Safety Data Sheet

Issuing Date 01-Jan-2024 **Revision Date** 02-Oct-2024 **Revision Number** V1.2

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name **Lithium-ion Rechargeable Battery**

Recommended Use

Lithium-ion Battery.
Telecom
Rack-Mounted Home Energy Storage
Wall-Mounted Home Energy Storage
Stacked Home Energy Storage
AGV
Golf Cart
Forklift/Low speed Vehicles
LFP 12V/24V

Supplier Address:

Leoch Battery Corp
20322 Valencia Circle
Lake Forest
CA 92630

Phone: 800-424-9300

Fax: 949-588-5966

Contact: Technical Support
Email: TS@leoch.us
Contact Phone: 949-588-5853

2. HAZARDS IDENTIFICATION

Emergency Overview：

Not classified as dangerous or hazardous with normal use. The cell should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

Label Elements：

	Causes severe skin burns and serious eye damage. May damage fertility or the unborn child if ingested or inhaled. May cause cancer if ingested or inhaled. Causes damage to central nervous system, blood and kidneys through prolonged or repeated exposure. May form explosive air/gas mixture during charging. Extremely flammable gas. Explosive, fire, blast, or projection hazard. May cause harm to breast-fed children Harmful if swallowed, inhaled, or contact with skin Causes skin irritation, serious eye damage.
	Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing, eye protection/face protection. Avoid breathing dust/fume/gas/mist/vapors/spray. Contact with internal components may cause irritation or severe burns. Avoid contact with internal acid. Irritating to eyes, respiratory system, and skin. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %
Lithium Iron Phosphate	15365-14-7	~35%
Electrolyte (Proprietary)	--	~25%
Nickel	7440-02-0	~0.1%
PVDF	24937-79-9	~1%
Copper	7440-50-8	~8%
Aluminum	7429-90-5	~5%

4. FIRST AID MEASURES

Battery is considered as sealed non-spillable one. Under normal operating conditions, the materials sealed inside should not be hazardous to people's health. Only when these materials exposed during production or under case broken condition or being extremely heated (fired), they may be hazardous to people's health.

General Advice	Provide this SDS to medical personnel for treatment.
Eye Contact	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. lf irritation occurs and persists, contact a medical doctor.
Skin Contact	Remove contaminated clothing and thoroughly wash with soap and plenty of water. lf irritation persists. contact a medical doctor.
Inhalation	Remove to fresh air. lf breathing difficulty or discomfort occurs and persists. see a medical doctor. lf breathing has stopped, give artificial respiration and see a medical doctor IMMEDIATELY.

Most Important Syptoms and Effects

Symptoms	Based on physical state of the product, accidental exposure is unlikely.

Indication of Any lmmediate Medical Attention and Special Treatment Needed

Notes to Physici**an**	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flammable Properties:	Lithium ion batteries contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (> 150 C (302 °F)), when damaged or abused (e.g, mechanical damage or electrical overcharge). Burning cells can ignite other batteries in close proximity.
Suitable extinguishing Media:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Small Fire	Carbon Dioxide, Dry Chemical, Foam, Water Fog
Large Fire	Move containers from fire area if you can do it without risk. Carbon Dioxide, Dry Chemical Foam,Water Fog.
Unsuitable extinguishing	Not Determined
Specific Hazards arising from the Chemical:	Exposing battery or cell to excessive heat, fire, or over voltage condition may cause flame or leak potentially hazardous organic vapors and produce hazardous decomposition producls. Damaged or opened cells and batteries can result in rapid heating and the release of flammable vapors.
Hazardous Combustion Products:	Fire will produce irritating, corrosive and/or toxic gases
Protective Equipment and Precautions for Firefighters	As in any fire, wear self-contained breathing apparatus pressure-demand. MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures	**Personal Precautions**	As an immediate precautionary measure, isolate spill or leak area for at least 25 meters(75feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed areas before entering Use personal protective equipment as required.
	Environmental Precautions:	Prevent material from contaminating soil and from entering sewers or waterways.
	Other Information	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area)
Methods and Material for Containment and Cleaning Up	**Methods for Containment**	Prevent further leakage or spillage if safe to do so. Do not release runoff from fire control methods to sewers or waterways.
	Methods for Clean Up	Ground and bond containers when transferring material. Sweep up and shovel into suitable containers for disposal. For waste disposal, see section 13 of the SDS.

7. HANDLING AND STORAGE

Advice on Safe Handling	**CHARGING/ DISCHARGING:**	Cells and batteries are designed to be rechargeable. However, abnormal charging may cause batteries to flame, and abnormal discharging may result in damaging batteries. Use approved chargers and procedure only.
	BATTERY DISASSEMBLE:	Do not disassemble a battery in any case. If a battery was unintentionally crushed or damaged, thus releasing its contents, rubber gloves must be used to handle all battery components. Avoid inhalation of vapors that may be omitted.

	BATTERY SHORT CIRCUIT:	The battery is an energy source that converts electric power into the chemical form of energy. Therefore, short circuiting the battery may cause the chemical reaction to occur too intensively and provide an ignition source.
	MIXED BATTERIES AND TYPES:	Do not assemble batteries with series or parallel connection. The use of old and new cells of varying capacity or different electrochemical battery systems should be avoided.
Conditions for Safe Storage,	**STORAGE CONDITIONS**	Fix positive and negative terminals properly to avoid short circuit. Store in cold and well-ventilated area preventing exposure from direct sunlight and other sources of heat. Elevated temperatures can result in reduced battery service life.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limit Values:	Airborne exposures to hazardous substances are not expected when product is used for its intended purpose.
Engineering Controls:	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fume and vapor.
Personal Protection:	Not necessary under normal conditions
Respiratory Protection:	Not necessary under normal conditions.
Skin Protection:	Not necessary under normal conditions. Wear neoprene or natural rubber gloves if handling an open or leaking cell.
Eye Protection:	Not necessary under normal conditions. Wear safety glasses if handling an open or leaking cell.
Other Protective Equipment:	Not necessary under normal conditions. lf exposure to the electrolyte solution is expected due to non-routine tasks, a safety shower and eye-wash fountain readily available in the immediate work area.
Other Protective Equipment:	Do not eat, drink or smoke in work areas. Maintain good housekeeping.

9. PHYSICAL AND CHEMICAL PROPERTIES

Material	**Appearance**	**Odor**	**Sublimating Point**	**Freezing Point/Melting Point**	**Solubility in water**	**Density**
PVDF	Powder	Odorless	--	165-172℃	Negligible	1.76-1.80g/ml
Copper	Metal	Odorless	--	1088℃	Insoluble	8.96g/ml
Nickel	Metal	Odorless	--	1555℃	Insoluble	8.91g/ml
Aluminum	Metal	Odorless	--	660℃	Insoluble	2.7g/ml
Electrolyte	Colorless Liquid	organic odor	126℃	--	Partial	--

10. STABILITY AND REACTIVITY

Stability:	Stable under recommended storage conditions.
Conditions to Avoid:	Avoid exposing the cell to fire or temperatures above 80°C. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse.
Incompatible Materials:	Do not immerse in water or other high conductivity liquids.
Possibility of Hazardous Reactions:	If battery assembly is damaged, contents may release flammable vapors.
Hazardous Decomposition Products:	This material may release toxic fumes if burned or exposed to fire. Breaching of the cell enclosure may lead to generation of hazardous fumes which may include extremely hazardous hydrofluoric acid.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity Data:	Acute oral, dermal and inhalation toxicity data are not available for this article.
Other Toxicity Data:	Not applicable.
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 to the skin, eyes and respiratory tract may occur.
Corrosivity:	Not applicable.
Sensitization:	Not applicable.
Neurological Effects:	Not applicable.
Genetic Effects:	Not applicable.
Reproductive Effects:	Not applicable.
Developmental Effects:	Not applicable.
Target Organ Effects:	Not applicable.
Carcinogenicity:	Normal safe handling of this product will not result in exposure to substances that are considered human carcinogens by IARC (International Agency for Research on Cancer), ACGIH (American Conference of Governmental Industrial Hygienists), OSHA (Occupational Safety and Health Administration) or NTP (National Toxicology Program).

12. ECOLOGICAL INFORMATION

Ecotoxicity:	Not applicable
Mobility:	Not applicable
Persistence and degradability:	Not readily biodegradable
Bioaccumulative potential:	Not applicable

Other adverse effects:	Solid cells released into the natural environment will slowly degrade and may release harmful or toxic substances. Cells are not intended to be released into water or on land but should be disposed or recycled according to local regulations.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:	Cell recycling is encouraged. Do NOT dump into any sewers, on the ground or into any body of water. Store material for disposal as indicated in Section 7 Handling and Storage.
USA:	In the United States, dispose of in accordance with local, state and federal laws and regulations. Consult universal/hazardous waste regulations for further information regarding disposal of spent batteries. If a battery is leaking/broken open, consult hazardous waste regulations under US Environmental Protection Agency's Resource Conservation and Recovery Act (RCRA). Also, consult state and local regulations for further disposal requirements.
Canada:	Dispose of in accordance with local, provincial and federal laws and regulations.
EU:	Waste must be disposed of in accordance with relevant EC Directives and national, regional and local environmental control regulations. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.

14. TRANSPORT INFORMATION

Leoch batteries are designed to comply with all applicable shipping regulations as prescribed by industry and legal standards which includes compliance with the UN Recommendations on the Transport of Dangerous Goods; IATA Dangerous Goods Regulations and applicable U.S. DOT regulations or the safe transport of lithium-ion batteries and the International Maritime Dangerous Goods Code. This battery has passed the UN Manual of Tests and Criteria Part III Subsection 38.3, which is required by all of the directives listed above.

UN Number:	UN3480/UN3481
Proper Shipping Name:	Lithium ion batteries (including lithium ion polymer batteries)
Hazard Class/Division:	9
Packing Group	Group II (Not apply to PI952 and PI967 Section I)
Label Required:	The Class 9—Lithium Battery hazard label, the Cargo aircraft Only Label, The Class9—Miscellaneous Dangerous Goods
ICAO / IATA:	Can be shipped by air in accordance with International Civil AviationOrganization (ICAO), TI or International Air Transport Association(IATA), DGR Packing Instruction 965 Section IA, appropriate of IATADGR 65th (2024 Edition) for transportation.
IMDG CODE:	Shipping may be done in accordance with the IMDG Code 2022 Edition(Amdt 41-22).
DOT:	Other requirements for the US Department of Transportation (DOT)Subchapter C, Hazardous Materials Regulations if shipped incompliance with 49 CFR 173.185.
ADR/ADN	Transport Requirements for United Nations Economic Commission for Europe (UNECE)ADR/ADN, Applicable as from 1 January 2023.

15. REGULATORY INFORMATION

USA
《Classification, Labeling and Packaging Regulation》
《REACH (EC)1907/2006》
《Dangerous Goods Regulation》
《Recommendations on Transport of Dangerous Goods Model Regulations》
《International Maritime Dangerous Goods》
《Technical Instructions for the Safe Transport of Dangerous Goods》
《Classification and code of dangerous goods》
《Occupational Safety and Health Act》 (OSHA)
《Toxic Substances Control Act》 (TSCA)
《Consumer Product Safety Act》 (CPSA)
《Federal Environmental Pollution Control Act》 (FEPCA)
《The Oil Pollution Act》 (OPA)
《Resource Conservation and Recovery Act》 (RCRA)
《Safety Drinking Water Act》 (CWA)
《Code of Federal Regulations》 (CFR)
European Union
International

IATA	This product meets all IATA Dangerous Goods Regulations (DGR) – up to 65th edition
IMDG Code	This product meets all requirements of IMDG Code up to 39-18

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	Not determined	Not determined	Not determined	Not determined
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	Not determined	Not determined	Not determined	Not determined

16. OTHER INFORMATION

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Revision Note V1.3

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide.

DISCLAIMER:

ALL PERSONS USING THIS PRODUCT, ALL PERSONS WORKING IN AN AREA WHERE THIS PRODUCT IS USED, AND ALL PERSONS HANDLING THIS PRODUCT SHOULD BE FAMILIAR WITH THE CONTENTS OF THIS DATA SHEET. THIS INFORMATION SHOULD BE EFFECTIVELY COMMUNICATED TO EMPLOYEES AND OTHERS WHO MIGHT COME IN CONTACT WITH THE PRODUCT.

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End of Safety Data Sheet