

PRODUCT SAFETY DATA SHEET (PSDS)

Document Title:	Product Safety Data Sheet for 1BP001BP (Rechargeable Lithium Ion Battery Pack)	Revision
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Prepared By:	ML	

SECTION 1: IDENTIFICATION OF THE SUBSTANCE OR PREPARATION AND COMPANY

Product Identifier		
Product Name:	Rechargeable Lithium-ion battery pack	
Chemical Name:	Not Applicable	
Synonyms:	Cylindrical lithium-ion multi-cell battery pack	
Proper Shipping Name:	Not Applicable	
Chemical Formula:	Not Applicable	
Other Means of Identification:	Model Number:	1BP001BP
	Nominal Voltage:	18V DC
	Nominal Capacity:	6000 mAh
	Nominal Energy:	108 W/h
	Nominal Weight:	750 g
CAS Number:	Not Applicable	
Relevant Identified Uses of The Substance or Mixture and Uses Advised Against		
Relevant Identified Uses:	Each cell consists of a hermetically sealed STAINLESS STEEL container containing a number of chemicals and materials of construction which are hazardous only if the materials are released by damaging the cell or if exposed to fire. The sealed battery cell is not hazardous in normal use.	
Details of The Supplier of The Safety Data Sheet		
Registered Company Name:	Pacvac Pty Ltd	
Address:	7 Mackay Street, Kewdale, WA, 6105, Australia	
Telephone:	+618 9479 1444	
Fax:	+618 9478 5444	
Website:	www.pacvac.com.au	
Email:	sales@pacvac.com	
Emergency Telephone Number		
Association/Organisation:	Not Available	
Emergency Telephone Numbers:	Contact Pacvac Pty Ltd	
Other Emergency Telephone Numbers:	Not Available	

SECTION 2: HAZARDS IDENTIFICATION

Classification of The Substance or Mixture

Not classified as Hazardous according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia. Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition).

Hazard/Caution Statements:	<ul style="list-style-type: none"> Do not open or disassemble. Do not expose to fire or open flame. Do not short circuit or force discharge. Do not puncture, deform, incinerate or heat above the declared operating temperature range.
Routes of Entry:	<ul style="list-style-type: none"> Inhalation: Not anticipated. Respiratory and eye irritation may occur if fumes are released due to heat or an abundance of leaking batteries. Skin: Yes Ingestion: Yes
Potential Health Effects:	These chemicals are contained in a sealed can. Risk of exposure occurs only if the battery is mechanically or electrically abused. The most likely risk is acute exposure when a cell/battery vents. Contact of electrolyte and extruded lithium with skin and eyes should be avoided.
Signs/Symptoms of Exposure:	Skin and eye irritation may occur following exposure to a leaking battery.
Medical Conditions Generally Aggravated by Exposure:	An acute exposure will not generally aggravate any medical condition.

The materials contained in this product may only represent a hazard if the integrity of the cells or battery is compromised; physically or electrically abused.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Although the chemical composition of the various cell manufacturers is proprietary, the following is typical of the chemistry. Under normal use conditions, cells and batteries do not emit hazardous or regulated substances.

Mixtures

	Chemical Name	CAS No.	Mass range in cell (g/g %)
Electrolyte	Contains Electrolyte salt and solvents		5-20
Electrolyte salt	Lithium hexafluorophosphate	21324-40-3	0.05-5
Electrolyte solvent	Includes one or more of the following; Ethylene Carbonate Propylene Carbonate Diethyl Carbonate Ethyl propionate	96-49-1 108-32-7 105-58-8 105-37-3	5-20
PVDF	Polyvinylidene fluoride	24937-79-9	<1
Copper	Cu	7440-50-8	3-15
Aluminium	Al	7429-90-5	2-10
Cathode	Lithium cobalt oxide	12190-79-3	20-50
Anode	Graphite	7782-42-5	10-30
Steel, Nickel, and inert components		Various	Balance

SECTION 4: FIRST AID MEASURES	
Description of First Aid Measures	
Eye Contact:	If content comes into contact with eye, flush with water for 15 minutes without rubbing and immediately contact a physician.
Skin Contact:	<p>If skin contact occurs:</p> <ul style="list-style-type: none"> • Immediately remove all contaminated clothing, including footwear. • Flush skin and hair with running water (and soap if available). • Seek medical attention in event of irritation.
Inhalation:	Remove patient to fresh air and seek medical attention.
Ingestion:	For advice, contact Poisons Information Centre or a doctor.
Indication of Any Immediate Medical Attention and Special Treatment	
Treat symptomatically	
SECTION 5: FIREFIGHTING MEASURES	
Extinguishing Media	
Use dry chemical powder, alcohol-resistant foam, carbon dioxide or water as a fine spray.	
Special Hazards Arising from The Substrate or Mixture	
Fire Incompatibility:	None known
Advice for Firefighters	
Fire Fighting:	<p>Slight hazard when exposed to heat, flame and oxidisers.</p> <ul style="list-style-type: none"> • Use firefighting procedures suitable for surrounding area. • DO NOT approach containers suspected to be hot. • Cool fire exposed containers with water spray from protected location. • If safe to do so, remove container from path of fire. • Equipment should be thoroughly decontaminated after use.
Fire/Explosion Hazard:	<ul style="list-style-type: none"> • Non-combustible. • Not considered to be a significant risk. • Heating may cause expansion or decomposition leading to violent rupture of containers. • May emit acrid smoke. May emit corrosive and poisonous fumes.
SECTION 6: ACCIDENTAL RELEASE MEASURES	
Personal Precautions, Protective Equipment and Emergency Procedures	
Minor Spills:	<ul style="list-style-type: none"> • Clean up all spills immediately. • Avoid contact with skin and eyes. • Place in suitable containers for disposal.
Major Spills:	<ul style="list-style-type: none"> • Clean up all spills immediately. • Secure load if safe to do so. • Bundle/collect recoverable product. • Collect remaining material in containers with covers for disposal.
Personal Protective Equipment:	See Section 8.
SECTION 7: HANDLING AND STORAGE	
Precautions for Safe Handling	
Safe Handling:	<ul style="list-style-type: none"> • Use good occupational work practice. • Observe manufacturer's storage and handling recommendations contained within this PSDS. • Avoid physical damage to containers.

	<ul style="list-style-type: none"> Do not short circuit, crush, incinerate or disassemble battery. 						
Other Information:	<ul style="list-style-type: none"> Keep dry. Store under cover. Protect containers against physical damage. Keep out of children's reach. Observe manufacturer's storage and handling recommendations contained within this PSDS. Store out of direct sunlight. Store away from incompatible materials. 						
Conditions for Safe Storage, Including Any Incompatibilities							
Suitable Container:	Packaging as recommended by manufacturer.						
Storage Incompatibility:	Avoid reaction with oxidising agents.						
Package Material Incompatibilities:	Not Available.						
SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION							
Control Parameters							
Ingredient Data:							
Occupational Exposure Limits (OEL)	Source	Ingredient	Material Name	TWA	STEL	Peak	Notes
	Australia Exposure Standards	Manganese dioxide	Manganese, dust & compounds (as Mn)	1 (mgm ³)	Not Available	Not Available	Not Available
	Australia Exposure Standards	Graphite	Graphite (all forms except fibres) (respirable dust) (g) (natural & synthetic)	3 (mgm ³)	Not Available	Not Available	Not Available
Emergency Limits	Ingredient	TEEL-0	TEEL-1	TEEL-2		TEEL-3	
	Ethylene Carbonate	40 (ppm)	125 (ppm)	500 (ppm)		500 (ppm)	
	Diethyl Carbonate	3 (ppm)	7.5 (ppm)	60 (ppm)		300 (ppm)	
	Manganese Dioxide	0.317 (ppm)	4.75 (ppm)	79.1 (ppm)		500 (ppm)	
	Graphite	2 (ppm)	6 (ppm)	10 (ppm)		500 (ppm)	
	Cobalt (II) Oxide	0.127 (ppm)	0.127 (ppm)	20 (ppm)		75 (ppm)	
	Nickel Oxide	1.27 (ppm)	1.27 (ppm)	12.7 (ppm)		12.7 (ppm)	
Emergency Limits	Ingredient	Original IDLH		Revised IDLH			
	Manganese Dioxide	N.E. (mgm ³) N.E. (ppm)		500 (mgm ³)			
	Graphite	N.E. (mgm ³) N.E. (ppm)		1250 (mgm ³)			
	Nickel Oxide	N.E. (mgm ³) N.E. (ppm)		10 (mgm ³)			

Exposure Controls			
Appropriate Engineering Controls:	None under normal operating conditions.		
Personal Protection:	Eye and Face Protection:	None under normal operating conditions, OTHERWISE; wear safety glasses.	
	Skin Protection:	See Hand Protection below.	
	Hand Protection:	None under normal operating conditions, OTHERWISE; wear rubber gloves.	
	Body Protection:	See Other Protection below.	
	Other Protection:	No special equipment needed when handling small quantities.	
	Thermal Hazards:	Not Available.	
	Recommended Material(s):	When handling larger quantities, wear rubber gloves.	
	Respiratory Protection:	None under normal operating conditions, OTHERWISE; wear safety mask.	
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES			
Information on Basic Physical and Chemical Properties			
Appearance:	Cells: Aluminium coloured sealed unit. Battery pack: Rectangular black plastic casing.		
Physical State:	Manufactured		
Odour:	Not Available	Relative density (water=1)	Not Available
Odour Threshold:	Not Available	Partition coefficient n-octanol/water	Not Available
pH Value (as supplied):	Not Available	Auto-ignition temperature (°C)	Not Available
Melting Point/Freezing Point (°C):	Not Available	Decomposition temperature (°C)	Not Available
Initial Boiling Point and Range (°C):	Not Available	Viscosity (cSt)	Not Available
Flash Point (°C):	Not Available	Molecular weight (g/mol)	Not Applicable
Evaporation Rate:	Not Available	Taste	Not Available
Flammability:	Not Available	Explosive properties	Not Available
Upper Explosive Limit (%):	Not Available	Oxidising properties	Not Available
Lower Explosive Limit (%):	Not Available	Surface tension (dyn/cm or mN/m)	Not Available
Vapour Pressure (kPa):	Not Available	Volatile component (%)	Not Available
Solubility in Water (g/L):	Immiscible	Gas group	Not Available
Vapour Density (Air=1):	Not Available	pH as a solution (1%)	Not Available
SECTION 10: STABILITY AND REACTIVITY			
Reactivity:	See Section 7.		
Chemical Stability:	Product is considered stable and hazardous polymerisation will not occur.		
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: TOXICOLOGY INFORMATION		
Information on Toxicological Effects		
Inhaled:	Not normally a hazard due to physical form of product. Vapours or fumes released due to burning or large number of leaking battery content may cause respiratory irritation.	
Ingestion:	Considered an unlikely route of entry in commercial/industrial environments. 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. Contact with battery contents may cause irritation.	
Eye:	Not normally a hazard due to physical form of product. Eye contact with the content of an open battery may cause irritation.	
Chronic:	Not normally a hazard due to physical form of product. Overexposure to products generated from overcharge or combustion of the cell or battery may result in simple and chemical asphyxiation. Symptoms may include rapid respiration, muscular incoordination, fatigue, dizziness, nausea, vomiting, unconsciousness, and death. Severe eye irritation or tissue injury may occur at high concentrations. Prolonged overexposure to decomposition products may adversely affect the lungs, blood, cardiovascular, and central nervous system. Symptoms may include headache, confusion, excitation, rapid breathing, an irregular heartbeat (arrhythmia), lassitude (weakness, exhaustion), cyanosis (bluish or purplish tinge to the skin), and chest pain.	
SECTION 12: ECOLOGICAL INFORMATION		
Toxicity:	DO NOT discharge into sewer or waterways.	
Persistence and Degradability:	Not Available.	
Bioaccumulative Potential:	Not Available.	
Mobility in Soil:	Not Available.	
SECTION 13: DISPOSAL CONSIDERATIONS		
Waste Treatment Methods		
Product/Packaging Disposal:	<ul style="list-style-type: none"> • Consult manufacturer for recycling options. • Consult State Land Waste Management Authority for disposal. 	
SECTION 14: TRANSPORT INFORMATION		
Labels Required:	Class 9	Class 9
UN Number:	3480	3481
Shipping Name:	Lithium Ion Battery	Lithium Ion Battery
DG Class:	9	9
Hazchem Code:	4W	4W
Packing Instruction:	PI965	PI966
Packing Section:	1A	1A
Marine Pollutant:	No	No
Maximum Gross Weight Limit Per Package:	Ground (Domestic) (Motor Vehicle & Rail):	35 kg
	Air (Domestic) Cargo Aircraft Only (CAO):	35 kg
	Passenger Aircraft (Pax A/C):	5 kg
	Air (International) Cargo Aircraft Only (CAO):	35 kg



	Passenger Aircraft (Pax A/C):	5 kg
	Cargo Vessel (Sea/Ocean):	No limit
SECTION 15: REGULATORY INFORMATION		
Ingredients with Multiple Cas Numbers	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/references .	
SECTION 16: OTHER INFORMATION		
<p>This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.</p> <p>This information relates to the specific materials designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use.</p> <p>Pacvac does not accept liability for any loss or damage that may occur, whether direct, indirect, incidental or consequential, from the use of this information. Pacvac Pty Ltd does not offer warranty against patent infringement.</p>		

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