. In the presence of the metabolic activation system, significant increases of structural aberrations were observed at 50 and 70 ug/mL and significant increases of numerical aberrations were observed at 70 ug/mL. In an in vivo mammalian erythrocyte micronucleus assay, all animals dosed (15 - 60 mg/kg bw) with copper monochloride exhibited similar PCE/(PCE+NCE) ratios and MNPCE frequencies compared to those of the negative control animals. Therefore copper monochloride is not an in vivo mutagen.</p> <p>Carcinogenicity: there was insufficient information to evaluate the carcinogenic activity of copper monochloride.</p> <p>Reproductive and developmental toxicity: In the combined repeated dose toxicity study with the reproduction/developmental toxicity screening test (OECD TG 422), copper monochloride was given orally (gavage) to Sprague-Dawley rats for 30 days to males and for 39-51 days to females at concentrations of 0, 1.3, 5.0, 20, and 80 mg/kg bw/day. The NOAEL of copper monochloride for fertility toxicity was 80 mg/kg bw/day for the parental animals. No treatment-related effects were observed on the reproductive organs and the fertility parameters assessed. For developmental toxicity the NOAEL was 20 mg/kg bw/day. Three of 120 pups appeared to have icterus at birth; 4 of 120 pups appeared runted at the highest dose tested (80 mg/kg bw/day).</p> <p>WARNING: Inhalation of high concentrations of copper fume may cause "metal fume fever", an acute industrial disease of short duration. Symptoms are tiredness, influenza like respiratory tract irritation with fever.</p>
<p>Paslode - STOCKade Lithium Ion Battery Cell & LITHIUM COBALTATE & LITHIUM MANGANATE & COBALT LITHIUM MANGANESE NICKELATE &</p>	<p>No significant acute toxicological data identified in literature search.</p>

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ALUMINIUM	
Acute Toxicity	✘
Skin Irritation/Corrosion	⊖
Serious Eye Damage/Irritation	⊖
Respiratory or Skin sensitisation	⊖
Mutagenicity	⊖
Carcinogenicity	⊖
Reproductivity	⊖
STOT - Single Exposure	⊖
STOT - Repeated Exposure	⊖
Aspiration Hazard	⊖

Legend: ✘ – Data available but does not fill the criteria for classification
 ✔ – Data required to make classification available
 ⊖ – Data Not Available to make classification

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
lithium cobaltate	LC50	96	Fish	1.406mg/L	2
lithium cobaltate	EC50	48	Crustacea	2.618mg/L	2
lithium cobaltate	EC50	504	Crustacea	0.012mg/L	2
lithium cobaltate	EC50	72	Algae or other aquatic plants	0.144mg/L	2
lithium cobaltate	NOEC	168	Algae or other aquatic plants	0.0018mg/L	2
lithium manganate	EC50	24	Crustacea	>100mg/L	2
lithium manganate	EC50	48	Crustacea	>100mg/L	2
lithium manganate	NOEC	48	Crustacea	>100mg/L	2
cobalt lithium manganese nickelate	NOEC	672	Crustacea	ca.0.0028mg/L	2
cobalt lithium manganese nickelate	EC50	Not Applicable	Algae or other aquatic plants	ca.0.12mg/L	2
iron	BCF	24	Crustacea	0.000002mg/L	4
iron	EC50	96	Algae or other aquatic plants	3.7mg/L	4
iron	LC50	96	Fish	0.05mg/L	2
iron	NOEC	504	Fish	0.52mg/L	2
iron	EC50	48	Crustacea	5.11mg/L	2
iron	EC50	504	Crustacea	4.49mg/L	2
aluminium	BCF	360	Algae or other aquatic plants	9mg/L	4
aluminium	EC50	120	Fish	0.000051mg/L	5
aluminium	LC50	96	Fish	0.078-0.108mg/L	2
aluminium	EC50	48	Crustacea	0.7364mg/L	2
aluminium	EC50	96	Algae or other aquatic plants	0.0054mg/L	2
aluminium	NOEC	72	Algae or other aquatic plants	>=0.004mg/L	2
graphite, natural	LC50	96	Fish	>100mg/L	2
graphite, natural	EC50	48	Crustacea	>=38.4- <=67.6mg/L	2
graphite, natural	NOEC	672	Crustacea	>=0.58- <=10mg/L	2
graphite, natural	EC50	72	Algae or other aquatic plants	19mg/L	2
graphite, natural	EC50	72	Algae or other aquatic plants	7.2mg/L	2
copper	BCF	960	Fish	200mg/L	4
copper	EC50	72	Algae or other aquatic plants	0.013335mg/L	4
copper	NOEC	96	Crustacea	0.0008mg/L	4
copper	EC50	48	Crustacea	0.001mg/L	5
copper	EC50	96	Crustacea	0.001mg/L	5
copper	LC50	96	Fish	0.0028mg/L	2

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Legend:

Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

Bioaccumulative potential

Ingredient	Bioaccumulation
	No Data available for all ingredients

Mobility in soil

Ingredient	Mobility
	No Data available for all ingredients

SECTION 13 DISPOSAL CONSIDERATIONS**Waste treatment methods**

Product / Packaging disposal	
	<ul style="list-style-type: none"> ▶ Recycle wherever possible or consult manufacturer for recycling options. ▶ Consult State Land Waste Management Authority for disposal. ▶ Bury residue in an authorised landfill. ▶ Recycle containers if possible, or dispose of in an authorised landfill.

SECTION 14 TRANSPORT INFORMATION**Labels Required**

	
Marine Pollutant	NO
HAZCHEM	Not Applicable

Land transport (ADG)

UN number	3480
UN proper shipping name	LITHIUM ION BATTERIES (including lithium ion polymer batteries)
Transport hazard class(es)	Class : 9 Subrisk : Not Applicable
Packing group	Not Applicable
Environmental hazard	Not Applicable
Special precautions for user	Special provisions : 188 230 310 348 376 377 Limited quantity : 0

Air transport (ICAO-IATA / DGR)

UN number	3480
UN proper shipping name	Lithium ion batteries (including lithium ion polymer batteries)
Transport hazard class(es)	ICAO/IATA Class : 9

Continued...

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	ICAO / IATA Subrisk	Not Applicable
	ERG Code	9F
Packing group	Not Applicable	
Environmental hazard	Not Applicable	
Special precautions for user	Special provisions	A88 A99 A154 A164 A183
	Cargo Only Packing Instructions	See 965
	Cargo Only Maximum Qty / Pack	See 965
	Passenger and Cargo Packing Instructions	See 965
	Passenger and Cargo Maximum Qty / Pack	See 965
	Passenger and Cargo Limited Quantity Packing Instructions	Forbidden
	Passenger and Cargo Limited Maximum Qty / Pack	Forbidden

Sea transport (IMDG-Code / GGVSee)

UN number	3480	
UN proper shipping name	LITHIUM ION BATTERIES (including lithium ion polymer batteries)	
Transport hazard class(es)	IMDG Class	9
	IMDG Subrisk	Not Applicable
Packing group	Not Applicable	
Environmental hazard	Not Applicable	
Special precautions for user	EMS Number	F-A, S-I
	Special provisions	188 230 310 348 376 377
	Limited Quantities	0

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION

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

LITHIUM COBALTATE(12190-79-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

LITHIUM MANGANATE(12057-17-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards

Australia Hazardous Substances Information System - Consolidated Lists

COBALT LITHIUM MANGANESE NICKELATE(182442-95-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards

Australia Hazardous Substances Information System - Consolidated Lists

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

IRON(7439-89-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards

Australia Inventory of Chemical Substances (AICS)

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

ALUMINIUM(7429-90-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards

Australia Hazardous Substances Information System - Consolidated Lists

Australia Inventory of Chemical Substances (AICS)

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

GRAPHITE, NATURAL(7782-42-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards

Australia Hazardous Substances Information System - Consolidated Lists

Australia Inventory of Chemical Substances (AICS)

CARBON, NON-ACTIVATED(7440-44-0) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Continued...

Australia Exposure Standards
Australia Inventory of Chemical Substances (AICS)

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Air Transport Association (IATA) Dangerous Goods Regulations - Prohibited List Passenger and Cargo Aircraft

COPPER(7440-50-8) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards
Australia Hazardous Substances Information System - Consolidated Lists

Australia Inventory of Chemical Substances (AICS)
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

National Inventory	Status
Australia - AICS	N (cobalt lithium manganese nickelate; lithium manganese)
Canada - DSL	N (cobalt lithium manganese nickelate; lithium manganese)
Canada - NDSL	N (cobalt lithium manganese nickelate; copper; aluminium; carbon, non-activated; lithium cobaltate; iron; graphite, natural; lithium manganese)
China - IECSC	N (lithium manganese)
Europe - EINEC / ELINCS / NLP	N (cobalt lithium manganese nickelate)
Japan - ENCS	N (cobalt lithium manganese nickelate; copper; aluminium; carbon, non-activated; iron; graphite, natural; lithium manganese)
Korea - KECL	N (cobalt lithium manganese nickelate)
New Zealand - NZIoC	N (cobalt lithium manganese nickelate)
Philippines - PICCS	N (cobalt lithium manganese nickelate; lithium cobaltate; lithium manganese)
USA - TSCA	Y
Legend:	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

Other information

Ingredients with multiple cas numbers

Name	CAS No
aluminium	7429-90-5, 91728-14-2
carbon, non-activated	7440-44-0, 82600-58-6
copper	7440-50-8, 133353-46-5, 133353-47-6, 195161-80-9, 65555-90-0, 72514-83-1

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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