

MSDS Report

Samples

Li-ion Battery (RFE-18650)

Client Unit

Shandong RealForce Enterprises Co., Ltd.

Client Address

RealForce Industrial Park, Weishan County, Jining
City, Shandong Province, China

No.: W02153025216D
Code: h1vq159z

Report in electronic version is only for client's preview and reference. For confirmative content, formal test report shall prevail.

Material Safety Data Sheet

Section 1 - Chemical Product and Company Identification

Product Name: Li-ion Battery

Battery Type: RFE-18650

Manufacture: Shandong RealForce Enterprises Co., Ltd.

Address: RealForce Industrial Park, Weishan County, Jining City, Shandong Province,
China

Post Code: 277600

Tel: 0537-8699999

Emergency Telephone: 0537-8699999

Fax: 0537-8699916

E-mail: sales@realforce.com.cn

Section 2 – Composition/Information on Ingredient

Chemical Name	Molecular formula	CAS No.	Weight (%)
Ferrous Phosphate Lithium	LiFePO ₄	15365-14-7	25.7~35.7
SP	---	---	0.7
KS-6	---	---	0.56
PVDF	(CH ₂ -CF ₂) _n	24937-79-9	1.41
M34020	---	---	12.8
SBR	(C ₈ H ₈ -C ₄ H ₆) _x	9003-55-8	0.27
CMC	[C ₆ H ₇ O ₂ (OH) ₂ CH ₂ COONa] _n	9004-32-4	0.11
Electrolyte	--	--	14.55
Copper	Cu	7440-50-8	8.83
Nickel	Ni	7440-02-0	0.4
Aluminum	Al	7429-90-5	4.43
Iron	Fe	7439-89-6	20

Section 3 - Hazards Identification

Health Hazards (Acute and Chronic)

These chemicals are contained in a sealed can. Risk of exposure occurs only if the battery is mechanically or electrically abused. Contact of electrolyte and extruded lithium with skin and eyes should be avoided.

Sign/Symptoms of Exposure

A shorted lithium battery can cause thermal and chemical burns upon contact with the skin. May be a reproductive hazard.

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

Section 5 - Fire Fighting Measures

Flash Point: N/A.

Auto-Ignition Temperature: N/A.

Extinguishing Media

Dry chemical, CO₂.

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.

Section 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 batteries 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, handing in the abandoned batteries to related department unified, dispose of the batteries in accordance with approved local, state, and federal requirements. Consult state environmental protection agency and/or federal EPA.

Section 7 - Handling and Storage

The batteries 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

Batteries 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

Respiratory Protection

In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting batteries. 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 batteries: Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

Section 9 - Physical and Chemical Properties

Nominal Voltage: 3.2V.

Rated Capacity: 1.35Ah.

Appearance Characters: Purple, cylindrical, odorless, solid battery.

Chemical Uses: Portable electronic products, electric vehicles and related equipment for the power battery.

Section 10 - Stability and Reactivity

Stability

Stable.

Conditions to Avoid

Heating, mechanical abuse and electrical abuse.

Hazardous Decomposition Products

N/A.

Hazardous Polymerization

N/A.

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

Section 11 - Toxicological Information

Inhalation, skin contact and eye contact are possible when the battery is opened. Exposure to internal contents, the corrosive fumes will be very irritation to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and

membrane irritation.

Section 12 - Ecological Information

When promptly used or disposed the battery does not present environmental hazard.
When disposed, keep away from water, rain and snow.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

If batteries are still fully charged or only partially discharged, they can be considered a reactive hazardous waste because of significant amount of uncreated or unconsumed lithium remaining in the spent battery. The batteries must be neutralized through an approved secondary treatment facility prior to disposal as a hazardous waste. Recycling of battery can be done in authorized facility, through licensed waste carrier.

Section 14 - Transport Information

The Li-ion Battery (RFE-18650) has passed the test UN38.3, according to the report ID: W02153024821D~1. According to PACKING INSTRUCTION 965 section II of IATA DGR 53rd Edition for transportation, or the special provision 188 of IMDG or the Recommendations On The Transport Of Dangerous Goods-Model Regulations.
The products are not subject to dangerous goods.

More information concerning shipping, testing, marking and packaging can be obtained from Label master at <http://www.labelmaster.com>.

Separate Lithium-ion batteries when shipping to prevent short-circuiting. They should be packed in strong packaging for support during transport. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles and wet by rain.

Transport Fashion: By air, by sea, by railway, by road.

Packaging Information: Carton.

Section 15 - Regulatory Information

Law Information

- 《Dangerous Goods Regulation》
- 《Recommendations on the 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)
- 《Superfund Amendments and Reauthorization Act Title III (302/311/312/313)》 (SARA)
- 《Resource Conservation and Recovery Act》 (RCRA)
- 《Safety Drinking Water Act》 (CWA)
- 《California Proposition 65》
- 《Code of Federal Regulations》 (CFR)

In accordance with all Federal, State and Local laws.

Section 16 - 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 results 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 his particular purpose.

Prepared by: *Zuo Jingjing* Checked by: *Wangzhimin* Approved by: *Liyun*

MSDS Creation Date: February 29, 2012