MATERIAL SAFETY DATA SHEET

Reference No……..	:	WTX20S12100847B003
Applicant……..	:	SHENZHEN EASTAR BATTERY CO.,LTD
Address……..	:	RM905, HONGCHANG PLAZA, SHENNAN ROAD EAST, LUOHU, SHENZHEN, CHINA
Manufacturer……..	:	SHENZHEN EASTAR BATTERY CO.,LTD
Address……..	:	RM905, HONGCHANG PLAZA, SHENNAN ROAD EAST, LUOHU, SHENZHEN, CHINA
Sample's name……	:	Lithium LiFePo4 battery
Date of Issue……	:	2022-01-20
Test Report Form No.	:	WBB-MSDS-01A

Prepared By:

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Approved by:

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Material Safety Data Sheet

Section 1-Chemical Product and Company Identification

Product Name:	Lithium LiFePo4 battery
Model No.:	IFR32700
Ratings:	48V, 6Ah, 288Wh
Weight:	Approx. 2.37Kg
Manufacturer:	SHENZHEN EASTAR BATTERY CO.,LTD
Address:	RM905, HONGCHANG PLAZA, SHENNAN ROAD EAST, LUOHU, SHENZHEN, CHINA
Emergency Telephone:	+86-0755-22214426
Fax:	/
E-mail:	sales1@eastarbattery.com

Section 2-Hazards Identification

Classification:	Not dangerous with normal use. Do not dismantle、open or shred battery. The hazards indicated are for a ruptured battery. Exposure to the ingredients contained within or their ingredients products could be harmful.
Invasion route:	**ACUTE**: 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.
	Skin contact: The leakage of the electrolyte may cause sore and stimulation on the skin
	Eye contact: The steam of the electrolyte may stimulate eyes. Especially, substance that may cause inflammation of the eyes is contained
	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 is not anticipated due to the battery size. The ingestion of the electrolyte causes tissue damage to throat
Health hazards:	For the battery or cell, chemical materials are stored in a sealed metal or metal laminated plastic case, which designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition, explosion or leakage of hazardous materials. However, if exposed to a fire, added mechanical shocks or decomposed, these improper handlings would cause the leakage of electrolyte. Moreover, if heated strongly by the surrounding fire, acrid gas may be emitted
Environment hazards:	Electrolyte leakage or battery container rupture may lead to the leakage of inner component into the environment
Burn & burst danger:	Do not dispose of battery in fire--may explode. Do not short-circuit the battery—may cause fire

Section 3 – Composition/information on Ingredient

Pure ☐ Admixture☒

Chemical Composition	Molecular Formula	CAS No.	Weight (%)
Lithium Cobalt Oxide	LiCoO2	12190-79-3	35
Aluminum Foil	Al	7429-90-5	24
Copper Foil	Cu	7440-50-8	8
Organic carbonate	N/A	N/A	14
Carbon	C	7440-44-0	17
Phosphate(1-), hexafluoro-, lithium	N/A	21324-40-3	2

Note: CAS number is Chemical Abstract Service Registry Number.

N/A=Not apply.

Section 4 – First Aid Measure

Skin touch:	Remove all contaminated clothing and flush extraneous matter with soap and plenty of water immediately for at least 15 minutes. Get medical aid.
Eyes touch:	In case of contact electrolyte with eyes, rinse immediately with plenty of water. Have the victims remove contact lenses if he is wearing them before rinsing. Do not let the victims rub his eyes. Get medical aid.
Inhalation:	Remove to fresh air. Give oxygen or artificial respiration if needed. Get medical aid.
Ingestion:	Swallowing is not anticipated in normal condition. If accidentally eat the product, dilute by giving plenty of water and get medical aid. Assure that mucus does not obstruct the airway. Do not give anything by mouth to an unconscious person

Section 5 – Fire Fighting measures

Danger characteristic:	Non-flammable. The batteries can leak combustible electrolyte fumes in case of over heat resulting from inappropriate use.
Hazardous combustion products:	Irritant gas may be emitted if burned or exposed to fire
Fire-Fighting method & media:	The staff must equipped with filter mask (full mask) or isolated breathing apparatus. The staff must wear the clothes and gloves which can defend the fire and the toxic gas. When the battery burns with other combustibles simultaneously, take fire-extinguishing method which correspond to the combustibles. Extinguish a fire from the windward as much as possible
Extinguishant:	Carbon dioxide, dry chemical, foam, etc

Section 6 – Accidental Release Measures

Personal precautions	Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
Other Information	Refer to protective measures listed in section 7 and 8.
Environmental precautions	Refer to protective measures listed in Section 7 and 8. Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.
Methods for containment	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up	Pick up and transfer to properly labeled containers.

Section 7 – Handing and storage

Handing:	Before handling the batteries, the users should read the product specification carefully. Do not crush, pierce the battery terminals with conductive goods. Not directly heat or solder. Do not throw in fire. Do not mix batteries of different types. Do not mix new and used batteries. Keep batteries in non-conductive trays
Storage:	Store batteries in cool and ventilated area away from sources of heat, open flames, corrosive chemicals, food and drink. Since short circuit can cause burn, leakage and rupture, keep batteries in original packaging until use and do not jumble them. Keep away form children

Section 8 – Exposure controls, Personal Protection

Maximum admissible concentration:	No information is available
Monitoring Method:	Use ventilation or other monitoring devices to control temperature, humidity and fumes
Engineering Control:	Use ventilation or other monitoring devices to control temperature, humidity and fumes
Respiratory Protection:	Not necessary under normal use. In case of battery rupture, use self-contained respiratory equipment
Eyes/face Protection:	Not necessary under normal use. Wear safety goggles if handing a leaking or ruptured batteries
Skin and Body protection:	Not necessary under normal use. Use rubber apron and protective clothes in case of handing a leaking or ruptured batteries
Hands Protection:	Not necessary under normal use. Use rubber gloves if handing a leaking or ruptured batteries
Hygiene Measures:	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Contaminate work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. For environmental protection, remove and wash all contaminated protective equipment before re-use.
Other Protections:	None

Section 9 – Physical and Chemical Properties

Physical state:	Solid
Color:	Blue
Odor:	No information is available
pH Value:	Not available
Boiling point /range	Not available
Melting /freezing Point:	Not available
Flash point:	Not available
Evaporation rate:	Not available
Upper flammable(explosive) limits in air-Lower (vol%)-UEL:	Not available
Vapor pressure:	Not available
Vapor density:	Not available
Specific Gravity:	Not available
Water Solubility:	Immiscible in water
Solubility in other solvents:	Not available
Partition coefficient (n-octanol / water):	Not available
Autoignition temperature	Not available
Decomposition temperature:	Not available
Kinematic viscosity:	Not available
Dynamic viscosity:	Not available
Explosive properties:	Not available
Oxidizing properties:	Not available
Evaporation rate:	Not available
Ignition temperature:	No information is available
Any addition information:	None

Section 10 – Stability and Reactivity

Reactivity:	No data is available
Chemical stability:	Stable under recommended storage condition
Possibility of Hazardous Reactions:	None under normal processing.
Hazardous Polymerization:	No information is available
Conditions to avoid:	Exposure to air or moisture over prolonged periods.
Incompatible materials	Acids, Bases, Oxidizing agent.
Hazardous Decomposition Products:	Irritant gas may be emitted if burned or exposed to fire

Section 11 – Toxicological Information

Acute Toxicity:	No information is available
Sub-acute and Chronic Toxicity:	Lithium ion batteries do not contain toxic materials
Irritation:	Irritation only occurs if the batteries are abused and it may cause irritation to skin, eyes, respiratory tract.
Sensitization:	No information is available
Mutagenicity:	No information is available
Carcinogenicity:	No information is available
Others:	None

Section 12 – Ecological Information

Eco-toxicity:	When properly used and disposed, lithium iron batteries do not present environment hazard
Biodegradable:	No information is available
Non-biodegradable:	No information is available
Bioconcentration or biological accumulation:	No information is available
Other harmful effects:	None

Section 13 – Disposal Considerations

Nature of waste:	No information is available
Waste disposal methods:	Dispose in accordance with applicable regulations which vary from country to country. In more countries the discard of used batteries is forbidden and the end-users are invited to dispose them properly. Lithium ion battery should have their terminals insulated and be preferably wrapped in plastic bags prior to disposal
Contaminated Packaging:	Dispose of contents/containers in accordance with local regulations.
Attention abandoned:	Incineration should never be performed by battery user

Section 14 - Transport information

Note:	This report applies to transportation of by air or by sea or by road. The Lithium LiFePo4 battery IFR32700 has passed the test Section 38.3 of Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria. Report No.: WTX20S12100847B001 The transportation of lithium cells and batteries is regulated by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code. When shipped by air, package should according to packing instruction 965~967 Section IA of IATA DGR 62nd Edition for transportation. When shipped by sea, package should according to packing instruction 903 of IMDG CODE 39-18 Edition for transportation. When shipped by road, package should according to packing instruction 903 of European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).
UN Number:	3480/3481
Class:	9
Packing group:	II
Proper shipping name:	Lithium Ion Batteries/ Lithium Ion Batteries Contained In Equipment/Lithium Ion Batteries Packed With Equipment
Packaging Mark:	Each package must be labeled with a lithium battery label.
Packaging Method:	No information is available
Transport Fashion:	By air /By sea/By road
Transport Attentions:	Examine whether the package of the containers are integrate and tight-closed or not before transport. No divulgence, no collapse, no precipitation or no damage during the course of transportation. Don't put the goods together with corrosive chemicals. Stopovers should be away from fire and heat sources

Section 15 – Regulatory Information

Regulatory Information:	ISO 11014-2009 Safety data sheet for chemical products – Content and order of sections. GB/T 16483-2008 Safety data sheet for chemical products – Content and order of sections The international Maritime Dangerous Goods (IMDG) Code International Air Transport Association (IATA) Dangerous Goods Regulations, 62nd, 2021. The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) The Regulations Concerning the International Transport of Dangerous Goods by Rail (RID) U.S. Department of Transportation (DOT) Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Section 16 – Additional Information

Additional Information:	The above information is based on the data of which we are aware and is believed to be correct as of the data hereof. Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the result of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for this particular purpose

====== End of Report ======