DANGEROUS GOODS (DG) and HAZARDOUS SUBSTANCES (HS) RISK ASSESSMENT	
Administration	Date Completed: Click or tap to enter a date. 29/08/24
Department/Work Area Location: MATH: [151] Monadelphous EECE Lab	Responsible Work Area Manager/ Supervisor **Stuart Mather / Jega Gurusamy**
People involved in completion of this Risk Assessment:	
Name of Dangerous Goods or Hazardous Substance:	Lithium polymer batteries and lithium ion batteries
Equipment being use	BLDC motors, Drones

Determine Dangerous Goods (DG) and Hazardous Substances (HS) Hazard and Risk Factors					
Review SDS of DG / HS and answer the following questions:					
Question	**Yes/No**	**Class:**	**Packaging Group:**	**Quantity:**	**Unit of Measure:**
Is the substance classified as being Hazardous?	Yes	N/A	N/A	Multiple batteries	N/A
Is the substance a Dangerous Good?	Yes	Class 9: Miscellaneous dangerous substances and articles	Packing group II: Substances presenting medium danger	Multiple batteries	N/A
Review SDS of DG / HS and document Risk and Safety Phrase:					
Risk Phrases Eg. Heating may cause explosion	Harmful if swallowed, Highly Flammable, Corrosive, Causes burns, Limited evidence of carcinogenic effect, May cause sensitisation by skin contact				
Safety Phrases Eg. Keep in cool place	Guidelines for safe handling: Always follow the warming information on the batteries and device manuals. Only use the recommended battery for the device. Keep batteries away from children. Do not swallow batteries. Do not throw batteries in water. Do not throw batteries in fire. Avoid deep discharge. Do not short-circuit batteries. Do not reverse polarity within a battery pack. Use recommended charging time and current. The batteries should never be disassembled, or mechanically abused. Storage: Store at room temperature, in a dry and ventilated area. Avoid large temperature variations. Do not store near heating equipment. Avoid exposure to direct sunlight for long periods of time. Preferably store at 50% of the nominal capacity.				

Separation and Segregation – Compatibility Chart by ADGC

Determine DG/HS Risk Factors: *Tick ☑the below boxes to for all identified risks*

What form is the HS/DG in?

- ☐ Liquid
- ☒ Solid
- ☐ Gas/Odour
- ☐ Powder
- ☐ Other (Describe)

HS Hazards

Does the SDS make reference to any of the following HS hazards?

- ☐ Toxic
- ☒ Harmful
- ☒ Corrosive
- ☐ Irritant
- ☐ Poisonous
- ☒ Sensitiser (allergic reaction to skin)
- ☒ Carcinogenic
- ☐ Mutagenic
- ☐ Teratogenic (may cause birth defects)
- ☐ Other (Describe):

DG Hazards

Does the SDS make reference to any of the following DG hazards?

- ☐ Acid ☐ Strong ☐ Weak
- ☐ Base ☐ Strong ☐ Weak
- ☐ Acid oxidiser
- ☒ Corrosive
- ☐ Dangerous when wet
- ☐ Explosive
- ☒ Highly flammable
- ☐ Organic peroxide
- ☐ Oxidising agent
- ☒ Spontaneously combustible
- ☒ Unstable
- ☐ Other (Describe):

Exposure Routes

Does the SDS make reference to any specific requirements managing possible exposure routes?

- ☒ Inhalation
- ☒ Ingestion
- ☐ Injection
- ☒ Skin
- ☒ Eye
- ☐ Other (Describe):

First Aid and Emergency

Does the SDS outline any specific first aid?

- ☒ Transfer immediately to doctor/hospital
- ☒ First aid supplies (eye wash, first aid kit etc.)
- ☐ First aid equipment required
- ☐ First aid training
- ☐ Call Poison Information Centre
- ☒ Do NOT induce vomiting
- ☐ Give water
- ☐ Medical emergency plan
- ☒ Evacuation plan
- ☐ Emergency Equipment
- ☐ Other (Describe):

Health Monitoring

Does the SDS refer to any specific health monitoring requirements in being exposed to the HS/DG?

- ☐ Health Surveillance
- ☐ Air Monitoring
- ☐ Other (Describe)

Handling and Usage

Does the SDS outline any specific requirements in handling/using the DG / HS

- ☐ Wear PPE
- ☒ Follow label instructions
- ☐ Avoid inhalation
- ☐ Avoid skin or eye contact
- ☐ Only use in well-ventilated areas
- ☐ Keep container sealed when not in use
- ☒ Maintain personal hygiene standards before and after use
- ☒ Keep away from ignition sources
- ☒ Training required before use
- ☐ Other (Describe):

Storage

Does the SDS refer to any specific safe storage requirements?

- ☐ Ensure Correct labelling
- ☒ Store in cool and dry area
- ☐ Store in ventilated area
- ☒ Protect from heat
- ☒ Protect from ignition sources or open flames
- ☒ Protect from sunlight
- ☐ Refrigerate or freeze at specified temperature
- ☐ Isolate/ Lock / Restrict Access
- ☒ Separation and Segregation

**See Compatibility Chart **

- ☒ Other (Describe):

Avoid moisture, temperatures above 100°C, strong oxidizing agents, reducing agents, acids and bases. Incompatible with water

Transport (DG Items Only)

Which Australian Dangerous Goods Code (ADG Code) requirements apply to this DG?

- ☒ Packaging requirements
- ☐ Use of bulk containers, IBCs, freight containers and unit loads
- ☒ Marking and placarding
- ☐ Vehicle requirements
- ☐ Segregation and stowage
- ☐ Safety equipment
- ☐ Procedures during transport emergencies
- ☐ Other (Describe):

Spill Management

Does the SDS make reference to any specific actions in managing HS/DG spills?

- ☒ Spills management kit and PPE items
- ☐ Isolate spill from water drainage systems
- ☒ Apply absorbent material
- ☒ Apply neutralising agent
- ☐ Dilute spill with water
- ☐ If safe to do so, stop gas flow to avoid explosion and fire.
- ☒ Spills management kit and PPE items
- ☐ Other (Describe):

Disposal

Does the SDS make reference to any specific actions in disposing of the HS/DG item?

- ☐ Dilute with Water:
- ☐ Dispose by domestic waste water system:
- ☒ Separate from waste
- ☒ Check local environmental laws
- ☐ Store for next chemical waste disposal collection
- ☐ Empty cylinders to be returned to manufacturer/supplier
- ☒ Disposal by licensed disposal company
- ☐ Empty containers to be disposed of as per product

Other Risks

Can anyone be injured or suffer ill health from exposure to other hazards while using the HS/DG

- ☐ Manual handling
- ☐ Plant
- ☐ High Risk Work (HRW)
- ☐ Permit to Work
- ☐ Other (Describe):

**Note if risks related to manual handling, plant or HRW have been identified, please also consider completing a Risk Assessment, Permit to Work, Safe Work Method Statement (SWMS) templates etc

Comments – *Provide further comment on the risk factors identified:*

Stable during normal operation conditions. Ventilation and PPE not necessary under normal use. Hazardous decomposition or byproducts: None under normal operating conditions. Carbon dioxide and hydrogen fluoride gas may be generated during combustion of battery.

Risk Measures and Actions

Where risks or hazards have been identified above complete the following listing all controls that will be undertaken to reduce the risk rating:

Refer to Assessment Matrix and Hierarchy of Controls document to determine risk ratings and the most appropriate controls

Add additional pages if required.

Hazard/Risk Identified in Section B	General Description of Hazard/Risk	Risk Rating Before Controls			Controls Implemented	Risk Rating After Controls		
		Likelihood	*Consequence*	*Risk Rating*	**More than one control may be required to effectively mitigate an identified hazard**	*Likelihood*	*Consequence*	*Risk Rating*
Harmful	Harmful if swallowed	Unlikely	Major	Moderate (Mo5)	**Administrative Controls** - Maintain personal hygiene standards before and after use - Training required before use	Unlikely	Major	Moderate (Mo5)
Corrosive	Causes burns in case of electrolyte leakage from battery	Possible	Major	Major (Ma2)	**Engineering Controls** - Store and charge in Bat-Safe Li-Po Battery Charging & Storage Safe Bags **Administrative Controls** - Store in cool and dry area - Keep away from heat sources - The batteries should never be disassembled, or mechanically abused. - Training required before use	Unlikely	Major	Moderate (Mo5)
Sensitiser	Electrolyte may cause sensitisation by skin contact in case of leakage from battery	Possible	Moderate	Moderate (Mo2)	**Administrative Controls** - The batteries should never be disassembled, or mechanically abused. - Training required before use	Unlikely	Moderate	Minor Mi6)
Carcinogenic	Limited evidence of carcinogenic effect in case of electrolyte leakage from battery	Possible	Moderate	Moderate (Mo2)	**Administrative Controls** - Store in cool and dry area - Keep away from heat sources - The batteries should never be disassembled, or mechanically abused. - Training required before use	Possible	Moderate	Minor Mi6)
Highly flammable	Highly flammable liquid and gas can be released in case of break or electrolyte leakage from battery	Possible	Major	Major (Ma2)	**Engineering Controls** - Store and charge in Bat-Safe Li-Po Battery Charging & Storage Safe Bags **Administrative Controls** - Store in cool and dry area - Keep away from heat sources - The batteries should never be disassembled, or mechanically abused. - Training required before use	Unlikely	Major	Moderate (Mo5)
Spontaneously combustible / unstable	If the Anode is exposed to water or excessive humidity hydrogen gas is formed, which may inflame spontaneously	Possible	Major	Major (Ma2)	**Engineering Controls** - Store and charge in Bat-Safe Li-Po Battery Charging & Storage Safe Box **Administrative Controls** - Store in cool and dry area - The batteries should never be disassembled, or mechanically abused. - Training required before use	Unlikely	Major	Moderate (Mo5)

INDUCTEES DECLARATION		
I will comply with UWA's Safety and Health Policy and associated procedures and guidelines. I acknowledge receipt of this induction and have received the necessary information, instruction and training required to enable me to work safely.		
Name(s):	Signature(s):	Date:

PROJECT SUPERVISOR DECLARATION (if applicable)		
Name: Jega Gurusamy	Signature: 	Date: Click or tap to enter a date. 29/08/24
LAB SUPERVISOR DECLARATION		
Name: Stuart Mather	Signature: 	Date: Click or tap to enter a date. 29/08/24
HEAD OF SCHOOL AUTHORISATION		
Name: Tim Sercombe	Signature: 	Date: Click or tap to enter a date. 05/09/2024

Email completed and signed form to School Operations Engineering schoolops-eng@uwa.edu.au