SOLUNA

MATERIAL SAFETY DATA SHEET
Issue date: 2023-11-21 Rev: A.1
MSDS REF. NO.: Soluna EOS-5K Pack
LITHIUM-ION RECHARGEABLE BATTERY

SECTION 1 MANUFACTURER'S INFORMATION

IDENTITY	Product Category	:	Rechargeable Li-ion Battery Pack
	Model Name	:	Soluna EOS-5K Pack
	Brand	:	SOLUNA
	Nominal Capacity	:	100Ah
	Nominal Voltage	:	51.2 V
	Watt-hour	:	5.12kWh
	Chemical System	:	Lithium iron phosphate
	Desigened for Recharge	:	■ Yes □ No

SECTION 2 MATERIAL AND INGREDIENTS INFORMATION

Battery :

Important Note :	The battery should not be opened or burned since the following ingredients contained within the product that could be barmful under some circumstance if exposed or misuse. The battery contains neither metallic lithium nor lithium alloy.

Material name	CAS No.	Concentration range (wt %)
LiFePO4	15365-14-7	35.1
C	7782-42-5	18.2
Al	7429-90-5	10.8
Cu	7440-50-8	9.0
C4H8O3	623-53-0	6.4
C3H4O3	996-49-1	5.1

C3H6O3	616-38-6	4.7
LiPF6	21324-40-3	2.7
（C2H4)n	9002-88-4	2.0
Al2O3	1344-28-1	1.9
C4H6O3	108-32-7	0.9
(C2H2F2)n	24937-79-9	0.8
C3H2O3	872-36-6	0.7
(C3H6)n	9003-07-0	0.6
C	308068-56-6	0.4
(C4H8.C4H6)n	9003-55-8	0.4
C	1333-86-4	0.4
[C6H7O2(OH)2OCH2COONa]n	9004-32-4	0.2
Pb	7439-92-1	Not Detected
Cd	7440-43-9	Not Detected
Hg	7439-97-6	Not Detected

SECTION 3 HAZARDS IDENTIFICATION

Preparation hazards an dclassification	Not dangerous with normal use. Do not dismantle, open or shred Rechargeable Li-ion Polymer Battery the ingredients contained withinor their ingredients products could be harmful.
Cell Apperance, Color, and Odor	Solid object with no odor, Blue color.
Primary Route(s) of Exposure	These chemicals are contained in a sealed stainless steel enclosure. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure.If this occurs, exposure to the electrolyte solution contained within canoccur by Inhalation, Ingestion, Eye contact and Skin contact
Potential Health Effects	**ACUTE (short term): see** Section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns.**Inhalation:** Inhalation of materials from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation. **Ingestion:** Swallowing of materials from a sealed battery is not an expected route of exposure. Swallowing the contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract. **Skin:** Contact between the battery and skin will not cause any harm. Skin contact with contents of an open battery can cause severeirritation or burns to the skin. **Eye:** Contact between the battery and the eye will not cause any harm. Eye contact with contents of an open battery can cause severe irritation or burns to the eye.

	CHRONIC (long term): see Section 11 for additional toxicological data
Medical Conditions Aggravate dby Exposure	Not applicable
Reported as carcinogen	Not applicable

SECTION 4 FIRST-AID MEASURES

Inhalation	If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice.
Skin contact	If skin contact with contents of an open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuseor discard.
Eye contact	If eye contact with contents of an open battery occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes whileholding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.
Ingestion	If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60to 240 mL (2-8 oz.) of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.

ECTION 5 FIRE-FIGHTING MEASURE

Flammable Properties	In the event that this battery has been ruptured, the electrolyte solution contain within the battery would be flammable. Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials.
Suitable extinguishingMedia	Use extinguishing media suitable for the materials that are burning.
Unsuitable extinguishing Media	Not available
Explosion Data	**Sensitivity to Mechanical Impact:** This may result in rupture in extremecases **Sensitivity to Static Discharge:** Not Applicable

Specific Hazards arisingfrom the chemical	Fires involving Rechargeable Li-ion Polymer Battery an be controlled with water. Whenwater is used, however, hydrogen gas may evolve. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended to extinguish the fire
Protective Equipment and precautions forfirefighters	As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance. Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.
NFPA	Health: 0 Flammability: 0 Instability: 0

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, protective equipment, and emergency procedures	Restrict access to area until completion of clean-up. Donot touch the spilled material. Wear adequate personalprotective equipment as indicated in Section 8.
Environmental Precautions	Prevent material from contaminating soil and fromentering sewers or waterways.
Methods and materials for Containment	Stop the leak if safe to do so. Contain the spilled liquidwith 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 PERCAUTIONS FOR SAFE HANDLING AND USE

Handling	Don't handling Lithium ion cell in metalwork. Do not open, dissemble, crush or burn battery. Ensure goodventilation/ exhaustion at the workplace. Prevent formation of dust. Information about protection against explosions andfires: Keep ignition sources away- Do not smoke.
Storage	If the Lithium ion cell are subject to storage for such a long term as more than 3 months, it is recommended torecharge the Lithium ion cell periodically. 3 months: -10℃~+40℃, 45 to 85%RH And recommended at 0℃~+35℃ for long periodstorage. The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be80% or more.

	The voltage for a long time storage shall be 50.4V-54.4Vrange. Do not storage Rechargeable Li-ion Polymer Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metalobjects. Keep out of reach of children. Do not expose Rechargeable Li-ion Polymer Battery toheat or fire. Avoid storage in direct sunlight. Do not store together with oxidizing and acidicmaterials.

SECTION 8 ECOLOGICAL INFORMATION

Engineering Controls	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes andvapor. Keep away from heat and open flame. Store in a cool,dry place.
Personal Protective Equipment	**Respiratory Protection:** Not necessary under normalconditions. **Skin and body Protection:** Not necessary under normal conditions, Wear neoprene or nitrile rubbergloves if handling an open or leaking battery. **Hand protection:** Wear neoprene or natural rubber material gloves if handling an open or leaking battery. **Eye Protection:** Not necessary under normal conditions, Wear safety glasses if handling an open orleaking battery.
Other Protective Equipment	Have a safety shower and eye wash fountain readilyavailable in the immediate work area.
Hygiene Measures	Do not eat, drink, or smoke in work area. Maintain goodhousekeeping.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Physical State (Cell)	Form: Solid
	Color: Blue
	Odour: Monotony
Change in condition:	Not applicable
pH, with indication of the concentration	Not applicable
Melting point/freezing point	Not available.
Boiling Point, initial boiling point and Boilingrange:	Not available.
Flash Point	Not available.

Upper/lower flammability or explosive limits	Not available.
Vapor Pressure:	Not applicable
Vapor Density: (Air = 1)	Not applicable
Density/relative desity	Not available.
Solubility in Water:	Insoluble
n-octanol/water partition coefficient	Not available.
Auto-ignition temperature	130°C
Decomposition temperature	Not available.
Odout threshold	Not available.
Evaporation rate	Not available.
Flammability (soil, gas)	Not available.
Viscosity	Not applicable

SECTION 10 STABILITY AND REACTIVITY

Stability	The product is stable under normal conditions.
Conditions to Avoid (e.g. static discharge,shock or vibration)	Do not subject Rechargeable Li-ion Polymer Battery tomechanical shock. Vibration encoutered during transportation does notcause leakage, fire or explosion. Do not disassemble, crush, short or install with incorrectpolarity. Avoid mechanical or electrical abuse.
Incompatible Materials	Not Available
Hazardous Decomposition Products	This material may release toxic fumes if burned or exposed to fire
Possibility of Hazardous Reaction	Not Available

SECTION 11 TOXICOLOGICAL INFORMATION

Irritation	Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation tothe skin, eyes and respiratory tract may occur.
Sensitization	Not Available
Neurological Effects	Not Available
Teratoaenicitv	Not Available
Reproductive Toxicity	Not Available
Mutagenicity (Genetic Effects)	Not Available
Toxicologically Synergistic Materials	Not Available

SECTION 12 ECOLOGICAL INFORMATION

General note:	Water hazard class 1(Self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Anticipated behavior of a chemical productin environment/possible environmental impace/ecotoxicity	Not Available
Mobility in soil	Not Available
Persistence and Degradability	Not Available
Bioaccumulation potential	Not Available
Other Adverse Effects	Not Available

SECTION 13 DISPOSAL CONSIDERATIONS

Product disposal recommendation: Observe local, state and federal laws and regulations.

Packaging disposal recommendation: Be aware discarded batteries may cause fire, tape the battery terminalsto insulate them. Don’t disassembly the battery. Completely discharge

containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations.

SECTION 14 Transport information

The Lithium ion cell tested according to the requirements of the UN manual of tests and Critera,PartIII,subsection 38.3.
Lithium ion cell according to Section IA of Packing Instruction 965, or Section I of Packing Instrution 966~967 of the 2021 IATA Dangerous Goods regulations 62nd Edition may be transported.and ApplicableU.S.DOT regulations for the safe transport of Rechargeable Li-ion Polymer Battery.
Packaging group: II
More information concerning shipping, testing, marking and packaging can be obtained from label master at http://www.labelmaster.com/.

The packaging shall be adequate to avoid mechanical damage during transport,handling and stacking.Thematerials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction,corrosion of the terminals and ingress of moisture.
The package must be handled with care and that a flammability hazard exists if the package is damaged.
Each package must be labeled with a Rechargeable Li-ion Polymer Battery handling label or in addition tobe Class 9 hazard label.
Lithium-ion batteries can be treated as"Non-dangerous goods" under the United Nations Recommendations onthe Transport of Dangerous Goods, Special Provision 188, provided that packaging is strong and prevent the products from short-circuit.
With regard to transport, the following regulations are cited and considered:
-The International Civil Aviation Organization (ICAO) Technical Instructions.
-The International Air transport Association (IATA) Dangerous Goods Regulations.UN number of lithium battery: Un3480 or Un3481;
UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteriesContained in equipment or Lithium ion batteries packed with equipment.
-The International Maritime Dangerous Goods (IMDG) Code.
For Lithium-ion batteries by sea,provided that packaging is strong and prevent the products from short-circuit.UN number of lithium battery: UN3480 ;
UN Proper shipping name/Description (technical name):Lithium ion batteries (including lithium ion polymer batteries).
-The US Hazardous Materials Regulation (HMR) pursuant to a final rule issued by RSPA
-The Office of Hazardous Materials Safety within the US Department of Transportations' (DOT) Research andSpecial Programs Administration (RSPA)

SECTION 15 REGULATORY INFORMATION

OSHA hazard communication standard (29 CFR 1910.1200)
_√___ Hazardous __ Non-hazardous

The information above is believed to be accurate and represents the best information currently available to us. However, concord makes 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 particular 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.
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