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MATERIAL SAFETY DATA SHEET

For

BATTERY PACK

Lithium-Ion Polymer rechargeable battery Pack

Customer: HEIGHT TECHNOLOGIES

REVISION TABLE

<u>Rev.</u>	<u>Date</u>	<u>Name</u>
0	November 1, 2021	Slava C.



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1. SECTION 1 – PRODUCT AND MANUFACTURER INFORMATION

- 1.1. This document is a preliminary MATERIAL SAFETY DATA SHEET for a proto-type battery pack as described in applicable document 1.9.1.
- 1.2. PRODUCT COMPANY: AMICELL - AMIT INDUSTRIES Ltd.
- 1.3. PRODUCT P.N.: **901LP-190656-6S2P-M1**
- 1.4. PRODUCT TYPE: Li-Ion Polymer rechargeable Battery Pack.
- 1.5. NOMINAL VOLTAGE/VOLTAGE: 22.2V
- 1.6. Wh rating: 800Wh
- 1.7. Basic cell: 104-ABLP8474170H300
- 1.8. HAZARD RATINGS:

	<u>NPCA/HMIS</u>	<u>NFPA 704</u>	<u>Rating Key</u>
Health:	0	0	0 = Minimal
Flammability:	0	0	1 = Slight
Reactivity:	0	0	2 = Moderate
			3 = Serious
			4 = Severe

NFPA = National Fire Protection Association
 NPCA/HMIS = National Paint & Coatings Association/ Hazardous Materials Identification System

- 1.9. APPLICABLE DOCUMENTS:
- 1.9.1. AMICELL - AMIT INDUSTRIES - xxxxx-yy-zz – Data sheet.

2. SECTION 2 – COMPOSITION / INFORMATION ON INGREDIENTS

Battery Pack <u>Net</u> weight (cells)	~226grams
In addition: Case weight	~2800grams
Electronic circuits & wiring	~90grams



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MATERIAL OR INGREDIENT	Wt %
Lithium cobalt dioxide (LiCoO ₂)	40.31
Electrolyte	15.29
Copper (Cu)	11.78
Carbon (C)	19.27
Aluminum (Al)	4.75
Aluminum Laminated Film	<6.0
Separator	<3.0
Tab	<1.0
For single cell	
Flash point	over 150 deg. C
Flavor	none
Toxicity	none
Corrosiveness	none

3. SECTION 3 – HAZARDS IDENTIFICATION / EMERGENCY OVERVIEW

PRIMARY ROUTES OF ENTRY

Skin contact, Skin absorption, Eye contact, Inhalation, and Ingestion: NO

SYMPTOMS OF EXPOSURE

In case of battery damage, possible release of dangerous substances and flammable gas mixture.

Skin contact

No adverse effects expected. No effect under routine handling and use.

Skin absorption

No effect under routine handling and use.

Eye contact

No adverse effects expected. No effect expected under routine handling and use.

Inhalation

Product is not respirable. No effect under routine handling and use.

Ingestion

Product cannot be ingested. No effect under routine handling and use.

REPORTED AS CARCINOGEN

IARC- No, NTP - No, OSHA - No

PS: IARC = International Agency for Research on Cancer

NTP = National Toxicology Program

OSHA = Occupational Safety and Health Administration



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4. SECTION 4 – FIRST AID MEASURES

GENERAL

The following first aid measures are required only in case of exposure to interior battery components after damage or misuse. Undamaged, under routine handling and use – represent no danger to health.

Inhalation	If exposure to internal materials within the battery due to damaged outer casing, Leave area immediately. Make the victim blow his/her nose, gargle. Seek medical attention immediately.
Ingestion	If swallowed, Drink plenty of milk/water and induce vomiting; Seek medical attention immediately.
Skin Contact	Remove contaminated clothes and shoes immediately. Immediately wash extraneous matter or contact region with soap and plenty of water. If irritation continues seek medical attention.
Eye Contact	Do not rub eyes. Immediately flush eyes with water continuously, also under the eyelids, for at least 15 minutes . Seek medical attention.

5. SECTION 5 – FIRE FIGHTING MEASURES

GENERAL HAZARD

Cell is not flammable but internal organic material will burn if the cell is incinerated.

EXTINGUISHING MEANS

Use extinguishing means suitable for the materials that are burning. Use carbon dioxide gas, nitrogen gas, chemical powder fire extinguishers, fire foam, Plenty of water, or dry sand if only small amount of batteries are involved.

SPECIAL FIREFIGHTING INSTRUCTIONS

When the cell burns with other combustibles simultaneously, take fire extinguishing method which corresponds to the combustibles. Extinguish a fire from the windward as much as possible.

If possible, remove Battery/ies from fire fighting area. If heated above 125°C, Battery/ies can explode/vent.

SPECIAL HAZARDS ARISING FROM THE CHEMICAL

May form hydrofluoric acid if electrolyte comes into contact with water.

In case of fire, the formation of the following flue gases cannot be excluded: Hydrogen fluoride (HF), Carbon Monoxide and Carbon Dioxide.

FIREFIGHTING EQUIPMENT

Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

Hand protection: Protective gloves

Eye protection: Goggle or protective glasses designed to protect against liquid splashes

Skin and body protection: Protective clothes.



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6. SECTION 6 – ACCIDENTAL RELEASE MEASURES

ON LAND

Place material into suitable containers and call local fire/police department.

IN WATER

If possible, remove from water and call local fire/police department.

7. SECTION 7 – HANDLING AND STORAGE

7.1. Handling:

No special protective clothing required for handling individual cells.

7.2. Storage:

Store in a cool & dry place.

Storage temperature: -20°C - +55°C with no time limit. Storage in lower temperatures - down to -40°C - is possible, without time limit, but is expected to reduce battery life expectancy (no safety risk).

Best storage temperature: +15°C±5°C

7.3. Charging

While charging the Battery Pack, make sure that the charger used includes a balancing + charging system suitable for this Battery pack – includes over charge protection.

7.4. Additional Safety Instructions for Handling and Storage

- 7.4.1. Accidental short circuit for a few seconds will not seriously affect the battery. However, this battery is capable of delivering very high short circuit currents. Prolonged short circuits will cause high temperature that can cause skin burns. Do not short-circuit the Battery Pack. Do not connect the plus (“+”) and the minus (“-“) terminals with metal objects (such as wires).
- 7.4.2. Do not carry or store the Battery Pack with metal objects (such as wires, electrical items, jewelry etc.) and always transport or store it when the terminals are insulated.
- 7.4.3. Do not transport or store the battery near flammable liquids or gas: Prevent any contact between the Battery Pack and flammable liquids or gas.
- 7.4.4. Do not operate it in a location where static electricity is rich, otherwise, the safety devices may be damaged, causing a harmful situation (not relevant for aerial transportation).
- 7.4.5. Do not transport or store near Heated Place.
- 7.4.6. Do not immerse the Battery Pack in water or seawater, or get it wet.
- 7.4.7. Do not inflict structural loads on the Battery Pack.



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- 7.4.8. Do not get into a microwave or a high-pressure container. It might cause the Battery Pack to generate smoke, rupture or flame, because of a sudden heat or damage in the sealing condition of the Pack.
- 7.4.9. Do not transport or store leaked battery.
- 7.4.10. Do not transport or store an abnormal battery (Rust, Changing color and Deformation).
- 7.4.11. Do not drive sharp objects into the Battery Pack.
- 7.4.12. Do not Impact the Battery Pack or Drop it. Do not strike or throw the battery against rigid surface.

8. SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Keep away from heat and open flame. Store in a cool dry place.

PERSONAL PROTECTION

Respiratory protection	Not required during normal operations. SCBA required in the event of a fire. Respirator with air cylinder, dust mask.
Hand protection	Not required during normal operations. In abnormal event: Protective gloves.
Eye/Face protection	Not required beyond safety practices of employer. In abnormal event: Goggle or protective glasses designed to protect against liquid splashes.
Skin and body protection	Working clothes with long sleeve and long trousers. Steel toed shoes recommended for large container handling.

9. SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

State	Solid
pH	N/A
Vapor Pressure	N/A
Boiling Point	N/A
Specific Gravity	N/A
Density	N/A



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10. SECTION 10 – STABILITY AND REACTIVITY

Stability	None is during normal operation.
Incompatibilities	None during normal operation. Avoid exposure to heat, open flame, and corrosives
Hazardous decomposition products	None during normal operating conditions. If cells are opened, hydrogen fluoride and carbon monoxide may be released.
Reactivity	None
Conditions to avoid	Avoid exposure to heat, open flame and corrosives. Do not puncture, crush or incinerate.

11. SECTION 11 – TOXICOLOGICAL INFORMATION

This product does not elicit toxicological properties during routine handling and use.

If the Battery is opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

12. SECTION 12 – ECOLOGICAL INFORMATION

Under normal conditions this product is not expected to cause toxicity to the environment.

Components of this material are not biomagnified or bio-concentrated in the environment.





13. SECTION 13 – DISPOSAL CONSIDERATIONS

Dispose of according to all federal, state, and local regulations.

14. SECTION 14 – TRANSPORTATION

Transportation Instructions:

- Class 9

<u>UN. No.</u>	3480	3481	3481
<i>UN proper shipping name</i>	Lithium Ion Batteries	Lithium Ion Batteries Packed With Equipment	Lithium Ion Batteries Contained in Equipment
<i>Packing instruction</i>	965	966	967
<i>Section</i>	Section IA	Section I	Section I
<i>Quantity per package</i>	-	-	-
<i>Max net weight per package</i>	35 Kg	PAX ≤ 5Kg CAO ≤ 35Kg	PAX ≤ 5Kg CAO ≤ 35Kg
<i>Labels on outer package</i>	 		
<i>State of charge</i>	≤30%	-	-

This product was not tested yet according to IATA UN Manual of Tests and Criteria, Part III, subsection 38.3. This product may be transported according to special provision A88 + Packing instruction 910.

15. SECTION 15 – REGULATORY

OSHA hazard communication standard (29 CFR 1910.1200).

This regulatory information included here should not necessarily be considered all inclusive. None of the ingredients in this products are subjected to the reporting requirements of the CERCLA, the Clean Air Act and the Clean Water Act(US).This product is not formulated with, nor do the manufacturing or formulation process utilize any Class I or II Ozone depleting substance.



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16. SECTION 16 – OTHER INFORMATION

The recommendation and information contained in this MSDS have been compiled from sources believed to represent the most current information available when the MSDS was prepared. However, the manufacturer of this battery pack does not provide any warranty and/or guaranty as to the correctness or sufficiency of this information. If this product is to be used in large amount and/or an unusual manner, the user is obliged to determine what safety measures are appropriate, including the applicable and relevant workplace and environmental regulations pertaining to handling, use and disposal.