

Lithium Ion Battery Test Summary

- (a) Model Number SL-F30
- (b) Product manufacturer IDX Company, Ltd.
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- (c) Test laboratory Pony Testing Group Shenzhen Co., Ltd.
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 Shenzhen, Guangdong, China
 Telephone (0755)26050909
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- (d) Identification number MPIDA4YC13094721
- (e) Date of test report April 23, 2021
- (f) Description of Product Rechargeable Li-ion Battery Pack
 Nominal Voltage 7.27V
 Capacity(mAh/Wh) 3310mAh/25Wh
 Lithium equivalent content 1.99g
 Mass 107.7g
 Physical description Battery with outer case

(g) Test Result

No.	Test Item	Test Results	Note	
T1	Altitude Simulation	Pass	First cycle fully charged 4 Batteries	After 25 cycle fully charged 4 Batteries
T2	Thermal Test	Pass		
T3	Vibration	Pass		
T4	Shock	Pass		
T5	External Short Circuit	Pass		
T6	Impact	Pass	First cycle 50% charged 5 cells	After 25 cycle 50% charged 5 cells
T7	Overcharge	Pass	First cycle fully charged 4 Batteries	After 25 cycle fully charged 4 Batteries
T8	Forced Discharge	Pass	First cycle fully discharged 10 cells	After 25 cycle, fully discharged 10 cells

※The Battery pack Package complies with the requirements of 3m Stacking test according to regulations.

- (h) Assembled Battery Testing Requirements N/A.
- (i) Reference edition UN Manual of Tests and Criteria,
 ST/SG/AC.10/11/Rev.7/Part III,sub-section38.3
- (j) Signature

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No. XC21X0049-04

SAFETY DATA SHEET FOR PRODUCT

1. PRODUCT AND COMPANY IDENTIFICATION

- Product Name : Rechargeable Lithium Ion Battery Pack
- Product code : SL-F30
- Company Name : IDX Company, Ltd.
- Address : 6-28-11 Shukugawara, Tama-ku, Kawasaki-shi, Kanagawa-ken,
214-0021 Japan
- Telephone number : +81-44-850-8801
- FAX number : +81-44-850-8838
- Emergency Telephone Number : +81-44-850-8831 (Technical Development. Direct)

2. HAZARDS IDENTIFICATION

For cell

For the battery cell, chemical materials are stored in a hermetically sealed metal or metal laminated plastic case, designed to withstand temperatures and pressures encountered during normal use.

As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials' leakage.

However, if exposed to a fire, added mechanical shocks, decomposed, added electric stress by miss-use, the gas release vent will be operated. The battery cell case will be breached at the extreme, hazardous materials may be released.

Moreover, if heated strongly by the surrounding fire, acrid gas may be emitted.

- GHS Classification : Not available

(This products is outside the scope of GHS system since it's considered as an "article".)

- Most important hazard and effects

Human health effects:

- Inhalation : No effect under routine handling and use. The steam of the electrolyte has an anesthesia action and stimulates a respiratory tract.

- Skin contact : No effect under routine handling and use. The steam of the electrolyte stimulates a skin. The electrolyte skin contact causes a sore and stimulation on the skin.

- Skin absorption: No effect under routine handling and use.

- Eye contact : No effect under routine handling and use. The steam of the electrolyte stimulates eyes. The electrolyte eye contact causes a sore and stimulation on the eye. Especially, substance that causes a strong inflammation of the eyes is contained.

- Reported as carcinogen: Not applicable.

Environmental effects : Since a battery pack remains in the environment, do not throw out it into the environment.

- Specific hazards: If the electrolyte contacts with water, it will generate detrimental hydrogen fluoride.

Since the leaked electrolyte is inflammable liquid, do not bring close to fire.

For molding case

- Inhalation : Pellet inhalation unlikely due to physical form.

- Skin contact : Not a hazard with pellets during normal industrial use.

- Eye contact : Resin particles, like other inert materials, are mechanically irritating to eyes.

- Ingestion: Pellet ingestion unlikely due to physical form.

- Sensitization: No information available on this product.

- Chronic/Carcinogenic Information

- Chronic Toxicity: No information available



- Processing Issues: Processing vapors may cause irritation to the eyes, skin, and respiratory tract. In cases of severe exposure, nausea and headache can also occur. Grease-like processing vapor condensates on ventilation ductwork, molds, and other surfaces can cause irritation and injury to skin.
- Aggravated Medical Conditions: MEDICAL RESTRICTIONS: There are no known health effects aggravated by exposure to this product. However, certain sensitive individuals and individuals with respiratory impairments may be affected by exposure to components in the processing vapors.

3. COMPOSITION / INFORMATION ON INGREDIENTS

For cell

Material name	%
Aluminum Foil	2-10
Nickel compound(proprietary)	0-80
Manganese compound(proprietary)	0-15
Cobalt compound(proprietary)	0-15
Styrene-Butadiene-Rubber	<1
Polyvinylidene Fluoride(PVDF)	<5
Copper Foil	2-10
Carbon(proprietary)	10-30
Electrolyte (proprietary)	10-20
Steel, Nickel and inert materials	Remainder

For molding case

- Chemical Name : Polycarbonate based on bisphenol A
- Composition : Polycarbonate more than 81 wt%(CAS No.25971-63-5)
Flame Retardant less than 12 wt%
Elastomer less than 7 wt%
- Chemical Formula : [-O-C6H4-C(CH3)2-C6H4-O-CO-]n-
- CAS Registry No. : 25971-63-5

4. FIRST-AID MEASURES

For cell

Spilled internal cell materials

- Inhalation : Make the victim blow his/her nose, gargle. Seek medical attention if necessary.
- Skin contact : Remove contaminated clothes and shoes immediately. Wash extraneous matter or contact region with soap and plenty of water immediately.
- Eye contact : Do not rub one's eyes. Immediately flush eyes with water continuously for



at least 15 minutes. Seek medical attention immediately.

A battery cell and spilled internal cell materials

- Ingestion : Wash out mouth thoroughly. Do not make the victim vomit, unless instructed by medical personnel. Seek medical attention immediately.

For molding case

- Inhalation : If fumes are inhaled, remove person to fresh air. If breathing is difficult, get medical attention.
- Ingestion : This product does not show significant acute toxicity. Get medical attention if considerable amounts of this product are ingested.
- Skin contact : Wash contaminated skin with soap and water after contact with processing vapors and fumes. Immediately cool contaminated skin with water and get medical attention after contact with molten resin.
- Eye contact : Flush the eyes with plenty of water without rubbing the eyes with hands. Get medical attention if irritation persists.

5. FIRE-FIGHTING MEASURE

For cell

- Suitable extinguishing media : Plenty of water, carbon dioxide gas, nitrogen gas, chemical powder fire extinguishing medium, and fire foam.
- Specific hazards : Corrosive gas may be emitted during fire.
- Specific methods of fire-fighting :
When the battery burns with other combustibles simultaneously, take fire-extinguishing method which corresponds to the combustibles.
Extinguish a fire from the windward as much as possible.
- Special protective equipment for firefighters:
Refer to Section 8 -EXPOSURE CONTROLS / PERSONAL PROTECTION (WHEN THE ELECTROLYTE LEAKS)

For molding case

- Special fire-fighting procedures :
This product is a combustible thermoplastic material which will melt and drip when ignited and gives off combustion product mainly consisting of carbon dioxide carbon monoxide. Formation of traces of aliphatic and aromatic hydrocarbons, aldehydes, acids, phenol and phenol derivatives may occur. Fire-men have to wear self-containing breathing apparatus.
- Extinguishing media : Water spray or other Class A extinguishing agent.
- Specific Hazards: Take precautionary measures against static discharges. During processing, dust may form explosive mixture in air. Thermal decomposition can lead to release of irritating gases and vapors.



6. ACCIDENTAL RELEASE MEASURES

Spilled internal cell materials, such as electrolyte leaked from a battery cell, are carefully dealt with according to the followings.

- Precautions for human body :

Remove spilled materials with protective equipment (refer to Section 8 -EXPOSURE CONTROLS / PERSONAL PROTECTION (WHEN THE ELECTROLYTE LEAKS)). Do not inhale the gas as much as possible. Moreover, avoid touching with as much as possible.

- Environmental precautions :

Do not throw out into the environment.

- Method of cleaning up : The spilled solids are put into a container. The leaked place is wiped off with dry cloth.

- Prevention of secondary hazards :

Avoid re-scattering. Do not bring the collected materials close to fire.

In general for molding case

Sweep or gather up product and place in proper container for disposal or recovery. Do not discard in sewers or waterways because fish may eat pellets, resulting in obstruction of their digestive tracts.

7. HANDLING AND STORAGE

- **Handling suggestions**

For cell

- Do not connect the positive terminal to the negative terminal with electrical wire or chain.
- Avoid polarity reverse connection when installing the battery to an instrument.
- Do not wet the battery with water, seawater, drink or acid; or expose to strong oxidizer.
- Do not damage or remove the battery case.
- Keep the battery away from heat and fire.
- Do not disassemble or reconstruct the battery; or solder the battery directly.
- Do not give a mechanical shock or deform.
- Do not use unauthorized charger or other charging method. Terminate charging when the charging process doesn't end within specified time.
- In the case of charging, use only dedicated charger or charge according to the conditions specified by IDX.

For molding case

Avoid breathing processing fumes and vapors. Processing fumes and vapors may cause eye, skin and respiratory tract irritation, and in case of overexposure, nausea and headache. Clean dust from cutting and sanding operation to prevent its accumulation, since it may cause spark due to statics electricity or dust explosion. Properly ground air transportation lines including hoppers, bad filters to prevent accumulation of static electricity.



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- Storage

For cell

- Store in a cool, dry place.
- Do not store the battery with metalware, water, seawater, strong acid or strong oxidizer.
- Make the charge amount less than or equal to 50% then store at -20~40 degree C in a dry (humidity: 45~85%) place.
- Since deterioration will be faster in the high temperature range than in the low temperature range, so do not keep it in the high temperature range beyond the period that is specified by the seller or owner.
- Use insulative and adequately strong packaging material to prevent short circuit between positive and negative terminal when the packaging breaks during normal handling. Do not use conductive or easy to break packaging material.

For molding case

Store this product in place not subject to direct sunlight or elevated temperatures or where there are no ignition sources. Take measures to prevent an accident due to static electricity from occurring.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION (WHEN THE ELECTROLYTE LEAKS)

For cell

- Engineering controls : Keep away from heat and fire . Keep in a cool and dry place.
- Control parameters : ACGIH has not been mentioned control parameter of electrolyte.
- Personal protective equipment.
 - Respiratory protection : Respirator with air cylinder, dust mask.
 - Hand protection : Protective gloves.
 - Eye protection : Goggle or protective glasses designed to protect against liquid splashes.
 - Skin and body protection :Working clothes with long sleeve and long trousers.

For molding case

- Personal protections
 - Respiratory protection : Avoid breathing dust, vapors or fumes.
Use NIOSH/OSHA approved respiratory protection equipment(full facepiece recommended) when airborne exposure limits are exceeded.
 - Eye protection : Does not cause significant eye irritation or eye toxicity requiring special protection, except when in molten state. Use good industrial practice to avoid eye contact. Processing of this product releases vapors or fumes which may cause eye irritation. Where there is significant potential for eye contact, wear appropriate eye protection and have eye flushing equipment available.
 - Skin protection : Does not present a significant skin concern requiring special protection at room temperature. Minimize skin contamination by following good industrial hygiene practice. Processing of this product releases vapors or fumes which may cause skin irritation. Wash hands and contaminated skin thoroughly after contact with processing vapors or fumes. Wear



rubber glove when handling molten resin.

ACGIH : American Conference of Governmental Industrial Hygienists, Inc.

NIOSH : National Institute for Occupational Safety and Health

OSHA : Occupational Safety & Health Administration

9. PHYSICAL AND CHEMICAL PROPERTIES

For cell

- Appearance
- Physical stat : Solid.
- Form : Cylindrical.
- Color : Metallic color(without tube if it has tube).
- Odor : No odor.

For molding case

- Physical State: Solid
- Appearance : Pellet.
- Color: Black
- Odor : None or slight
- Autoignition Temperature : 630°C (1166°F) estimated
- Boiling point : Not applicable.
- Vapor pressure : Not applicable.
- Melting point : Not applicable.
- Specific gravity : >1
- Oxidizability : None under normal handling conditions.
- Flammability : combustible.
- Explosion Limit : Not applicable.
- Solubility in water : Insoluble.

10. STABILITY AND REACTIVITY

For cell

- Stability : Normally stable unless a strong shock is applied or heated strongly.
- Possibility of hazardous reactions:
Damage to the container may cause leakage of contents. Contents may leak or ignite due to temperature rise.
- Conditions to avoid: Crushing or deformation, use and storage at 80 degree C or higher or at high humidity. Usage at a voltage or a current outside the rating and external short circuit.
- Incompatible materials: Conductive material such as water or metal pieces. Oxidizing agent such as bleach.
- Hazardous decomposition products :
Acrid or harmful gas is emitted during fire.



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For molding case

- Conditions to Avoid: Avoid temperatures above 630°C. To avoid thermal decomposition, avoid elevated temperatures. Heating can result in the formation of gaseous decomposition products, some of which may be hazardous. Do not exceed melt temperature recommendations in product literature. Purgings of hot material should be collected in small, flat, thin shapes and quenched with water to allow for rapid cooling. Do not allow product to remain in barrel at elevated temperatures for extended periods of time.
- Hazardous decomposition products : Smoldering or incomplete combustion leads to the formation of toxic gas mixture such as carbon dioxide, carbon monoxide and traces of aliphatic and aromatic hydrocarbons, aldehydes, acids, phenol and phenol derivatives.

11. TOXICOLOGICAL INFORMATION

For cell

This product does not contain elicitor toxicological properties during routine handling and use. If cells are opened through misuse or damage, do not discard immediately. Internal components of cell are irritants and sensitizers.

- A Sensitization : No
- Teratogenicity : No
- Reproductive toxicity : No
- Acute toxicity : No

For molding case

Acute Toxicity

- LD50/oral/rat : >5000 mg/kg
- LD50/dermal/rabbit : >2000 mg/kg
- Inhalation : Pellet inhalation unlikely due to physical form.
- Eye Contact : Resin particles, like other inert materials, are mechanically irritating to eyes.
- Skin Contact : Not a hazard with pellets during normal industrial use.
- Ingestion : Pellet ingestion unlikely due to physical form.
- Chronic Toxicity : No information available.
- Subchronic Toxicity : No information available.
- Primary Irritation : Substance does not generally irritate and is only mildly irritating to the skin.

Remarks : The toxicological data has been taken from Products of similar composition.

Special Studies : No Information



IARC: Not listed
OSHA: Not regulated
NTP: Not tested

12. ECOLOGICAL INFORMATION

For cell

- Persistence/degradability : Since a battery cell and the internal materials remain in the environment, do not bury or throw out into the environment.

For molding case

- Ecotoxicity Effects : Do not flush into surface water or sanitary sewer system.
- Other information : Ecological damages are not known or expected under normal use.

13. DISPOSAL CONSIDERATIONS

- Recommended methods for safe and environmentally preferred disposal :

Product (waste from residues)

Specified collection or disposal of lithium ion battery is required by the law like as "battery control law" in several nations. Collection or recycle of the battery is mainly imposed on battery's manufacturer or importer in the nations recycle is required.

Contaminated packaging

Neither a container nor packing is contaminated during normal use. When internal materials leaked from a battery cells contaminates, dispose as industrial wastes subject to special control.

14. TRANSPORT INFORMATION

In the case of transportation, avoid exposure to high temperature and prevent the formation of any condensation. Take in a cargo of them without falling, dropping and breakage. Prevent collapse of cargo piles and wet by rain. The container must be handled carefully. Do not give shocks that result in a mark of hitting on a batteries. Please refer to Section 7 – HANDLING AND STORAGE also.

UN classification

- UN Number and proper shipping name :
UN3480 "Lithium ion batteries " [or UN3481 "Lithium ion batteries packed with equipment " or UN3481 "Lithium ion batteries contained in equipment"]].

[Watt-hour rating is not more than 100Wh]

This SL-F30 has a capacity of 25Wh.

Class9 Dangerous Goods (PI965 section 1B)

Cargo Aircraft Only

Exempted Dangerous Goods (PI965 section 2) is 2 batteries per one packaging.



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UN Specification packaging is not required. Packaging must be test for 1.2m drop test.
Maximum of 20 spare batteries in carry-on baggage only.

All IDX Li-ion batteries have Wh rating marked on notation.

Batteries capacity is must be transport at a state of charge(SoC) not exceeding 30% of the their rated capacity.

* Although this product meets the criteria of "dangerous goods" and are classified "lithium ion batteries", depending on the battery's total capacity in the packaging, etc., they may not be subject to the fully regulated provisions.

Regulation depends on region and transportation mode

- Worldwide, Air transportation :

ICAO/IATA-DGR [packing instruction 965 section 1A, Section 1B]

(when shipping batteries "packed with" or "contained in" equipment, use packing instruction 966 or 967 as appropriate.)

- Worldwide, Ocean transportation : IMO-IMDG Code [special provision 188]

- Europe, Ground transportation : ADR [special provision 188]

* Instructions or provision in the box brackets are conditions to make the battery cell exempted from full regulation.

15. REGULATORY INFORMATION

- Regulations specifically applicable to the product:

US Department of Transportation 49 Code of Federal Regulations [USA]

Wastes Disposal and Public Cleaning Law [Japan]

Law for Promotion of Effective Utilization of resources [Japan]

16. OTHER INFORMATION

- The information contained in this Safety data sheet is based on the present sate of knowledge and current legislation.

- This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

- IDX makes no warranty, expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. IDX assumes no responsibility for injury from the use to the product described herein.

- Reference

Dangerous Goods Regulations – 65th Edition Effective from 1 January 2024: International Air Transport Association (IATA)



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IMDG Code -2022 Edition: International Maritime Organization(IMO)

The European Agreement concerning the International Carriage of Dangerous Goods by Road

-2024:The United Nations Economic Commission for Europe(UNECE)

MSDS of raw materials prepared by the manufactures

4th edition: January 1, 2024

Prepared and approved by

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