

MSDS Report

Product name	Rechargeable Li-ion battery pack
Product model	Li-18650-38.4V-2600mAh
Nominal voltage	38.4V
Rated capacity	2600mAh, 99.84Wh
Weight	Approx. 1000g
Dimension	62mm x 62mm x 170mm (T x W x L)
Prepared by	Avelo Labs
Report number	Avelo_2023_BP903A

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Section 1 – Chemical product and company identification

Product name	Rechargeable Li-ion battery pack
Product model	Li-18650-38.4V-2600mAh
Manufacture	Avelo Labs
Address	Hawai'i United States
Phone	+1-858-208-3511
Emergency phone	+1-858-208-3511
Email	diveavelo@avelolabs.com

Section 2 – Hazards identification

Classification of danger	See section 14
Primary route(s) of exposure	Eye, skin contact, ingestion
Health hazard	The batteries are not hazardous when used according to the instructions of manufacturer under normal conditions. In case of abuse, there's risk of rupture, fire, heat, leakage of internal components, which could cause casualty loss. Abuses include but not limited to the following cases: charged for long time, short circuited, put into fire, whacked with hard object, punctured with acute object, crushed, and broken.

Section 3 – Composition/information on ingredients

Chemical composition	CAS No.	Concentration or concentration ranges (%)
Lithium Cobalt Oxide	12190-79-3	37.82
Polyvinylidene Fluoride (PVDF)	24937-79-9	1.46
Aluminum foil (Al)	7429-90-5	9.03
Graphite	7782-42-5	16.48
Styrene-Butadiene Rubber (SBR)	9003-55-8	0.39
Carboxymethylcellulose	9000-11-7	0.31
Copper (Cu)	7440-50-8	9.74
Nickel (Ni)	7440-02-0	1.08
Lithium Hexafluorophosphate	21324-40-3	18.56
Polyethylene	9002-88-4	3.03
Nylon	24937-16-4	0.8
Polypropylene	9003-07-0	1.3

Labeling according to EC directives.

No symbol and risk phrase are required.

Note: CAS number is Chemical Abstract Service Registry Number.

N/A = Not apply.

Section 4 – First aid measures

Eye	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin	Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.
Inhalation	Remove from exposure and move to fresh air immediately. Use oxygen if available.
Ingestion	Give at least two glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

Section 5 – Firefighting measures

Characteristics of hazard	Dusts at sufficient concentrations can form explosive mixtures with air. Combustion generates toxic fumes.
Hazardous combustion products	Carbon dioxide
Fire-extinguishing methods and extinguishing media	For small fires, use water spray, dry chemical, carbon dioxide or chemical foam.
Attention in fire-extinguishing	Wear self-contained breathing apparatus in pressure demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6 – Accidental release measures

Personal precautions, protective equipment, and emergency procedures	In case of rupture. Attention! Corrosive material. Avoid contact with skin, eyes, and clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill//leak. Refer to protective measures listed in Section 7 and 8.
Environmental precautions	Prevent product from contaminating soil and from entering sewers or waterways.
Methods and materials for containment	Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately.
Methods and materials for cleaning up	Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.

Section 7 – Handling and storage

Handling	In case of rupture. Handle in accordance with good industrial hygiene and safety practices. Avoid contact with skin, eyes, or clothing. Use personal protection equipment.
Storage	Store in a cool, dry, well-ventilated area away from incompatible substances. Store locked up. Keep out of the reach of children.
Other precautions	The battery may explode or cause burns if disassembled, crushed, or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

Section 8 – Exposure controls/personal protection

Engineering controls	Use adequate ventilation to keep airborne concentrations low. If used under conditions that generate particulates, the ACGIH TLV-TWA of 3mg/m ³ respirable fraction (10mg/m ³ total) should be observed.
Personal protective equipment	Eye and face protection: None required for consumer use. If there is a risk of contact: Tight sealing safety goggles. Face protection shield. Skin and body protection: None required for consumer use. If there is a risk of contact: Wear protective gloves and protective clothing. Respiratory protection: No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Section 9 – Physical and chemical properties

Physical state	Appearance: Prismatic Color: Black Odor: If leaking, smells of medical ether
Change in condition	
pH	Not applicable as supplied
Flash point	Not applicable unless individual components exposed
Flammability	Not applicable unless individual components exposed
Relative density	Not applicable unless individual components exposed
Solubility (water)	Not applicable unless individual components exposed
Solubility (other)	Not applicable unless individual components exposed

Section 10 – Stability and reactivity

Chemical stability	Stable
Possibility of hazardous reactions	Not available
Conditions to avoid	Flames, sparks, and other sources of ignition, incompatible materials
Incompatible materials	Oxidizing agents, acid, base
Hazardous decomposition products	Carbon monoxide, carbon dioxide, lithium oxide fumes

Section 11 – Toxicological information

Irritation	In the event of exposure to internal contents, vapor fumes may be very irritating to the eyes and skin.
Sensitization	Not available
Reproductive toxicity	Not available
Toxicologically synergistic materials	Not available

Section 12 – Ecological information

General note	Do not allow undiluted product or large quantities of it to reach ground water, water course, or sewage system.
Anticipated behavior of a chemical product in environment/possible environmental impact/ecotoxicity	Not available

Section 13 – Disposal considerations

Waste treatment	Recycle or dispose of in accordance with government, state and local regulations.
Attention for waste treatment	Deserted batteries couldn't be treated as ordinary trash. Couldn't be thrown into fire or placed in high temperatures. Couldn't be dissected, pierced, crushed, or treated similarly. The best way is recycling.

Section 14 – Transport information

UN number	UN3480 or UN3481
Proper shipping name	Lithium-ion batteries (including lithium ion polymer batteries) or Lithium-ion batteries packed with equipment (including lithium-ion polymer batteries) or Lithium-ion batteries contained in equipment (including lithium-ion polymer batteries)
Class or division	9
Marine pollutant (Yes/No)	No
Packing group	II

Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises

ICAO/IATA	Can be shipped by air in accordance with International Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA), DGR Packing Instructions (PI) 965 Section IA, or (PI) 966 Section I, or (PI) 967 Section I appropriate of IATA DGR 63 rd (2022 Edition) for transportation.
IMDG code	Can be shipped by sea in accordance with IMDG Code 2020 Edition (Amdt 40-20) Packing Instructions P903.

In addition, to be permitted in transport, each lithium cell and battery types must have passed the applicable tests set out in Subsection 38.3 of the UN Manual of Tests and Criteria.

Section 15 – Regulatory information

- a. Dangerous Goods Regulations
- b. Recommendations on the Transport of Dangerous Goods-Model Regulations
- c. Recommendations on the Transport of Dangerous Goods-Manual of Tests and Criteria
- d. International Air Transport Association (IATA)
- e. International Maritime Dangerous Goods (IMDG)
- f. Technical Instructions for the Safe Transport of Dangerous Goods
- g. Classification and code of dangerous goods (GB 6944-2012)
- h. 2012 OSHA Hazard Communication Standard (29 CFR 1910. 1200)
- i. Toxic Substance Control Act (TSCA)
- j. Code of Federal Regulations
- k. In accordance with all Federal, State, and local laws

Section 16 – Other information

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration, and investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations. Therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

The data/information contained herein has been reviewed and approved for general release on the basis that this document contains no export-controlled information.



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