

Printing date 15.09.2020

Revision: 15.09.2020

## 1 Identification

**Product Name:** CYLINDRICAL LITHIUM ION RECHARGEABLE CELL

**Other Means of Identification:** Mixture

**Recommended Use of the Chemical and Restriction on Use:** Battery

**Details of Manufacturer or Importer:**

Adventure Operations  
 3/20 Enterprise Drive,  
 Bundoora VIC 3083

**Phone Number:** 1300 657 022

**Emergency telephone number:** 1300 657 022

## 2 Hazard(s) Identification

**Hazardous Nature:**

Not classified as Hazardous according to the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) and Safe Work Australia criteria.

Not classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)



health hazard

Carcinogenicity 2  
 STOT RE 2

H351 Suspected of causing cancer. Route of exposure: Inhalation.  
 H373 May cause damage to organs through prolonged or repeated exposure.



corrosion

Serious Eye Damage/Irritation 1 H318 Causes serious eye damage.



environment

Aquatic Chronic 2

H411 Toxic to aquatic life with long lasting effects.



Skin Corrosion/Irritation 2  
 Skin Sensitisation 1

H315 Causes skin irritation.  
 H317 May cause an allergic skin reaction.

Aquatic Acute 2

H401 Toxic to aquatic life.

**Signal Word** Danger

**Hazard Statements**

H315 Causes skin irritation.  
 H318 Causes serious eye damage.  
 H317 May cause an allergic skin reaction.  
 H351 Suspected of causing cancer. Route of exposure: Inhalation.  
 H373 May cause damage to organs through prolonged or repeated exposure.  
 H411 Toxic to aquatic life with long lasting effects.

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**Precautionary Statements**

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	IF ON SKIN: Wash with plenty of water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P321	Specific treatment (see on this label).
P314	Get medical advice/attention if you feel unwell.
P362+P364	Take off contaminated clothing and wash it before reuse.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national regulations.

### 3 Composition and Information on Ingredients

**Chemical Characterization: Mixtures****Description:** Mixture of substances listed below with nonhazardous additions.**Hazardous Components:**

CAS: 346417-97-8	Lithium nickel manganese cobalt oxide	36.3%
	☠ Carcinogenicity 2, H351; ⚠ Skin Sensitisation 1, H317	
CAS: 7782-42-5	Graphite	19.4%
CAS: 7439-89-6	Iron	17.0%
	⚠ Flammable Solids 1, H228	
CAS: 7440-50-8	Copper	6.7%
	⚠ Aquatic Acute 1, H400; Aquatic Chronic 1, H410	
CAS: 96-49-1	1,3-Dioxolan-2-one	2.8%
	⚠ Serious Eye Damage/Irritation 1, H318	
CAS: 7429-90-5	Aluminium	2.7%
CAS: 21324-40-3	Phosphate(1-), hexafluoro-, lithium	1.8%
	⚠ Acute Toxicity (Oral) 3, H301; ⚠ STOT RE 1, H372; ⚠ Skin Corrosion/Irritation 1A, H314; ⚠ Serious Eye Damage/Irritation 1, H318	
CAS: 7440-02-0	Nickel	0.3%
	☠ Carcinogenicity 2, H351; ⚠ STOT RE 1, H372; ⚠ Skin Sensitisation 1, H317	

**Additional information:**

The battery is sealed hermetically and designed to withstand temperatures and pressures encountered during normal use. Thus, the ingredients have no hazard potential except if the battery is violated or dismantled. If exposed to a fire, mechanical shocks, and electric stress by miss-use, the battery cell case will be breached and the hazardous materials may be released and acrid gas may be emitted. Therefore the batteries should not be short circuited, overcharged, punctured, incinerated, immersed in water, force discharged or exposed to temperatures above the temperature range of the cell or battery.

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## 4 First Aid Measures

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention if breathing problems develop.

This information is relevant only if the battery is broken and contents are exposed.

**Skin Contact:**

In case of skin contact, immediately remove contaminated clothing and wash affected areas with water and soap for at least 30 minutes. Seek medical attention if symptoms occur.

This information is relevant only if the battery is broken and contents are exposed.

**Eye Contact:**

In case of eye contact, rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention.

This information is relevant only if the battery is broken and contents are exposed.

**Ingestion:**

If swallowed, do not induce vomiting. Rinse mouth with water. Give water to drink. Do not give anything by mouth to an unconscious person. Seek immediate medical attention.

This information is relevant only if the battery is broken and contents are exposed.

**Symptoms Caused by Exposure:**

Inhalation: Contents of an open battery may cause respiratory irritation.

Skin Contact: Contents of an open battery cause skin irritation. May cause an allergic skin reaction.

Eye Contact: Contents of an open battery cause serious eye damage.

Ingestion: The contents of an open battery may cause gastrointestinal irritation.

## 5 Fire Fighting Measures

**Suitable Extinguishing Media:** Use fire extinguishing methods suitable to surrounding conditions.

**Specific Hazards Arising from the Chemical:**

Hazardous combustion products include toxic fumes and hydrogen gas.

This product is not flammable, but organic ingredients will burn in a fire.

If heated above 120 °C batteries may burst and release hazardous flammable or corrosive materials.

Batteries close to fire should be removed if safe to do so. Use water spray to cool fire exposed batteries.

**Special Protective Equipment and Precautions for Fire Fighters:**

When fighting a major fire wear self-contained breathing apparatus and protective equipment.

## 6 Accidental Release Measures

**Personal Precautions, Protective Equipment and Emergency Procedures:**

Wear approved respiratory protection, chemical goggles, neoprene or natural rubber gloves, protective clothing, impervious clothing and safety boots. Evacuate all non-essential personnel from affected area. Do not breathe vapours. Ensure adequate ventilation. Do not touch or walk through spilled material.

**Environmental Precautions:**

In the event of a major spill, prevent spillage from entering drains or water courses.

**Methods and Materials for Containment and Cleaning Up:**

Absorb spilled liquid with sand, earth, vermiculite or some other absorbent material. Carefully collect batteries and place in an appropriate container for disposal. Provide adequate ventilation. Clean the area of spill with water and detergent.

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## 7 Handling and Storage

### Precautions for Safe Handling:

Use of safe work practices are recommended to avoid eye or skin contact and inhalation of vapours.

Avoid mechanical or electrical abuse.

DO NOT short circuit or install incorrectly.

Batteries may explode, pyrolize or vent if disassembled, crushed, overcharged or exposed to high temperatures.

Food, beverages and tobacco products should not be stored or consumed where this material is in use. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use. Provide eyewash fountains and safety showers in close proximity to points of potential exposure.

### Conditions for Safe Storage:

Store in a cool, dry and well ventilated area. Protect from direct sunlight, heat and open flames, water or seawater.

Keep away from strong oxidising agents, acids and water. Do not store with other metal objects where they may be short circuited.

Conditions for storage:

-10 - +40 °C, 85% humidity (for less than 3 months)

0 - +35 °C, 85% humidity (for greater than 3 months)

For prolonged storage voltage should be in the range of 3.7 to 4.2V. For prolonged storage recharge batteries periodically.

## 8 Exposure Controls and Personal Protection

### Exposure Standards:

#### CAS: 7782-42-5 Graphite

WES TWA: 3 mg/m<sup>3</sup>

#### CAS: 7440-50-8 Copper

WES TWA: 1\* 0.2\*\* mg/m<sup>3</sup>  
\*dust & mists (as Cu) \*\*fume

#### CAS: 7429-90-5 Aluminium

WES TWA: 10\* 5\*\* mg/m<sup>3</sup>  
\*metal dust; \*\*welding, pyro powders

#### CAS: 7440-02-0 Nickel

WES TWA: 1 mg/m<sup>3</sup>  
Metal: Sen

**Engineering Controls:** Ensure adequate ventilation of the working area.

**Respiratory Protection:** Respiratory protection is not required under normal use conditions.

### Skin Protection:

Skin protection is not required under normal use conditions.

Use neoprene or natural rubber gloves, impervious clothing and safety boots is recommended if handling an open or leaking battery.

### Eye and Face Protection:

Eye protection is not required under normal use conditions.

Wear safety glasses with sideshields or chemical goggles if handling an open or leaking battery.

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## 9 Physical and Chemical Properties

**Appearance:****Form:** Solid**Colour:** Grey**Odour:** Odourless**Odour Threshold:** No information available**pH-Value:** Not applicable.**Melting point/freezing point:** No information available**Initial Boiling Point/Boiling Range:** No information available**Flash Point:** No information available**Flammability:** Product is not flammable.**Auto-ignition Temperature:** 130 °C**Decomposition Temperature:** No information available**Explosion Limits:****Lower:** No information available**Upper:** No information available**Vapour Pressure:** Not applicable.**Density:** No information available**Vapour Density:** Not applicable.**Evaporation Rate:** No information available**Solubility in Water:** Insoluble**Partition Coefficient (n-octanol/water):** No information available

## 10 Stability and Reactivity

**Possibility of Hazardous Reactions:** Hazardous polymerisation will not occur.**Chemical Stability:** Stable at ambient temperature and under normal conditions of use.**Conditions to Avoid:**

Direct sunlight, heat and open flames, water or sea-water.

Do not disassemble, crush or short circuit. Avoid mechanical or electrical abuse.

**Incompatible Materials:** Strong oxidising agents, acids and water.**Hazardous Decomposition Products:** Toxic fumes and hydrogen gas.

## 11 Toxicological Information

**Toxicity:****LD50/LC50 Values Relevant for Classification:****CAS: 7439-89-6 Iron**

Oral LD50 984 mg/kg (rat)

**CAS: 7440-50-8 Copper**

Oral LD50 &gt;2,000 mg/kg (rat)

**CAS: 96-49-1 1,3-Dioxolan-2-one**

Oral LD50 10,000 mg/kg (rat)

**CAS: 7440-02-0 Nickel**

Oral LD50 &gt;9,000 mg/kg (rat)

**Acute Health Effects****Inhalation:** Contents of an open battery may cause respiratory irritation.**Skin:** Contents of an open battery cause skin irritation. May cause an allergic skin reaction.

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**Eye:** Contents of an open battery cause serious eye damage.**Ingestion:** The contents of an open battery may cause gastrointestinal irritation.**Skin Corrosion / Irritation:** Causes skin irritation.**Serious Eye Damage / Irritation:** Causes serious eye damage.**Respiratory or Skin Sensitisation:** May cause an allergic skin reaction.**Germ Cell Mutagenicity:** Based on classification principles, the classification criteria are not met.**Carcinogenicity:**

Suspected of causing cancer.

Nickel, metallic is classified by IARC as Group 2B - Possibly carcinogenic to humans.

Polyethylene is classified by IARC as Group 3 - Not classifiable as to its carcinogenicity to humans.

**Reproductive Toxicity:** Based on classification principles, the classification criteria are not met.**Specific Target Organ Toxicity (STOT) - Single Exposure:**

Based on classification principles, the classification criteria are not met.

**Specific Target Organ Toxicity (STOT) - Repeated Exposure:**

May cause damage to organs through prolonged or repeated exposure.

**Aspiration Hazard:** Based on classification principles, the classification criteria are not met.**Chronic Health Effects:** No information available**Existing Conditions Aggravated by Exposure:** No information available**Additional toxicological information:** No information available

## 12 Ecological Information

**Ecotoxicity:****Aquatic toxicity:**

Toxic to aquatic life with long lasting effects.

**CAS: 7439-89-6 Iron**

LC50/96 h 0.56 mg/l (carp)

**CAS: 7440-50-8 Copper**

EC50/48 h 0.792 mg/l (daphnia)

EC50/72 h 0.333 mg/l (algae)

LC50/96 h 0.0068-0.0156 mg/l (fathead minnow)

0.0081 mg/l (fish)

**CAS: 7440-02-0 Nickel**

EC50/48 h 1 mg/l (daphnia)

LC50/96 h 1.3 mg/l (carp)

**Persistence and Degradability:** No further relevant information available.**Bioaccumulative Potential:** No further relevant information available.**Mobility in Soil:** No further relevant information available.**Other adverse effects:** No further relevant information available.

## 13 Disposal Considerations

**Disposal Methods and Containers:** Dispose according to applicable local and state government regulations.

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**Special Precautions for Landfill or Incineration:**  
Please consult your state Land Waste Management Authority for more information.

**14 Transport Information**

<b>UN Number</b>	UN3480
<b>ADG, IMDG, IATA</b>	
<b>Proper Shipping Name</b>	LITHIUM ION BATTERIES, ENVIRONMENTALLY HAZARDOUS
<b>ADG</b>	LITHIUM ION BATTERIES (Copper), MARINE POLLUTANT
<b>IMDG</b>	LITHIUM ION BATTERIES
<b>IATA</b>	
<b>Dangerous Goods Class</b>	
<b>ADG Class:</b>	9 Miscellaneous dangerous substances and articles.
<b>Packing Group:</b>	Not applicable
<b>Marine pollutant:</b>	Yes Symbol (fish and tree)
<b>EMS Number:</b>	F-A,S-B
<b>Hazchem Code:</b>	4W
<b>Special Provisions:</b>	188, 230, 310, 348, 376, 377, 384, 387

SP188 states:  
Cells and batteries offered for transport are not subject to other provisions of this Code if they meet the following:  
(a) For a lithium metal or lithium alloy cell, the lithium content is not more than 1 g, and for a lithium-ion cell, the Watt-hour rating is not more than 20 Wh; and  
(b) For a lithium metal or lithium alloy battery the aggregate lithium content is not more than 2 g, and for a lithium-ion battery, the Watt-hour rating is not more than 100 Wh. Lithium ion batteries subject to this provision must be marked with the Watt-hour rating on the outside case; and  
(c) Each cell or battery is of the type proved to meet the requirements of each test in the Manual of Tests and Criteria, Part III, sub-section 38.3; and  
(d) Cells and batteries, except when installed in equipment, must be packed in inner packagings that completely enclose the cell or battery. Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit. The inner packagings must be packed in strong outer packagings which conform to the provisions of 4.1.1.1, 4.1.1.2, and 4.1.1.5; and  
(e) Cells and batteries when installed in equipment must be protected from damage and short circuit, and the equipment must be equipped with an effective means of preventing accidental activation. When lithium batteries are installed in equipment, the equipment must be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained; and  
(f) Each package shall be marked with the appropriate lithium

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battery mark, as illustrated at 5.2.1.9;

**NOTE 1:** The provisions concerning marking in special provision 188 of the eighteenth revised edition of the United Nations Recommendations on the Transport of Dangerous Goods, Model Regulations may continue to be applied until 31 December 2018.

**NOTE 2:** Packages containing lithium batteries packed in conformity with the provisions of Part 4, Chapter 11, packing instructions 965 or 968, Section IB of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air that bear the mark as shown in 5.2.1.9 (lithium battery mark) and the label shown in 5.2.2.1.9, Model No.9A shall be deemed to meet the provisions of this special provision.

This requirement does not apply to:

- (i) packages containing only button cell batteries installed in equipment (including circuit boards); and
- (ii) packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment. When packages are placed in an overpack, the lithium battery mark shall either be clearly visible or be reproduced on the outside of the overpack and the overpack shall be marked with the word "OVERPACK". The lettering of the "OVERPACK" mark shall be at least 12 mm high.
- (g) Except when lithium batteries are installed in equipment, each package must be capable of withstanding a 1.2 m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents; and
- (h) Except when lithium batteries are installed in or packed with equipment, packages must not exceed 30 kg gross mass.

As used above and elsewhere in this Code, "lithium content" means the mass of lithium in the anode of a lithium metal or lithium alloy cell. As used in this special provision "equipment" means apparatus for which the lithium cells or batteries will provide electrical power for its operation.

Separate entries exist for lithium metal batteries and lithium ion batteries to facilitate the transport of these batteries for specific modes of transport and to enable the application of different emergency response actions.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the Manual of Tests and Criteria is considered a "cell" and shall be transported according to the requirements for "cells" for the purpose of this special provision.

**Limited Quantities:**

0

**Packagings & IBCs - Packing Instruction:** P903, P908, P909, P910, LP903, LP904

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### 15 Regulatory Information

Australian Inventory of Chemical Substances:	
CAS: 7782-42-5	Graphite
CAS: 7439-89-6	Iron
CAS: 7440-50-8	Copper
CAS: 96-49-1	1,3-Dioxolan-2-one
CAS: 9002-88-4	Polyethylene low density
CAS: 21324-40-3	Phosphate(1-), hexafluoro-, lithium
CAS: 25038-59-9	Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)
CAS: 24937-79-9	Ethene, 1,1-difluoro-, homopolymer
CAS: 7440-02-0	Nickel
CAS: 61789-96-6	Rubber, butadiene styrene
CAS: 9000-11-7	Cellulose, carboxymethyl ether

**Standard for the Uniform Scheduling of Drugs and Poisons (SUSMP) - Poison Schedule:** Not Scheduled.

#### Australia: Priority Existing Chemicals

None of the ingredients is listed.

### 16 Other Information

**Date of Preparation or Last Revision:** 15.09.2020**Prepared by:** MSDS.COM.AU Pty Ltd[www.msds.com.au](http://www.msds.com.au)

#### Abbreviations and acronyms:

ADG: Australian Dangerous Goods  
 IMDG: International Maritime Code for Dangerous Goods  
 IATA: International Air Transport Association  
 GHS: Globally Harmonised System of Classification and Labelling of Chemicals  
 CAS: Chemical Abstracts Service (division of the American Chemical Society)  
 LC50: Lethal concentration, 50 percent  
 LD50: Lethal dose, 50 percent  
 IARC: International Agency for Research on Cancer  
 STEL: Short Term Exposure Limit  
 TWA: Time Weighted Average  
 NES: National Exposure Standard (Safe Work Australia - Workplace Exposure Standards For Airborne Contaminants)  
 Flammable Solids 1: Flammable solids – Category 1  
 Acute Toxicity (Oral) 3: Acute toxicity - oral – Category 3  
 Skin Corrosion/Irritation 1A: Skin corrosion/irritation – Category 1A  
 Skin Corrosion/Irritation 2: Skin corrosion/irritation – Category 2  
 Serious Eye Damage/Irritation 1: Serious eye damage/eye irritation – Category 1  
 Skin Sensitisation 1: Skin sensitisation, Hazard Category 1  
 Carcinogenicity 2: Carcinogenicity – Category 2  
 STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1  
 STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2  
 Aquatic Acute 1: Hazardous to the aquatic environment, short-term (Acute). Category 1  
 Aquatic Acute 2: Hazardous to the aquatic environment, short-term (Acute). Category 2  
 Aquatic Chronic 1: Hazardous to the aquatic environment, long-term (Chronic). Category 1  
 Aquatic Chronic 2: Hazardous to the aquatic environment, long-term (Chronic). Category 2

#### Disclaimer

This SDS is prepared in accord with the Safe Work Australia document "Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals - May 2018"

The information contained in this safety data sheet is provided in good faith and is believed to be accurate at the date of issuance. Adventure Operations makes no representation of the accuracy or comprehensiveness of the information and to the full extent allowed by law excludes all liability for any loss or damage related to the supply or use of the information in this material safety data sheet. MSDS.COM.AU Pty Ltd is not in a position to

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warrant the accuracy of the data herein. The user is cautioned to make their own determinations as to the suitability of the information provided to the particular circumstances in which the product is used.