Section 1. PRODUCT IDENTIFICATION

Product Name	Century Yuasa 12V LB1191 150 AH Lithium-Ion Battery	
Other Names	Lithium-ion batteries (including lithium-ion polymer batteries)	
Recommended Use of the Chemical and Restrictions on Use	Energy storage	
Details of Manufacturer or Importer	Distributed in Australia by: Century Yuasa Batteries 37-65 Cobalt Street Carole Park. QLD. 4300.	Distributed in New Zealand by: Century Yuasa Batteries 259 Church Street Onehunga. Auckland 1061
Emergency Telephone Number	07 3361 61 61	0800 93 93 93

Section 2. HAZARD(S) IDENTIFICATION

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

GHS Classification: Acute Toxicity (Oral) Category 3, Skin Corrosion/Irritation Category 2, Sensitisation (Skin) Category 1, Serious Eye Damage/Eye Irritation, Category 1, Germ Cell Mutagenicity Category 1A, Specific Target Organ Toxicity - Repeated Exposure Category 2, Hazardous to the Aquatic Environment Long-Term Hazard Category 2

GHS Label Elements

Signal Word: **DANGER**

IN THE EVENT OF INTERNAL CONTENTS EXPOSED

Hazard Statement(s)	H301	Toxic if swallowed.
	H315	Causes skin irritation.
	H317	May cause an allergic skin reaction.
	H318	Causes serious eye damage.
	H340	May cause genetic defects.
	H373	May cause damage to organs through prolonged or repeated exposure.
	H411	Toxic to aquatic life with long lasting effects.

IN THE EVENT OF INTERNAL CONTENTS EXPOSED

Precautionary Statement(s) General	P101	If medical advice is needed, have product container or label at hand
	P102	Keep out of reach of children
	P103	Read carefully and follow all instructions
Precautionary Statement(s) Prevention	P260	Do not breathe dust/fume.
	P264	Wash all exposed external body areas thoroughly after handling.
	P270	Do not eat, drink or smoke when using this product.
	P280	Wear protective gloves, protective clothing, eye protection and face protection.
	P273	Avoid release to the environment.
	P272	Contaminated work clothing should not be allowed out of the workplace.
Precautionary Statement(s) Response	P301 + P330 + P331+P316	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Get emergency medical help immediately, Call Poison Centre
	P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P308+P317	IF EXPOSED OR CONCERNED: Get medical help.
	P302+P352	IF ON SKIN: Wash with plenty of water and soap.
	P333+P313	IF SKIN IRRITATION OR RASH OCCURS: Get medical help.
	P362+P364	Take off contaminated clothing and wash it before reuse.
	P391	Collect spillage.
Precautionary Statement(s) Storage	P405	Store locked up
Precautionary Statement(s) Disposal	P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation

Section 3. COMPOSITION AND INFORMATION ON INGREDIENTS

Ingredient	Identification	Content % weight
Lithium Ion Phosphate (LiFePO4)	15365-14-7	21.38 ~ 22%
Iron (Fe)	7439-89-6	2%
Silica amorphous (xSiO2.yH2O)	112926-00-8	15.8 ~ 16.8%
Copper (Cu)	7440-50-8	4.4 ~ 5%
Graphite ($C_{24}X_{12}$)	7782-42-5	9.78 ~ 10.39%
Aluminium (Al)	7429-90-5	13.6 ~ 14.2%
methyl ethyl carbonate	623-53-0	6.11 ~ 6.72%
ethylene carbonate	96-49-1	4.89 ~ 5.5%
styrene/ butadiene/ acrylonitrile copolymer ($C_{15}H_{17}N$) (ABS)	9003-56-9	2.8%
Polyvinylidene fluoride	24937-79-9.	0.43 ~ 0.67%
lithium fluorophosphate	21324-40-3	1.22 ~ 1.83%
Polypropylene	9003-07-0.	0.21 ~ 0.56%
Carbon nanotubes	308068-56-6.	0.24 ~ 0.48%
Polycarbonate- Container (PC)	25037-45-0	6.7%
Ingredients determined not to be hazardous	N/A	6 ~ 10%

Section 4. FIRST AID MEASURES

DESCRIPTION OF FIRST AID MEASURES
The chemicals in this product are contained in a sealed package. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused.

Eye Contact

Generally, not applicable.
If this product comes in contact with eyes:
- Wash out immediately with water.
- If irritation continues, seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact

Generally, not applicable.
If skin or hair contact occurs:
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

Inhalation

Generally not applicable.
- If fumes, aerosols or combustion products are inhaled remove from contaminated area.
- Other measures are usually unnecessary.

Ingestion

Generally not applicable.
Not considered a normal route of entry.
- 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.

Symptoms Caused by Exposure

Treat symptomatically.

Medical Attention and Special Treatment

No special instructions specified.

Section 5. FIRE FIGHTING MEASURES

Suitable Extinguishing Equipment

Water	CO_2	Dry Chemical Powder	Foam	BCF/ Where regulations Permit	Class D Powder	Li-Ion Battery
✗	✓	✓	✗	✓	✓	✓

Specific Hazards Arising from the Chemical

Slight hazard when exposed to heat, flame and oxidisers.

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Fire/Explosion Hazard	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. Articles and manufactured articles may constitute a fire hazard where polymers form their outer layers or where combustible packaging remains in place. Certain substances, found throughout their construction, may degrade or become volatile when heated to high temperatures. This may create a secondary hazard
Hazchem Code	2Y

Section 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

In case of rupture, avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Ise personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Refer to protective measures listed in sections 7 and 8.

Environmental Precautions

Prevent product from contaminating soil and from entering sewers or waterways.

Methods and Materials for Containment and Cleaning Up

Minor Spills

- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Place in suitable containers for disposal.

Major Spills

- 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.
- Collect remaining material in containers with covers for disposal.
- Flush spill area with water.

Section 7. HANDLING AND STORAGE

Precautions for Safe Handling

- 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.
- Do not damage or remove the external tube.
- 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.
- Use good occupational work practice.
- Observe manufacturer's storage and handling recommendations contained within this SDS.
- Avoid physical damage to containers.

Other information

- 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.

Conditions for Safe Storage

Suitable container

- Generally packaging as originally supplied with the article or manufactured item is sufficient to protect against physical hazards.
- If repackaging is required ensure the article is intact and does not show signs of wear. As far as is practicably possible, reuse the original packaging or something providing a similar level of protection to both the article and the handler.

Storage Incompatibility

✓= May be stored together

ⓘ= May be stored together with specific preventions

×= Must not be stored together

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Section 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Control Measures - This product presents no health hazards to the user when used according to label directions for its intended purposes

Source	Ingredient	Material name	TWA	STEL	peak	Notes
Australia Exposure Standards	silica amorphous	Silica - Amorphous: Diatomaceous earth (uncalcined)	10 mg/m3	Not Available	Not Available	This value is for inhalable dust containing no asbestos and < 1% crystalline silica.
New Zealand Workplace Exposure Standards (WES)	silica amorphous	Diatomaceous earth (not calcined)	10 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	silica amorphous	Silica - Amorphous: Fume (thermally generated) (respirable dust)	2 mg/m3	Not Available	Not Available	Containing no asbestos and < 1% crystalline silica.
New Zealand Workplace Exposure Standards (WES)	silica amorphous	Silica fume respirable dust	2 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	silica amorphous	Silica, fused	0.05 mg/m3	Not Available	Not Available	Not Available
New Zealand Workplace Exposure Standards (WES)	silica amorphous	Silica fused respirable dust	0.2 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	silica amorphous	Silica - Amorphous: Silica gel	10 mg/m3	Not Available	Not Available	This value is for inhalable dust containing no asbestos and < 1% crystalline silica.
Australia Exposure Standards	silica amorphous	Silica - Amorphous: Precipitated silica	10 mg/m3	Not Available	Not Available	This value is for inhalable dust containing no asbestos and < 1% crystalline silica.
New Zealand Workplace Exposure Standards (WES)	silica amorphous	Silica-Amorphous, Precipitated silica	10 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	silica amorphous	Silica - Amorphous: Fumed silica (respirable dust)	2 mg/m3	Not Available	Not Available	Not Available
New Zealand Workplace Exposure Standards (WES)	silica amorphous	Silica fume respirable dust	2 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	graphite	Graphite (all forms except fibres) (respirable dust) (natural & synthetic)	3 mg/m3	Not Available	Not Available	Containing no asbestos and < 1% crystalline silica.
New Zealand Workplace Exposure Standards (WES)	graphite	Graphite, all forms except graphite fibres respirable dust	3 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	aluminium	Aluminium (metal dust)	10 mg/m3	Not Available	Not Available	Not Available
New Zealand Workplace Exposure Standards (WES)	aluminium	Inhalable dust (not otherwise classified)	10 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	aluminium	Aluminium (welding fumes) (as Al)	5 mg/m3	Not Available	Not Available	Not Available
New Zealand Workplace Exposure Standards (WES)	aluminium	Respirable dust (not otherwise classified)	3 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	aluminium	Aluminium, pyro powders (as Al)	5 mg/m3	Not Available	Not Available	Not Available
New Zealand Workplace Exposure Standards (WES)	aluminium	Aluminium metal and insoluble aluminium compounds (including pyro powder, aluminium oxide, and aluminium welding fumes), as Al respirable dust	1 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	copper	Copper, dusts & mists (as Cu)	1 mg/m3	Not Available	Not Available	Not Available
New Zealand Workplace Exposure Standards (WES)	copper	Copper and its inorganic compounds, as Cu respirable dust	0.01 mg/m3	Not Available	Not Available	dsen - Dermal sensitiser
Australia Exposure Standards	copper	Copper (fume)	0.2 mg/m3	Not Available	Not Available	Not Available
New Zealand Workplace Exposure Standards (WES)	copper	Respirable dust (not otherwise classified)	3 mg/m3	Not Available	Not Available	Not Available
New Zealand Workplace Exposure Standards (WES)	copper	Inhalable dust (not otherwise classified)	10 mg/m3	Not Available	Not Available	Not Available
New Zealand Workplace Exposure Standards (WES)	polycarbonate	Inhalable dust (not otherwise classified)	10 mg/m3	Not Available	Not Available	Not Available
New Zealand Workplace Exposure Standards (WES)	polycarbonate	Respirable dust (not otherwise classified)	3 mg/m3	Not Available	Not Available	Not Available
New Zealand Workplace Exposure Standards (WES)	styrene/ butadiene/ acrylonitrile copolymer	Inhalable dust (not otherwise classified)	10 mg/m3	Not Available	Not Available	Not Available

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New Zealand Workplace Exposure Standards (WES)	styrene/ butadiene/ acrylonitrile copolymer	Respirable dust (not otherwise classified)	3 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	Polyvinylidene fluoride	Hydrogen fluoride (as F)	Not Availabl e	Not Available	3 ppm / 2.6 mg/m3	Not Available
New Zealand Workplace Exposure Standards (WES)	Polyvinylidene fluoride	Hydrogen fluoride, as F	1 ppm / 0.8 mg/m3	1.6 mg/m3 / 2 ppm	Not Available	bio - Exposure can also be estimated by biological monitoring
	Polypropylene					
	Polypropylene					
New Zealand Workplace Exposure Standards (WES)	lithium fluorophosphate	Inhalable dust (not otherwise classified)	10 mg/m3	Not Available	Not Available	Not Available
New Zealand Workplace Exposure Standards (WES)	lithium fluorophosphate	Respirable dust (not otherwise classified)	3 mg/m3	Not Available	Not Available	Not Available

Ingredient	TEEL-1	TEEL-2	TEEL-3
iron	3.2 mg/m3	35 mg/m3	150 mg/m3
silica amorphous	18 mg/m3	200 mg/m3	1,200 mg/m3
silica amorphous	18 mg/m3	100 mg/m3	630 mg/m3
silica amorphous	120 mg/m3	1,300 mg/m3	7,900 mg/m3
silica amorphous	45 mg/m3	500 mg/m3	3,000 mg/m3
silica amorphous	18 mg/m3	740 mg/m3	4,500 mg/m3
graphite	6 mg/m3	330 mg/m3	2,000 mg/m3
ethylene carbonate	30 mg/m3	330 mg/m3	2,000 mg/m3
copper	3 mg/m3	33 mg/m3	200 mg/m3
polyethylene	16 mg/m3	170 mg/m3	1,000 mg/m3
lithium fluorophosphate	7.5 mg/m3	83 mg/m3	500 mg/m3

Biological Monitoring: Not required

Engineering Controls
- General exhaust is adequate under normal operating conditions.
- Articles or manufactured items, in their original condition, generally don't require engineering controls during handling or in normal use.
- Exceptions may arise following extensive use and subsequent wear, during recycling or disposal operations where substances, found in the article, may be released to the environment.

Personal Protection

Respirator Type
- Not normally required with normal use.
- OTHERWISE: A-AUS P2

Eye Protection
- None under normal operating conditions.
- OTHERWISE: Safety glasses.

Clothing
- Not normally required with normal use.
- In case of battery leaking, protective clothing.

Glove Type
- None under normal operating conditions.
- OTHERWISE: Rubber Gloves.

Footwear
- None under normal operating conditions.
- OTHERWISE: rubber Gloves

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Lithium-ion battery, odorless ; Insoluble in water.		
Odour	Not Available	**Lower explosive limits**	Not Applicable
Odour threshold	Not Available	**Vapour pressure (kPa)**	Not Applicable
pH	Not Applicable	**Vapour density (Air = 1)**	Not Applicable
Melting point/ freezing point (°C)	Not Applicable	**Relative density (Water = 1)**	Not Applicable
Initial boiling point and boiling range (°C)	Not Available	**Solubility in water (g,L)**	Immiscible
Flash point	Not Applicable	**Partition coefficient: n-octanol/water**	Not Available

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Evaporation rate	Not Applicable	**Auto-ignition temperature**	Not Applicable
Flammability	Not Applicable	**Decomposition temperature (°C)**	Not Available
Upper explosive limits	Not Applicable	**Viscosity**	Not Applicable

Section 10. STABILITY AND REACTIVITY

Reactivity	Not available	Chemical stability	Product is considered stable under recommended storage conditions
Possibility of hazardous reactions	None under normal process.	Conditions to avoid	Heating, mechanical abuse and electrical abuse.
Incompatible materials		Hazardous decomposition products	Carbon oxides

Section 11. TOXICOLOGICAL INFORMATION ACUTE EFFECTS

No adverse health effects expected if the product is handled in accordance with this safety data sheet and the product label.

Symptoms or effects that may arise if the product ruptures are:-

Inhaled	Inhalation of vapours or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation
Ingestion	Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual. Lithium, in large doses, can cause dizziness and weakness. If a low salt diet is in place, kidney damage can result. Acute toxic responses to aluminium are confined to the more soluble forms. Ingestion of finely divided carbon may produce gagging and constipation. Aspiration does not appear to be a concern as the material is generally regarded as inert and is often used as a food additive. A metallic taste, nausea, vomiting and burning feeling in the upper stomach region occur after ingestion of copper and its derivatives. The vomitus is usually green/blue and discolours contaminated skin. As absorption of phosphates from the bowel is poor, poisoning this way is less likely. Effects can include vomiting, tiredness, fever, diarrhoea, low blood pressure, slow pulse, cyanosis, spasms of the wrist, coma and severe body spasms.
Skin contact	This material can cause inflammation of the skin on contact in some persons. The material may accentuate any pre-existing dermatitis condition Though considered non-harmful, slight irritation may result from contact because of the abrasive nature of the aluminium oxide particles. Thus it may cause itching and skin reaction and inflammation. The diepoxide of butadiene has been reported to cause mild effect of causing skin tumours in mice when applied topically on its skin. Irritation and skin reactions are possible with sensitive skin Open cuts, abraded or irritated skin should not be exposed to this material Exposure to copper, by skin, has come from its use in pigments, ointments, ornaments, jewellery, dental amalgams and IUDs (intra-uterine devices), and in killing fungi and algae. Although copper is used in the treatment of water in swimming pools and reservoirs, there are no reports of toxicity from these applications. Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Eye	If applied to the eyes, this material causes severe eye damage. Eyes exposed to carbon particulates may be liable to irritation and burning. These can remain in the eye causing inflammation lasting weeks, and can cause permanent dark dotty discolouration. Copper salts, in contact with the eye, may produce inflammation of the conjunctiva, or even ulceration and cloudiness of the cornea.
Chronic effects	Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population. Animal testing shows long term exposure to aluminium oxides may cause lung disease and cancer, depending on the size of the particle. The smaller the size, the greater the tendencies of causing harm.

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Amorphous silicas generally are less hazardous than crystalline silicas, but the former can be converted to the latter on heating and subsequent cooling. Inhalation of dusts containing crystalline silicas may lead to silicosis, a disabling lung disease that may take years to develop.
Exposure to large doses of aluminium has been connected with the degenerative brain disease Alzheimer's Disease.
Prolonged or repeated inhalation of dust may cause in lung disease. Graphite workers have reported symptoms of headaches, coughing, depression, low appetite, difficult breathing and black sputum. Workers suffering from this have generally worked in the industry for long periods,
(10 years or more), although some cases have been reported after as little as four years.
Lithium compounds can affect the nervous system and muscle. This can cause tremor, inco-ordination, spastic jerks and very brisk reflexes.
There is insufficient evidence to suggest that exposure to carbon black causes increased susceptibility to cancer or other ill effects. Some lung changes can occur after a prolonged period of exposure as well as increased strain on the right side of the heart.
Soluble silicates do not exhibit sensitizing potential. Testing in bacterial and animal experiments have not shown any evidence of them causing mutations or birth defects.
For copper and its compounds (typically copper chloride):
Acute toxicity: There are no reliable acute oral toxicity results available. Animal testing shows that skin in exposure to copper may lead to
hardness of the skin, scar formation, exudation and reddish changes. Inflammation, irritation and injury of the skin were noted.
Repeat dose toxicity: Animal testing shows that very high levels of copper monochloride may cause anaemia.
Genetic toxicity: Copper monochloride does not appear to cause mutations in vivo, although chromosomal aberrations were seen at very high concentrations in vitro.
Cancer-causing potential: There was insufficient information to evaluate the cancer-causing activity of copper monochloride.
Occupational exposure to 1,3-butadiene, enhanced or caused cancer at different body sites with significant associated mortality, in animal testing and on the basis of human data. The predominant tumours are lymphomas, cancers of the testes, stomach and intestines, breast, thyroid, pancreas, throat and womb.
Chronic excessive intake of iron have been associated with damage to the liver and pancreas. People with a genetic disposition to poor control over iron are at an increased risk.
Sodium phosphate dibasic can cause stones in the kidney, loss of mineral from the bones and loss of thyroid gland function.
Some evidence exists that this material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects.

Acute Toxicity	Skin Irritation / Corrosion	Serious Eye Damage / Irritation	Respiratory Or Skin Sensitisation	Mutagenicity	Carcinogenicity	Reproductivity	Stot - Single Exposure	Stot - Repeated Exposure	Aspiration Hazard
✓	✓	✓	✓	✓	✗	✗	✗	✓	✗

✓ = Data required to make classification available ✗ = Data either not available or does not fill the criteria for classification

Section 12. ECOLOGICAL INFORMATION

Degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
silica amorphous	LOW	LOW
ethyl methyl carbonate	HIGH	HIGH
ethylene carbonate	HIGH	HIGH
polyethylene	LOW	LOW

Bio-accumulative Potential

Ingredient	Bioaccumulation
silica amorphous	LOW (LogKOW = 0.5294)
ethyl methyl carbonate	LOW (LogKOW = 0.7247)
ethylene carbonate	LOW (LogKOW = -0.3388)
polyethylene	LOW (LogKOW = 1.2658)

Mobility in Soil

Ingredient	Mobility
silica amorphous	LOW (KOC = 23.74)
ethyl methyl carbonate	LOW (KOC = 15.22)
ethylene carbonate	LOW (KOC = 9.168)
polyethylene	LOW (KOC = 14.3)

Section 13. DISPOSAL CONSIDERATIONS

Safe Handling & Disposal — Recycle wherever possible or consult manufacturer for recycling op
Consult State Land Waste Management Authority for disposal.

Environmental Regulations — Refer to section 15

Section 14. TRANSPORT INFORMATION

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REGULATED FOR TRANSPORT OF DANGEROUS GOODS ADG, IATA and IMDG

Labels Required

Land and Sea Transport

Air Transport

Marine Pollutant Yes
Hazchem Code 2Y

Land Transport

UN Number	3480
Proper Shipping Name	Lithium ion batteries (including lithium-ion polymer batteries)
Transport Hazard Class	Class 9 Sub-risk Not Applicable
Packing Group	Not Applicable
Environmental Hazards for Transport Purposes	Environmentally hazardous
Special Precautions for User	Special Provisions 188 230 310 348 376 377 384 387 390 Limited Quantity 0

Air Transport

UN Number	3480
Proper Shipping Name	Lithium ion batteries (including lithium-ion polymer batteries)
Transport Hazard Class	Class 9 Sub-risk Not Applicable
Packing Group	Not Applicable
Environmental Hazards for Transport Purposes	Environmentally hazardous
ERG Code	12FZ
Special Provisions	A88 A99 A154 A164 A183 A201 A206 A213 A331 A334 A802
	Cargo Only Packing Instructions: See 965
	Cargo Only Maximum Qty / Pack: See 965
	Passenger and Cargo Packing Instructions: Forbidden
	Passenger and Cargo Maximum Qty / Pack: Forbidden
	Passenger and Cargo Limited Quantity Packing Instructions: Forbidden
	Passenger and Cargo Limited Maximum Qty / Pack: Forbidden

Sea Transport

UN Number	3480
Proper Shipping Name	Lithium ion batteries (including lithium-ion polymer batteries)
Transport Hazard Class	Class 9 Sub-risk Not Applicable
Packing Group	Not Applicable
Environmental Hazards for Transport Purposes	Environmentally hazardous
Special Precautions for User	EMS Number F-A,S-I Special Provisions 188 230 310 348 376 377 384 387 Limited Quantities 0

Section 15. REGULATORY INFORMATION

lithium iron phosphate is found on the following regulatory lists

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) Schedule 4
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) Schedule 5
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) Schedule 6
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured - Nanomaterials (MNMS)
New Zealand Workplace Exposure Standards (WES)

iron is found on the following regulatory lists

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) Schedule 2
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) Schedule 4
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) Schedule 5
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) Schedule 6
Australian Inventory of Industrial Chemicals (AIIC)

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	International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured - Nanomaterials (MNMS) New Zealand Inventory of Chemicals (NZIoC) New Zealand Workplace Exposure Standards (WES)
silica amorphous is found on the following regulatory lists	Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring Australian Inventory of Industrial Chemicals (AIIC) Chemical Footprint Project - Chemicals of High Concern List International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)
copper is found on the following regulatory lists	Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) Schedule 4 Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) Schedule 5 Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) Schedule 6 Australian Inventory of Industrial Chemicals (AIIC) International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS) New Zealand Approved Hazardous Substances with controls New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals - Classification Data New Zealand Inventory of Chemicals (NZIoC) New Zealand Land Transport Rule: Dangerous Goods 2005 - Schedule 1 Quantity limits for dangerous goods New Zealand Workplace Exposure Standards (WES)
graphite is found on the following regulatory lists	Australian Inventory of Industrial Chemicals (AIIC) International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS) New Zealand Inventory of Chemicals (NZIoC) New Zealand Workplace Exposure Standards (WES)
aluminium is found on the following regulatory lists	Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals Australian Inventory of Industrial Chemicals (AIIC) International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS) New Zealand Approved Hazardous Substances with controls New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals - Classification Data New Zealand Inventory of Chemicals (NZIoC) New Zealand Workplace Exposure Standards (WES)
Methyl ethyl carbonate is found on the following regulatory lists	Not Applicable
ethylene carbonate is found on the following regulatory lists	Australian Inventory of Industrial Chemicals (AIIC) New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals - Classification Data New Zealand Inventory of Chemicals (NZIoC)
styrene/ butadiene/ acrylonitrile copolymer is found on the following regulatory lists	Australian Inventory of Industrial Chemicals (AIIC) International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS) New Zealand Inventory of Chemicals (NZIoC) New Zealand Workplace Exposure Standards (WES)
polyethylene is found on the following regulatory lists	Australian Inventory of Industrial Chemicals (AIIC) International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS) New Zealand Inventory of Chemicals (NZIoC) New Zealand Workplace Exposure Standards (WES)
lithium fluorophosphate is found on the following regulatory lists	Australian Inventory of Industrial Chemicals (AIIC) International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS) New Zealand Workplace Exposure Standards (WES)

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Polycarbonate is found on the following regulatory lists	International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS) New Zealand Workplace Exposure Standards (WES)
Polypropylene is found on the following regulatory lists	Australian Inventory of Industrial Chemicals (AIIC) Chemical Footprint Project - Chemicals of High Concern List International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS) New Zealand Inventory of Chemicals (NZIoC) New Zealand Workplace Exposure Standards (WES)
Carbon Nanotubes is found on the following regulatory lists	Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS) New Zealand Inventory of Chemicals (NZIoC)
Polyvinylidene fluoride (Hydrogen Fluoride is found on the following regulatory lists)	Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 2 Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 3 Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4 Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5 Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6 Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 7 Australian Inventory of Industrial Chemicals (AIIC) International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic New Zealand Approved Hazardous Substances with controls New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals - Classification Data New Zealand Inventory of Chemicals (NZIoC) New Zealand Workplace Exposure Standards (WES)

Section 16. ANY OTHER RELEVANT INFORMATION

Revision Information	Rev Number	Date	Name
Created Document	01	1/08/2025	Chris Noble

Abbreviations	
PC—TWA:	Permissible Concentration-Time Weighted Average
PC—STEL:	Permissible Concentration-Short Term Exposure Limit
IARC:	International Agency for Research on Cancer
STEL:	Short Term Exposure Limit
TEEL:	Temporary Emergency Exposure Limit。
IDLH:	Immediately Dangerous to Life or Health Concentrations
ES:	Exposure Standard
OSF:	Odour Safety Factor
NOAEL :	No Observed Adverse Effect Level
LOAEL:	Lowest Observed Adverse Effect Level
TLV:	Threshold Limit Value
LOD:	Limit Of Detection
OTV:	Odour Threshold Value
BCF:	Bio-Concentration Factors
BEI:	Biological Exposure Index
AIIC:	Australian Inventory of Industrial Chemicals
DSL:	Domestic Substances List
NDSL:	Non-Domestic Substances List
EINECS:	European Inventory of Existing Commercial chemical Substances
ELINCS:	European List of Notified Chemical Substances
NLP:	No-Longer Polymers
ENCS:	Existing and New Chemical Substances Inventory
NZIoC:	New Zealand Inventory of Chemicals
TSCA:	Toxic Substances Control Act

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NCI:	National Chemical Inventory
References	

IATA Lithium Battery Guidance Document (2021)
IMDG Code (incorporating amendment 39-18)
SafeWork Australia Workplace Exposure Standards for Airborne Contaminants (19 December 2019)
WorkSafe New Zealand Workplace exposure standards and biological exposure indices Ed 12-1 (November 2020)

ACGIH Threshold Limit Values https://www.osha.gov/annotated-pels/note

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