Report No.: MQIX0L2G027064719

Material Safety Data Sheet

Sample Name & Model	LiFePO4 Battery 51.2V100AH RGS51100
Applicant	Rubix Battery LLC
Address	2310 Township Road 444, Sugarcreek, OH 44681

Rubix Battery LLC

Material Safety Data Sheet

1. Chemical product and company identification	
Name of Sample	Lithium ion Battery Pack
Type/Mode	51.2V 100AH
Tested by	Rubix Battery LLC
Tester address	2310 Township Road 444, Sugarcreek, OH 44681
Manufacturer	Rubix Battery LLC
Manufacturer address	2310 Township Road 444, Sugarcreek, OH 44681
Inspection according to	EEC Directive 93/112/EC UN “Recommendations on the TRANSPORT OF DANGEROUS GOODS ”
Emergency telephone call	330-577-8249
-	Date of effective:2024.02.24

2. Composition information

Chemical Composition	CAS No.	Weight (%)
Lithium iron phosphate (LiFePO4)	15365-14-7	33.2
Polyvinylidene fluoride	24937-79-9	1.2
Aluminium	7429-90-5	4.1
Graphite	7782-42-5	15.6
Styrene butadiene rubber	9003-55-8	0.5
Lithium Hexafluorophosphate	21324-40-3	23
Copper Foil	7440-50-8	8.74
Aluminium film、Alminum tab、Copper tab and inert	---	13.66

3. Hazards identification

Explosive risk	This article does not belong to the explosion dangerous goods
Flammable risk	This article does not belong to the flammable material
Oxidation risk	This article does not belong to the oxidation of dangerous goods
Toxic risk	This article does not belong to the toxic dangerous goods
Radioactive risk	This article does not belong to the radiation of dangerous goods
Mordant risk	This article does not belong to the corrosion of dangerous goods
Other risk	This article is Li-ion Battery, Watt hour rate 5120Wh, which belong to the Lithium ion batteries (including lithium polymer batteries)

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 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

5. Fire-fighting measures

Flash Point: N/A.

Auto-Ignition Temperature: N/A.

Extinguishing Media: Water, CO_2.

Special Fire-Fighting Procedures

Self-contained breathing apparatus.

Unusual Fire and Explosion Hazards

Cell may vent when subjected to excessive heat-exposing battery contents.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide, lithium oxide fumes.

6. Accidental release measures

Steps to be taken in case Material is Released or Spilled

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

Waste Disposal Method

It is recommended to discharge the battery to the end, to use up the metal lithium inside the battery, and to bury the discharged battery in soil.

7. Handling and storage

The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

Precautions to be taken in handling and storing
Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

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.

8. Exposure controls/personal protection

Respiratory Protection
In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use.

Ventilation
Not necessary under conditions of normal use.

Protective Gloves
Not necessary under conditions of normal use.

Other Protective Clothing or Equipment
Not necessary under conditions of normal use.

Personal Protection is recommended for venting battery
Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

9. Physical and chemical properties

Appearance: Rectangle
Odour: If leaking, smells of medical ether.
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.

10. Stability and reactivity

Stability: Product is stable under conditions described in Section 7.

Conditions to Avoid : Heat above 70°C or incinerate. Deform. Mutilate. Crush. Disassemble. Overcharge. Short circuit. Expose over a long period to humid conditions.

Materials to avoid: Oxidising agents, alkalis, water.

Hazardous Decomposition Products : Toxic Fumes, and may form peroxides.

Hazardous Polymerization : N/A.

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, halogenated hydrocarbons.

11. Toxicological information

Signs & symptoms: None, unless battery ruptures.

In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.

Inhalation: Lung irritant.
Skin contact: Skin irritant.
Eye contact: Eye irritant
Ingestion: Poisoning if swallowed..

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to server irritation, burning and dryness of the skin may occur, Target organs nerves, liver and kidneys.

12. Ecological information

Mammalian effects: None known at present.
Eco-toxicity: None known at present.
Bioaccumulation potential: Slowly Bio-degradable.
Environmental fate: None known environmental hazards at present.

13. Disposal consideration

Disposal methods:

Recommendation:

Consult state, local or national regulations to ensure proper disposal.

Uncleaned packaging

Recommendation: Disposal must be made according to official regulations.

14. Transport information

UN or ID Number	
IATA	UN3480
IMDG	UN3480
Proper Shipping Name/Description	
IATA	Lithium ion batteries
IMDG	LITHIUM ION BATTERIES
Class or Div. (Sub Hazard)	
IATA	9
IMDG	9
Packing Group	
IATA	N/A
IMDG	N/A
Hazard Label	
IATA	
IMDG	
Environmental hazards	
Marine pollutant:	No
IMDG EmS:	F-A. S-I
Special precautions for user	No information available.

Watt-hour exceeds the standard. The goods are packaged according to the packaging Instruction 965 section IA of IATA DGR 63rd Edition for transportation, Cargo aircraft only. Watt- hour exceeds the standard. The goods are packaged according to the special provision 230, 348, 384 of IMDG (40-20).

Separate batteries to prevent short-circuiting. and they should be packed in strong package during transport.Lithium cell or battery should incorporate a safety venting device or be designed to prevent a violent rupture under normal transport conditions. Keep away from high temperature and open flames.
Note: State of Charge (SoC) not exceeding 30% of their rated capacity. (By air, Lithium ion batteries)

15. Other information

Issue Date: 2024-02-24
Issue Department:
Technical department:
Modification record:
Notice to reader
To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.
Other Information:
CAS: (Chemical Abstracts Service);
EC: (European Commission);
ACGIH: (American Conference of Governmental Industrial Hygienists);
NIOSH: (US National Institute for Occupational Safety and Health);
OSHA: (US Occupational Safety and Health);
TLV: (Threshold Limit Value)
TWA: (Time Weighted Average);
STEL: (Short Term Exposure Limit);
PEL: (Permissible Exposure Level);
REL: (Recommended Exposure Limit);
PC-STEL: (Permissible concentration-short time exposure limit); PC-TWA: (Permissible concentration-time weighted average);
IARC: (International Agency for Research on Cancer);
LC50: (Lethal concentration, 50 percent kill);
LD50: (Lethal dose, 50 percent kill);
EC50: (Median effective concentration);
BCF: (Bioconcentration Factor);
BOD: (Biochemical oxygen demand);
IECSC: (Inventory of Existing Chemical Substances in China);
NOEC: (No observed effect concentration);
NTP: (US National Toxicology Program);
RTECS: (Registry of Toxic Effects of Chemical Substances);
TOC: (Total Organic Carbon);
TSCA: (Toxic Substances Control Act of USA);
DSL: (the Domestic Substances List of Canada);
NDSL: (the Non-domestic Substances List of Canada)
IATA: （International Air Transport Association);
IMDG: (International Maritime Dangerous Goods);
TDG: (Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations);

End of report