MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT IDENTIFICATION

- **Product Identification**

Lithium-Ion Rechargeable Cell
Nominal Voltage:3.2V
Cell P/N:2770112
Nominal Cell Capacity:7500mAh
Watt-Hour rating:24Wh
Cell UL NO:
Customer P/N:
Reference No.

PACK P/N: N/A
PACK Capacity: N/A
PACK UL NO: N/A
Customer Model Name: N/A

- **Manufacturer Identification**

Tianjin Lishen Battery Joint-Stock CO. LTD.
No.38 Haitainan Road (Outside Outer Ring Road), Huayuan Science & Technology Park,
Tianjin Bin hai Hi-Tech Industrial Development Area, Tianjin, PRC.300384
Http://www.lishen.com.cn

86 - 22 - 83710366
Phone Number (For Information)
86 - 22 - 83710366
Emergency Phone Number Telex'
86 - 22 - 83710366

Note: Blank spaces are not permitted. If any item is not applicable or no information is available, the space must be marked to indicate that.Not Restricted and meet the Special Provision Number A 45 & A154

SECTION 2 HAZARDS IDENTIFICATION

Primary Routes of Entry	■ Inhalation ■ Skin Absorption	■ Ingestion ■ Eye contact	**CARCINOGEN LISTED IN**	☐ NTP ☐ LARC Monograph	☐ OSHA ☐ NOT Listed

Health Hazards	**Acute and chronic** All chemicals are contained in a sealed can. Risk of exposure occurs only, if the battery is mechanically or electrically abused.

Medical Conditions Generally Aggravated By Exposure

An acute exposure will not generally aggravate any medical condition.

Symptoms of Exposure	Skin contact, no effect under routine handling and use.
Eye Contact	No effect under routine handling and use
Skin Contact	No effect under routine handling and use
Ingestion	No effect under routine handling and use
Inhalation	No
Reported as carcinogen	Not applicable

SECTION 3 COMPOSITION IDENTIFICATION AND INFORMATION

COMPONENTS-Chemical Name and Common Names **(Hazardous Components 1% or greater, Carcinogens 0.1% or greater)**	%	OSHA PEL	ACGIH TLV	CAS Number	OTHER LIMITS RECOMMENDED
Lithium iron phosphate	19.6%			12190-79-3	
Graphite Carbon	10.0%			7782-42-5	
Lithium Hexafluorophosphate	2.5%			21324-40-3	
Organic solvent	16.5%				
Non-Hazardous Ingredients(tabs,pouch,separator,etc.)	51.5%				
Total	100%				

SECTION 4 FIRST-AID MEASURES

If exposure to internal materials in cell due to damaged outer casing, the following actions are recommended.

Eye Contact	In case of eye contact, flush with lot of water for 15 minutes, and get medical help.
Skin Contact	In case of skin contact with contents of battery, flush immediately with water.
Inhalation	In case of light inhalation ,move to an area with flash air immediately, if irritation persists, get medical help.
Ingestion	In case of ingestion, drink milk/water to induce vomitting,get medical help.

SECTION 5 FIRE FIGHTING MEASURES

Extinguisher Media:

CO_2 or dry chemical power or sand

Special Fire-Fighting Procedures:

In case of fire in cell original containers, use CO2 or dry chemical extinguisher or sand; For fire in an adjacent area, water can be used.

SECTION 6 ACCIDENTAL RELEASE MEASURES

On Land:

Place material into suitable containers and call local fire/police department to ask for help.

In Water:

If possible, remove from water far from body in special fixture, and call local fire/police department

SECTION 7 HANDING AND STORAGE

Handling:

Take all precautions mentioned in this document and operate the battery within the temperature ranges as follows: Charge: 0 ℃~45 ℃; Discharge: -20 ℃~60 ℃; Storage:-20 ℃~35 ℃.

No special protective clothing required for handling individual cells in corrective operational method.

Improper handling of lithium ion battery may result in injury or damage from electrolyte leakage, heating, ignition or explosion.

Storage:

Store the battery in a cool, drying place, without chemical vapor or excessive humidity.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

keep away from heat and open flame, prevent hard & sharp thing penetration, store in a cool & dry place.

Personal Protection:

Respiratory Protection: Not necessary under normal operations condition. SCBA required in the event of a fire.
Eye/Face Protection: Not necessary under normal operation condition.
Glove protection: Not necessary under normal operation condition.
Foot Protection: Steel toed shoes recommended for Large container handling.

Ventilation to Be Used	□ **Local Exhaust** Not necessary under conditions of Normal use.	□ **Mechanical (General)** Not necessary under conditions of Normal use. □ **Special** Not necessary under conditions of Normal use.
	□ **Other (Specify)** Not necessary under normal operation conditions.	

Other Protective Clothing and Equipment

Not necessary under normal operation conditions.

Hygienic Work Practices

Not necessary under normal operation conditions.

SECTION 9 PHYSICAL /CHEMICAL PROPERTIES

Specific Gravity (H2O=1):

$LiFeO_4$:2.80 Graphite:2.0~2.2

Melting Point:

LiFeO4: > 1000℃ Graphite:3500-3900℃

Appearance and Odor:

$LiFeO_4$ is a gray odorless power; Graphite is a black or odorless power;

Organic solvent is a colorless liquid; Lithium salt is a white, crystalline and odorless power.

SECTION 10 STABILITY & REACTIVITY DATA

Stability ■ Stable □ Unstable	**Conditions to Avoid:** Do not heat or incinerate the battery，Never impact, pierce or crush the battery. Do not disassemble or modify the battery， Do not charge the battery under high temperature conditions such as near a fire or in the direct sunlight. Do not shot-circuit the battery by connect the positive and negative terminals with a metal material. Do not allow the battery to get wet or be immersed in water.

Incompatibility (Materials to Avoid)

Water or salted water or see water.

Hazardous Decomposition Products

N/A

Hazardous Polymerization □ May Occur ■ Will Not Occur	Conditions to Avoid

SECTION 11 TOXICOLOGICAL INFORMATION

This product does not elicit toxicological properties during routine handling and use.

SECTION 12 ECOLOGICAL INFORMATION

Iron and its compounds can pose a threat if released to environment. The detail information are showed in waste disposal method in Section 13 "Disposal Consideration".

SECTION 13 DISPOSAL CONSIDERATIONS

There is no contamination during normal operation and use. Lithium batteries should have their terminals insulated prior to disposal, do not throw away a used battery and provide them for recycling company.

Open cells should be treated as hazardous waste. If the leakage or other material is Released, we should take actions as follows:

Leave the area, allow the batteries to cool down, let the vapors to dissipate .
Avoid skin and eye contact or inhalation of vapors. Remove spiller liquid with absorbent and incinerate after.

Waste Disposal method Opened cells should be treated as hazardous waste.

Incineration: incineration should never be performed by battery users but eventually by trained professionals in authorized facilities with proper gas and fumes treatment.

Landfilling:According to the proper laws and regulations in different countries or areas, the battery should be buried deeply in the specified place;

Recycling: Send to authorized recycling facilities to get Cu and Al,eventually through licensed waste carrier;

SECTION 14 Transportation

UN-No : UN3480

ADR/RID	Class：9；Packing group：II；ADR/RID-Labels：9； Proper shipping name：Lithium ion batteries,UN3480
IMO	Class：9；Packing group：II；ADR/RID-Labels：9； Proper shipping name：Lithium ion batteries,UN3480
IATA DGR	Class：9；Packing group：II；ADR/RID-Labels：9； Proper shipping name：Lithium ion batteries,UN3480

According to ICAO Packing Instruction 965 ,specifying less than 5kg gross per package.

There is no hazards in accordance with the UN recommendations test.(UN manual of tested and criteria 38.3).

SECTION 15 REGULATORY INFORMATION

IATA DGR

Hazardous [√] Non-hazardou [ ]

SECTION 16 OTHER INFORMATION

UN TEST RESULT

There is no hazards in accordance with the UN recommendations test.(UN manual of tested and criteria 38.3)

Cell Part Number	**2770112**
Nominal Voltage	**3.2V**
Nominal Capacity	**7.5Ah**
Cell Mass	**392g**
Equivalent Lithium Content	**2.72g**

Test NO	Test Item	Criteria	Result	Remark
38.3.4.1	Altitude Test	No mass loss,leakage,venting,disassembly,rupture,and fire.OCV should not be less than 90% before testing	Passed	
38.3.4.2	Thermal Test	No mass loss,leakage,venting,disassembly,rupture,and fire.OCV should not be less than 90% before testing	Passed	
38.3.4.3	Vibration	No mass loss,leakage,venting,disassembly,rupture,and fire.OCV should not be less than 90% before testing	Passed	
38.3.4.4	Shock	No mass loss,leakage,venting,disassembly,rupture,and fire.OCV should not be less than 90% before testing	Passed	
38.3.4.5	External Short Circuit	External temperature should not exceed 170degC. No disassembly, and fire within six hours of this test.	Passed	
38.3.4.6	Impact	External temperature should not exceed 170degC. No disassembly, and fire within six hours of this test.	Passed	
38.3.4.7	Overcharge	No disassembly, and fire within seven days of this test.	__	Battery only
38.3.4.8	Forced Discharge	No disassembly, and fire within seven days of this test.	Passed	

The information provided in this Safety Data Sheet is correct to the best of our knowledge,information and belief at the date of its publication.The information given is designed only as a guidance for safe handling,use,processing,storage,transportation,disposal and release and is not to be considered a warranty or quality specification.The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process,unless specified in the text.