Safety Data Sheet
according to WHS Regulations

Printing date 05.03.2021 Revision: 04.03.2021

1 Identification

Product Name: Lithium-ion Battery

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:
Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail (7th edition).
Not classified as Hazardous according to the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) and Safe Work Australia criteria.


Skull and crossbones

Acute Toxicity (Inhalation) 3	H331	Toxic if inhaled.


Health hazard

Respiratory Sensitisation 1	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Germ Cell Mutagenicity 2	H341	Suspected of causing genetic defects.
Carcinogenicity 1A	H350	May cause cancer.
Toxic To Reproduction 1B	H360	May damage fertility or the unborn child.
STOT RE 1	H372	Causes damage to the bones and the teeth through prolonged or repeated exposure. Route of exposure: Inhalation.

Skin Sensitisation 1	H317	May cause an allergic skin reaction.
Aquatic Acute 3	H402	Harmful to aquatic life.
Aquatic Chronic 3	H412	Harmful to aquatic life with long lasting effects.

Signal Word Danger

Hazard Statements
H331 Toxic if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H341 Suspected of causing genetic defects.

(Contd. on page 2)

Safety Data Sheet
according to WHS Regulations

Printing date 05.03.2021 Revision: 04.03.2021

Product Name: Lithium-ion Battery

(Contd. of page 1)

H350 May cause cancer.
H360 May damage fertility or the unborn child.
H372 Causes damage to the bones and the teeth through prolonged or repeated exposure. Route of exposure: Inhalation.
H412 Harmful to aquatic life with long lasting effects.

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.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
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/hearing protection.
P284 [In case of inadequate ventilation] wear respiratory protection.
P302+P352 IF ON SKIN: Wash with plenty of water.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
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.
P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national regulations.

Additional Information
This product is considered as a manufactured article and so is exempt from GHS classification. The classifications listed above refer to the contents of this battery. Users will not be exposed to the contents during normal use, but hazardous materials may be released if the battery is subjected to fire, mechanical shocks, or misuse.

3 Composition and Information on Ingredients

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

Hazardous Components:		
CAS: 12031-65-1	Lithium nickel dioxide Carcinogenicity 1A, H350; STOT RE 1, H372; Skin Sensitisation 1, H317	10-30%
CAS: 7440-50-8	Copper	5-15%
CAS: 7429-90-5	Aluminium	1-10%
CAS: 12190-79-3	Lithium cobaltite Acute Toxicity (Inhalation) 2, H330; Respiratory Sensitisation 1, H334; Toxic To Reproduction 1B, H360; STOT RE 1, H372	1-10%
CAS: 616-38-6	Dimethyl carbonate Flammable Liquids 2, H225	1-10%
CAS: 96-49-1	1,3-Dioxolan-2-one STOT RE 2, H373; Acute Toxicity (Oral) 4, H302; Serious Eye Damage/ Irritation 2A, H319	1-3%

(Contd. on page 3)

Safety Data Sheet
according to WHS Regulations

Printing date 05.03.2021 Revision: 04.03.2021

Product Name: Lithium-ion Battery

(Contd. of page 2)

CAS: 21324-40-3	Phosphate(1-), hexafluoro-, lithium Acute Toxicity (Oral) 3, H301; STOT RE 1, H372; Skin Corrosion/Irritation 1A, H314; Serious Eye Damage/Irritation 1, H318	1-3%
CAS: 7782-42-5	Graphite	1-3%
CAS: 623-53-0	Ethyl methyl carbonate Flammable Liquids 3, H226	1-3%
CAS: 872-50-4	N-methyl-2-pyrrolidone Toxic To Reproduction 1B, H360; Skin Corrosion/Irritation 2, H315; Serious Eye Damage/Irritation 2A, H319; STOT SE 3, H335; Flammable Liquids 4, H227	0.3-0.99%
CAS: 7440-02-0	Nickel Carcinogenicity 2, H351; STOT RE 1, H372; Skin Sensitisation 1, H317	0.1-0.99%
CAS: 16812-54-7	Nickel sulphide Germ Cell Mutagenicity 2, H341; Carcinogenicity 1A, H350; STOT RE 1, H372; Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Skin Sensitisation 1, H317	0.1-0.99%
CAS: 7440-21-3	Silicon Flammable Solids 2, H228	0.1-0.99%
CAS: 1333-86-4	Carbon black STOT RE 2, H373	0.1-0.99%
CAS: 110-61-2	Succinonitrile Acute Toxicity (Oral) 4, H302	0.1-0.99%

Non Hazardous Components:		
CAS: 9002-88-4	Polyethylene low density	1-10%
CAS: 9003-07-0	1-Propene, homopolymer	0.1-0.99%
CAS: 9003-55-8	Benzene, ethenyl-, polymer with 1,3-butadiene	0.1-0.99%

Additional information:
As a solid, manufactured article, exposure to hazardous ingredients is not expected with normal use.
The battery is sealed 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 misuse, the battery case will be breached and the hazardous materials may be released. Therefore the batteries should not be short circuited, overcharged, punctured, incinerated, immersed in water, forced to discharge or exposed to temperatures above the temperature range of the cell or battery.

4 First Aid Measures

Inhalation:
If the contents of an opened battery are inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.

Skin Contact:
In case of skin contact with the contents of an opened battery, immediately remove contaminated clothing and wash affected areas with water and soap for at least 15 minutes. Seek medical attention if symptoms occur.

Eye Contact:
In case of eye contact with the contents of an opened battery, hold eyelids open and rinse with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention if symptoms occur.

(Contd. on page 4)

Safety Data Sheet
according to WHS Regulations

Printing date 05.03.2021 Revision: 04.03.2021

Product Name: Lithium-ion Battery

(Contd. of page 3)

Ingestion:
If swallowed, do not induce vomiting. Immediately rinse mouth with water. Give 2-4 glasses of water or milk. Never give anything by mouth to an unconscious person. Seek immediate medical attention.

Symptoms Caused by Exposure:
Inhalation: Contents of an opened battery are toxic if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation, coughing and difficulty breathing.
Skin Contact: Contents of an opened battery may cause skin irritation. May cause an allergic skin reaction.
Eye Contact: Contents of an opened battery may cause eye irritation.
Ingestion: Contents of an opened battery may cause irritation to the mouth, throat and gastrointestinal tract.

5 Fire Fighting Measures

Suitable Extinguishing Media:
In case of small fire, use a HFC clean-agent fire extinguisher or alcohol resistant foam.
In case of a large fire, use a large amount of water.

Specific Hazards Arising from the Chemical:
Hazardous combustion products include highly toxic and irritating gases.
Product is not flammable but components may burn in a fire. Battery may rupture if exposed to high temperatures. Risk of ignition exists even if fire has been extinguished due to high heat of ignited battery. Batteries effected or close to fire should be removed only if safe to do so. Use water spray to cool fire exposed batteries until battery temperature returns to normal.
Prevent run-off from fire fighting entering drains or water courses.
HAZCHEM Code: 2Y

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 and protective equipment. Evacuate all non-essential personnel from affected area. Do not breathe vapours. Ensure adequate ventilation. Do not re-enter area until fumes have dissipated. Extinguish all sources of ignition. Avoid sparks and open flames. No smoking

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:
The material contained within the battery is released only in the case of mechanical, electrical or thermal abuse. In the event of battery rupture and leakage allow the batteries to cool and the vapour to dissipate. Stop leak if safe to do so and absorb spill with sand, vermiculite or other absorbent material. Collect the spilt material and place into a suitable container for disposal.

7 Handling and Storage

Precautions for Safe Handling:
Charge according to manufacturer's specifications. Charge only with specified charger designed for this battery. Do not overcharge, short-circuit, force discharge, disassemble, crush, deform, expose to high temperatures or incinerate. Do not allow battery terminals to contact each other or other metals. Do not weld, solder or in any way modify batteries. Do not damage or remove the external casing. Do not crush or drop batteries.
Use of safe work practices are recommended to avoid eye or skin contact and inhalation of vapours. Use only outdoors or in a well-ventilated area.
Food, beverages and tobacco products should not be stored or consumed where this material is in use. Always

(Contd. on page 5)

Safety Data Sheet
according to WHS Regulations

Printing date 05.03.2021 Revision: 04.03.2021

Product Name: Lithium-ion Battery

(Contd. of page 4)

wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use. Contaminated work clothing must not be allowed out of the workplace.
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 at room temperature (20 ºC) at approximately 40% of capacity. Keep in original container.
Ensure battery terminals are protected during storage. Batteries must be packed in a manner to prevent short circuits. Protect batteries from mechanical and electrical abuse such as short circuiting, overcharging, installing with incorrect polarity, disassembling or crushing.
Protect from heat, sparks, open flames and other sources of ignition. Protect from humidity.
Keep away from water, oxidising agents, reducing agents and combustibles.

8 Exposure Controls and Personal Protection

Exposure Standards:	
CAS: 7782-42-5 Graphite	
NES	TWA: 3 mg/m³
WES	TWA: 3 mg/m³
CAS: 1333-86-4 Carbon black	
NES	TWA: 3 mg/m³
WES	TWA: 3 mg/m³
CAS: 7429-90-5 Aluminium	
WES	TWA: 10* 5** mg/m³ *metal dust;**welding, pyro powders
CAS: 7440-50-8 Copper	
WES	TWA: 1* 0.2** mg/m³ *dust & mists (as Cu) **fume
CAS: 7440-02-0 Nickel	
WES	TWA: 1 mg/m³ Metal: Sen
CAS: 872-50-4 N-methyl-2-pyrrolidone	
WES	STEL: 309 mg/m³, 75 ppm TWA: 103 mg/m³, 25 ppm Sk
CAS: 7440-21-3 Silicon	
WES	TWA: 10 mg/m³
CAS: 1333-86-4 Carbon black	
WES	TWA: 3 mg/m³

Engineering Controls:
Maintain air concentration below occupational exposure standards, providing adequate ventilation.

Respiratory Protection:
Respiratory protection is not required under normal use conditions.
Use an approved vapour respirator under conditions where exposure to the substance is apparent (e.g. In the case of abuse and leakage of liquid or emission of fumes) and engineering controls are not feasible. See Australian Standards AS/NZS 1715 and 1716 for more information.

(Contd. on page 6)

Safety Data Sheet
according to WHS Regulations

Printing date 05.03.2021 Revision: 04.03.2021

Product Name: Lithium-ion Battery

(Contd. of page 5)

Skin Protection:
Not necessary under normal use conditions.
In case of spill wear protective gloves. See Australian/New Zealand Standard AS/NZS 2161 for more information.
When selecting gloves for use against certain chemicals, the degradation resistance, permeation rate and permeation breakthrough time should be considered.
Occupational protective clothing (depending on conditions in which it has to be used, in particular as regards the period for which it is worn, which shall be determined on the basis of the seriousness of the risk, the frequency of exposure to the risk, the characteristics of the workstation of each worker and the performance of the protective clothing). See Australian/New Zealand Standard AS/NZS 4501 for more information.

Eye and Face Protection:
Eye protection is not required under normal use conditions.
In case of spill wear eye and face protectors for protection against splashing materials or liquids. See Australian/ New Zealand Standard AS/NZS 1337 for more information.

9 Physical and Chemical Properties

Appearance:	
Form:	Solid
Colour:	No information available
Odour:	Odourless
Odour Threshold:	No information available
pH-Value:	No information available
Melting point/freezing point:	No information available
Initial Boiling Point/Boiling Range:	No information available
Flash Point:	No information available
Flammability:	No information available
Auto-ignition Temperature:	No information available
Decomposition Temperature:	No information available
Explosion Limits:	
Lower:	No information available
Upper:	No information available
Vapour Pressure:	No information available
Relative Density:	No information available
Vapour Density:	No information available
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: No dangerous reactions known under conditions of normal use.

Chemical Stability: Stable at ambient temperature and under normal conditions of storage and use.

Conditions to Avoid:
Mechanical and electrical abuse such as short circuiting, overcharging, installing with incorrect polarity, disassembling or crushing. Protect from heat, sparks, open flames and direct sunlight. Exposure to excessive moisture.

Incompatible Materials: Water, oxidising agents, reducing agents and combustibles.

(Contd. on page 7)

Safety Data Sheet
according to WHS Regulations

Printing date 05.03.2021 Revision: 04.03.2021

Product Name: Lithium-ion Battery

(Contd. of page 6)

Hazardous Decomposition Products: Highly irritating and toxic gases.

11 Toxicological Information

Toxicity:

LD50/LC50 Values Relevant for Classification:		
CAS: 616-38-6 Dimethyl carbonate		
Oral	LD50	13,000 mg/kg (rat)
Dermal	LD50	>5,000 mg/kg (rabbit)
CAS: 108-32-7 1,3-Dioxolan-2-one, 4-methyl-		
Oral	LD50	29,000 mg/kg (rat)
CAS: 96-49-1 1,3-Dioxolan-2-one		
Oral	LD50	10,000 mg/kg (rat)
CAS: 1333-86-4 Carbon black		
Oral	LD50	>5,000 mg/kg (rat)
Dermal	LD50	>3,000 mg/kg (rabbit)

Acute Health Effects
Inhalation:
Contents of an opened battery are toxic if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation, coughing and difficulty breathing.
Skin: Contents of an opened battery may cause skin irritation. May cause an allergic skin reaction.
Eye: Contents of an opened battery may cause eye irritation.
Ingestion: Contents of an opened battery may cause irritation to the mouth, throat and gastrointestinal tract.

Skin Corrosion / Irritation: Based on classification principles, the classification criteria are not met.

Serious Eye Damage / Irritation: Based on classification principles, the classification criteria are not met.

Respiratory or Skin Sensitisation:
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.

Germ Cell Mutagenicity: Suspected of causing genetic defects.

Carcinogenicity:
May cause cancer.
Styrene-butadiene copolymers, polyethylene and propylene are classified by IARC as Group 3 - Not classifiable as to its carcinogenicity to humans.
Carbon black and nickel are classified by IARC as Group 2B - Possibly carcinogenic to humans.

Reproductive Toxicity: May damage fertility or the unborn child.

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

Specific Target Organ Toxicity (STOT) - Repeated Exposure:
Causes damage to the bones and teeth through prolonged or repeated exposure.

Aspiration Hazard: Based on classification principles, the classification criteria are not met.

(Contd. on page 8)

Safety Data Sheet
according to WHS Regulations

Printing date 05.03.2021 Revision: 04.03.2021

Product Name: Lithium-ion Battery

(Contd. of page 7)

Chronic Health Effects: No data associated with long term health effects.

Existing Conditions Aggravated by Exposure: No information available

12 Ecological Information

Ecotoxicity:

Aquatic toxicity:
Harmful to aquatic life with long lasting effects.

CAS: 1333-86-4 Carbon black	
LC50/96 h	>1,000 mg/l (brachydanio rerio)

Persistence and Degradability: No data available on finished product.

Bioaccumulative Potential: The product ingredients have low potential for bioaccumulation.

Mobility in Soil: The product ingredients have no potential mobility in soil.
Other adverse effects: No further relevant information available.

13 Disposal Considerations

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

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

14 Transport Information

UN Number
ADG, IMDG, IATA UN3480

Proper Shipping Name
ADG, IMDG, IATA LITHIUM ION BATTERIES

Dangerous Goods Class
ADG Class: 9 Miscellaneous dangerous substances and articles.
Subsidiary Risk:

Packing Group: Not applicable

Marine pollutant:

EMS Number: F-A,S-I

Hazchem Code: 2Y

Special Provisions: 188, 230, 310, 348, 376, 377, 384, 387, 390

Limited Quantities: 0 kg

Packagings & IBCs - Packing Instruction: P903, P908, P909, P910, P911, LP903, LP904, LP905, LP906

15 Regulatory Information

Australian Inventory of Industrial Chemicals:	
CAS: 7440-50-8	Copper

(Contd. on page 9)

Safety Data Sheet
according to WHS Regulations

Printing date 05.03.2021 Revision: 04.03.2021

Product Name: Lithium-ion Battery

(Contd. of page 8)

CAS: 7429-90-5	Aluminium
CAS: 12190-79-3	Lithium cobaltite
CAS: 616-38-6	Dimethyl carbonate
CAS: 9002-88-4	Polyethylene low density
CAS: 96-49-1	1,3-Dioxolan-2-one
CAS: 21324-40-3	Phosphate(1-), hexafluoro-, lithium
CAS: 7782-42-5	Graphite
CAS: 623-53-0	Ethyl methyl carbonate
CAS: 7440-02-0	Nickel
CAS: 9003-07-0	1-Propene, homopolymer
CAS: 872-50-4	N-methyl-2-pyrrolidone
CAS: 16812-54-7	Nickel sulphide
CAS: 7440-21-3	Silicon
CAS: 554-13-2	Lithium carbonate
CAS: 1333-86-4	Carbon black
CAS: 9003-55-8	Benzene, ethenyl-, polymer with 1,3-butadiene
CAS: 110-61-2	Succinonitrile

Standard for the Uniform Scheduling of Medicines 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: 04.03.2021

Prepared by: MSDS.COM.AU Pty Ltd 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 Liquids 2: Flammable liquids – Category 2
Flammable Liquids 3: Flammable liquids – Category 3
Flammable Liquids 4: Flammable liquids – Category 4
Flammable Solids 2: Flammable solids – Category 2
Acute Toxicity (Oral) 3: Acute toxicity - oral – Category 3
Acute Toxicity (Oral) 4: Acute toxicity - oral – Category 4
Acute Toxicity (Inhalation) 2: Acute toxicity - inhalation – Category 2
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

(Contd. on page 10)

Safety Data Sheet
according to WHS Regulations

Printing date 05.03.2021 Revision: 04.03.2021

Product Name: Lithium-ion Battery

(Contd. of page 9)

Serious Eye Damage/Irritation 2A: Serious eye damage/eye irritation – Category 2A
Respiratory Sensitisation 1: Respiratory sensitisation, Hazard Category 1
Skin Sensitisation 1: Skin sensitisation, Hazard Category 1
Germ Cell Mutagenicity 2: Germ cell mutagenicity – Category 2
Carcinogenicity 1A: Carcinogenicity – Category 1A
Carcinogenicity 2: Carcinogenicity – Category 2
Toxic To Reproduction 1B: Reproductive toxicity – Category 1B
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
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 3: Hazardous to the aquatic environment, short-term (Acute). Category 3
Aquatic Chronic 1: Hazardous to the aquatic environment, long-term (Chronic). Category 1
Aquatic Chronic 3: Hazardous to the aquatic environment, long-term (Chronic). Category 3

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 - July 2020”

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 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.