FDK

Issued date: January 1, 2026

# SAFETY DATA SHEET (SDS)

## 1. Product and Company identification

Product Category : Lithium Rechargeable Battery
Nominal Voltage : 3 V
Product name

| Model | Lithium (g) |
|---|---|
| ML614 | 0.002 |
| ML621 | 0.002 |
| ML1220 | 0.009 |
| ML2016 | 0.018 |
| ML2430 | 0.051 |

Supplier's Name : FDK CORPORATION
Supplier's Address : Shibaura Crystal Shinagawa, 1-6-41 Konan, Minato-ku, Tokyo 108-8212 Japan
Telephone +81-3-5715-7400
Emergency Contact : CHEMTREC at (800)424-9300

Note: SDS is not applicable to the product hermetically sealed as dry battery. The battery has no risk to life and health under normal use or transportation because ingredients of battery are not leaked out by virtue of hermetical sealing with metal case.
This SDS notify possible risk of our battery under abnormal use but mainly aims to provide information about ingredients, notification of handling and transportation regulations as a useful reference.

## 2. Hazards identification

| | |
|---|---|
| Important hazards and adverse effects of the chemical product | No information available |
| Chemical products - specific hazards | No information available |
| Outline of an anticipated emergency | Chemical contents are sealed in metal can. Therefore, risk of exposure never occurs unless battery is mechanically or electrically abused.<br>Risk of explosion by fire is anticipated if batteries are disposed of in fire or heated above 100 degrees Celsius. If the batteries are extremely short circuited or charged, the batteries may generate heat and explosion or fire. |

Note) Our battery is not classified in accordance with the GHS classification.

## 3. Principal Composition/ information on Ingredients

| Part | Material | CAS No. | Contents |
|---|---|---|---|
| Positive electrode | Manganese Dioxide | 1313-13-9 | 5 ～ 20 wt% |
| Negative electrode | Lithium aluminum alloy | N/A | 5 ～ 12 wt% |
| Electrolyte | 1,2-Dimethoxyethane | 110-71-4 | 2 ～ 4 wt% |
| | Mixture of organic solvent | N/A | 2 ～ 10 wt% |

4. First-aid measures

| | |
|---|---|
| Inhalation | If battery contents leak and are inhaled, move to a place with fresh air and seek medical attention. |
| Skin contact | If battery contents leak and meet the skin, rinse immediately with soap and water. It may cause skin soreness. Seek medical attention if necessary. |
| Eye contact | If battery contents leak and enter the eyes, flush immediately with plenty of water for at least 15 minutes without rubbing. Use medical treatment as it may cause eye irritation. |
| Swallowing | In case of battery ingestion, seek medical attention immediately. |

5. Fire-fighting measures

Fire extinguishing agent:

Dry chemical, alcohol-resistant foam, powder, atomized water, carbon dioxide and dry sand are effective.

Extinguishing method:

Move the batteries to a safe place to prevent fire spreading.

Because packaging material of battery is paper, use water extinguisher, $CO_2$ extinguisher or powder extinguisher as normal extinguisher.

Since vapor, generated from burning batteries may make eyes, nose and throat irritate, be sure to extinguish the fire on the windward side. Wear respiratory protection equipment if necessary.

6. Accidental release measures

Chemical contents are sealed in metal can. But if the battery is mechanically or electrically abused, contents may leak out. In such cases, act as shown below.

Personal precautions: Temporary inhalation of odor and attaching of electrolyte to skin does not cause serious health hazard. Be sure of the ventilation and wash out of electrolyte quickly.

Environmental precautions: Clean up quickly. Specific environmental precautions are not necessary.

Method and materials for containment and methods and materials for cleaning up:

Contain and collect spillage and place in container for disposal according to local regulations.

7. Handling and storing

| | |
|---|---|
| Handling | Do not short-circuit, disassemble, deform, heat or incinerate.<br>Do not place battery on metal case, metal plate or antistatic material.<br>In case of multi cell application, replace all batteries to new at once when replacing used batteries.<br>Do not mix the different types of batteries, the new and old batteries of the same type, or the different manufacture of the same type batteries.<br>Do not use batteries for unspecified purposes. |
| Storage | Be sure to store batteries in well-ventilated, dry and cool conditions.<br>Keep away from water, rain, snow, frost or dew condensation.<br>Do not store batteries near source of heat or nozzle of hot air.<br>Do not store batteries in direct sunshine.<br>Take care not to get wet packed by dew condensation when packing is removed from cold to warm and humid condition.<br>Enough number of fire fighting apparatuses should be installed in warehouse.<br>Keep batteries out of reach of children. |

8. Exposure controls and personal protection

There is no need for personal protective equipment for regular handling and storage. In the event, however, a large amount of electrolyte should be released by mechanical or electrical abuse, use the protections as shown below.

Respiratory protection : Mask (with a filter preferably)
Hand protection : Synthetic rubber gloves
Eye protection : Goggles or glasses

9. Physical and chemical properties

State : Solid
Shape : Coin-type

---

10. Stability and reactivity

Stability: Stable on regular handling
Conditions to avoid: External short circuit of battery, deformation by crush, exposure at high temperature of more than 100 degree C (may cause heat generation and ignition), direct sunlight, high humidity
Materials to avoid: Substances that cause short circuits.

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11. Toxicological information

Since chemicals are contained in a sealed can, there are no hazards.

---

12. Ecological information

| | |
|---|---|
| Persistence and degradability | No information available |
| Mobility in soil | No information available |

---

13. Disposal considerations

Dispose of batteries in accordance with applicable federal, state and local regulations.
For safety precaution, batteries should be insulated in proper manner; covering both terminals by tape, wrapping batteries in insulation bag or packing batteries in original package is recommended in order to prevent ignition or explosion due to short-circuit.

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14. Transportation Information

Lithium metal cells and batteries are classified as Class 9 Dangerous Goods in the United Nations Recommendations and given UN numbers as shown in the below table. In case of transport of lithium metal cells and batteries, compliance with all the relevant UN regulations in addition to the requirements of the United Nations Recommendations is required.
This battery (as described in Chapter 1) is manufactured in a factory certified to the ISO 9001 quality program and meets all test requirements specified in the United Nations Manual of Tests and Criteria, Part III, subsection 38.3.
Furthermore, the packaging used when shipping from our company meets the standards required for each mode of transport.

＜Air Transport＞

This battery falls under the category of single cells containing 1g or less of lithium, or battery packs containing 2g or less of lithium. Therefore, it complies with Packing Instruction 968, Section IB of the IATA Dangerous Goods Regulations (IATA-DGR). Consequently, it can be transported without requiring a Packaging Group II container.
However, if the limits specified in Section IB are exceeded, transportation using the packaging specifications of Section IA is permissible.
Our products can be transported by cargo aircraft only since our products are classified into lithium metal batteries.

＜Maritime Transport＞

This battery qualifies as a single cell containing 1g or less of lithium, or a battery pack containing 2g or less of lithium. Therefore, it can be transported as an exempted dangerous goods item by fully meeting all the transport conditions specified in Special Provision 188 of the International Maritime Dangerous Goods Code (IMDG Code).

Important Notes
When customers (individuals, companies, or organizations) transport our lithium batteries, the responsibility for packaging lies with the shipping customer.
Therefore, regardless of the shipping method (batteries shipped alone, shipped with equipment, or shipped as part of equipment), you must prepare packaging that complies with all applicable regulations. Furthermore, as countries, regions, and shipping companies may have their own specific regulations, we recommend confirming the packaging method and required documentation with your chosen shipping company.

Shipping names / Packing requirements

| Proper Shipping Name | UN ID No. | Air transport | Maritime transport |
|---|---|---|---|
| Lithium metal batteries | 3090 | Packing Instruction 968 | Special Provision 188 |
| Lithium metal batteries packed with equipment | 3091 | Packing Instruction 969 | Special Provision 188 |
| Lithium metal batteries contained in equipment | 3091 | Packing Instruction 970 | Special Provision 188 |

Related regulations: Following regulations shall be cited and considered.

| | Organization / Issue documents |
|---|---|
| UN | UN / Recommendations on the Transport of Dangerous Goods<br>・Model Regulations ; 23rd revised edition<br>・Manual of Tests and Criteria: Subsection 38.3; 8th revised edition Amendment 1 |
| Air transport | IATA（International Air Transport Association）/<br>IATA Dangerous Goods Regulations ; 67th Edition *1 |
| Maritime transport | IMO（International Maritime Organization）/<br>IMDG Code ; 2024 Edition *2 |
| Land transport (Intra-European) | RID（International Carriage of Dangerous Goods by Rail）, ADR（International Carriage of Dangerous Goods by Road） |
| USA | USDOT（US Department of Transportation）/ DOT 49 CFR（US law） |

Each country, region, or shipping company may have its own regulations, so please check with the shipping company in advance.

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15. Applicable legislation
EU Regulation 2023/1542

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16. Other information
Reference
- IATA Dangerous Goods Regulations, latest edition *1

Notes on this sheet
*1 Dangerous Goods Regulations – 67th Edition: International Air Transport Association (IATA)
*2 IMDG Code –2024 Edition: International Maritime Organization (IMO)

This sheet refers to normal use of the product in question. FDK Corp. makes no warranty expressed or implied.

# Test Report No. F690101/LF-CTSAYAA25-29531

Issued Date : 2025. 07. 14



**FDK CORPORATION**
28, Ohta Iwami-cho
Iwami-gun, Tottori 681-0063
Japan

The following sample(s) was/were submitted and identified by/on behalf of the client as:-

| | | |
|---|---|---|
| **SGS File No.** | : | AYAA25-29531 |
| **Product Name** | : | ML621-TZ Tab Configurations |
| **Item No./Part No.** | : | N/A |
| **Client Reference Data** | : | ML414, ML414U, ML421, ML614, ML621, ML414-TZ Tab Configurations, ML414U-TZ Tab Configurations, ML421-TZ Tab Configurations, ML614-TZ Tab Configurations |
| **Received Date** | : | 2025. 07. 09 |
| **Test Period** | : | 2025. 07. 09 to 2025. 07. 14 |
| **Test Comments** | : | By the applicant's specific request, the sampling and testing was performed only for the part indicated in the photo without disassembly. |
| **Test Results** | : | For further details, please refer to following page(s) |

Monet Jeong

**Monet Jeong**

**Technical Manager / SGS Korea Co., Ltd**

This test report is limited to the samples and sample names provided by the client and does not guarantee the quality of all the client 's products. It shall not be used for public relation, advertisement, lawsuit and shall not be used by excepts from it. This test report can be checked through the <http://rohs.kr.sgs.com/checkreport/main>. This test report is not related to KS Q ISO/IEC 17025 and Korea Laboratory Accreditation Scheme.

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**Sample No.** : AYAA25-29531.001
**Sample Description** : ML621-TZ Tab Configurations
**Item No./Part No.** : N/A
**Materials** : N/A

## Heavy Metals

| Test Items | Unit | Test Method | MDL | Results |
|---|---|---|---|---|
| Cadmium (Cd) | mg/kg | With reference to IEC 62321-5 : 2013, by ICP-OES | 0.5 | N.D. |
| Lead (Pb) | mg/kg | With reference to IEC 62321-5 : 2013, by ICP-OES | 5 | N.D. |
| Mercury (Hg) | mg/kg | With reference to IEC 62321-4 : 2013+AMD1:2017CSV, by ICP-OES | 2 | N.D. |
| Hexavalent Chromium (Cr VI)+ | mg/kg | With reference to IEC 62321-7-2 : 2017, by UV-Vis and/or with reference to IEC 62321-5 : 2013, by ICP-OES | 8 | N.D. |

## Flame Retardants-PBBs/PBDEs

| Test Items | Unit | Test Method | MDL | Results |
|---|---|---|---|---|
| Monobromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Dibromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Tribromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Tetrabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Pentabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Hexabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Heptabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Octabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Nonabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Decabromobiphenyl | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Monobromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Dibromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Tribromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Tetrabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Pentabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Hexabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Heptabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Octabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |

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**Sample No.** : AYAA25-29531.001
**Sample Description** : ML621-TZ Tab Configurations
**Item No./Part No.** : N/A
**Materials** : N/A

## Flame Retardants-PBBs/PBDEs

| Test Items | Unit | Test Method | MDL | Results |
|---|---|---|---|---|
| Nonabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |
| Decabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5 | N.D. |

## Phthalates

| Test Items | Unit | Test Method | MDL | Results |
|---|---|---|---|---|
| Di-isobutyl phthalate (DIBP) | mg/kg | With reference to IEC 62321-8: 2017, by GC-MS | 50 | N.D. |
| Di-butyl phthalate (DBP) | mg/kg | With reference to IEC 62321-8: 2017, by GC-MS | 50 | N.D. |
| Benzyl butyl phthalate (BBP) | mg/kg | With reference to IEC 62321-8: 2017, by GC-MS | 50 | N.D. |
| Di-(2-ethylhexyl) phthalate (DEHP) | mg/kg | With reference to IEC 62321-8: 2017, by GC-MS | 50 | N.D. |

NOTE: (1) N.D. = Not detected. (<MDL)
(2) mg/kg = ppm, ug/kg = ppb, mg/L = ppm
(3) MDL = Method Detection Limit
(4) - = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable
(7) + = a. The result of Hexavalent Chromium (Cr(VI)) is "ND" as the result of Chromium (Cr) is "ND", and confirmation test of Hexavalent Chromium (Cr(VI)) is not required.
b. If the content of Total Chromium (Cr) is greater than the MDL of Hexavalent Chromium (Cr(VI)), it is the result of hexavalent Chromium by UV-VIS.
(8) ++= a. The sample is positive for Cr VI if the Cr VI concentration is greater than 0.13 ug/cm2. The sample coating is considered to contain Cr VI.
b. The sample is negative for Cr VI if Cr VI is ND(concentration less than 0.10 ug/cm2). The coating is considered a non-Cr VI based coating.
c. The result between 0.10 ug/cm2 and 0.13 ug/cm2 is considered to be inconclusive – unavoidable coating variations may influence the determination.

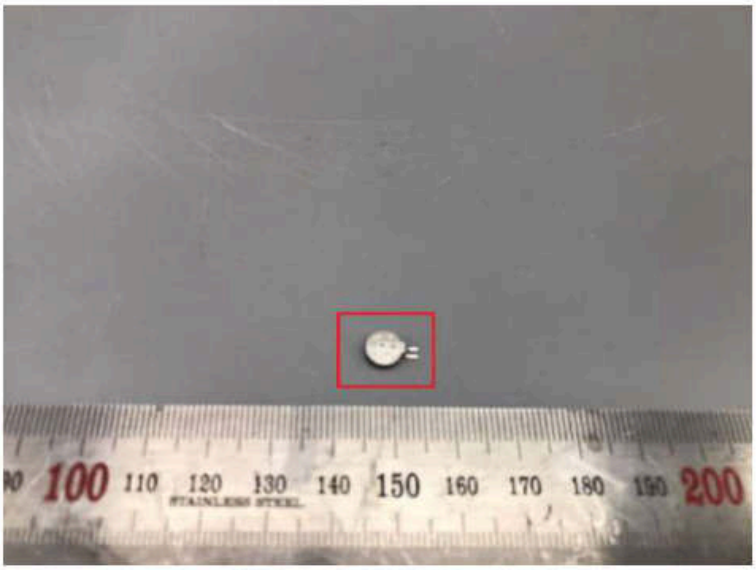
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**Picture of Sample as Received:**




**AYAA25-29531.001**

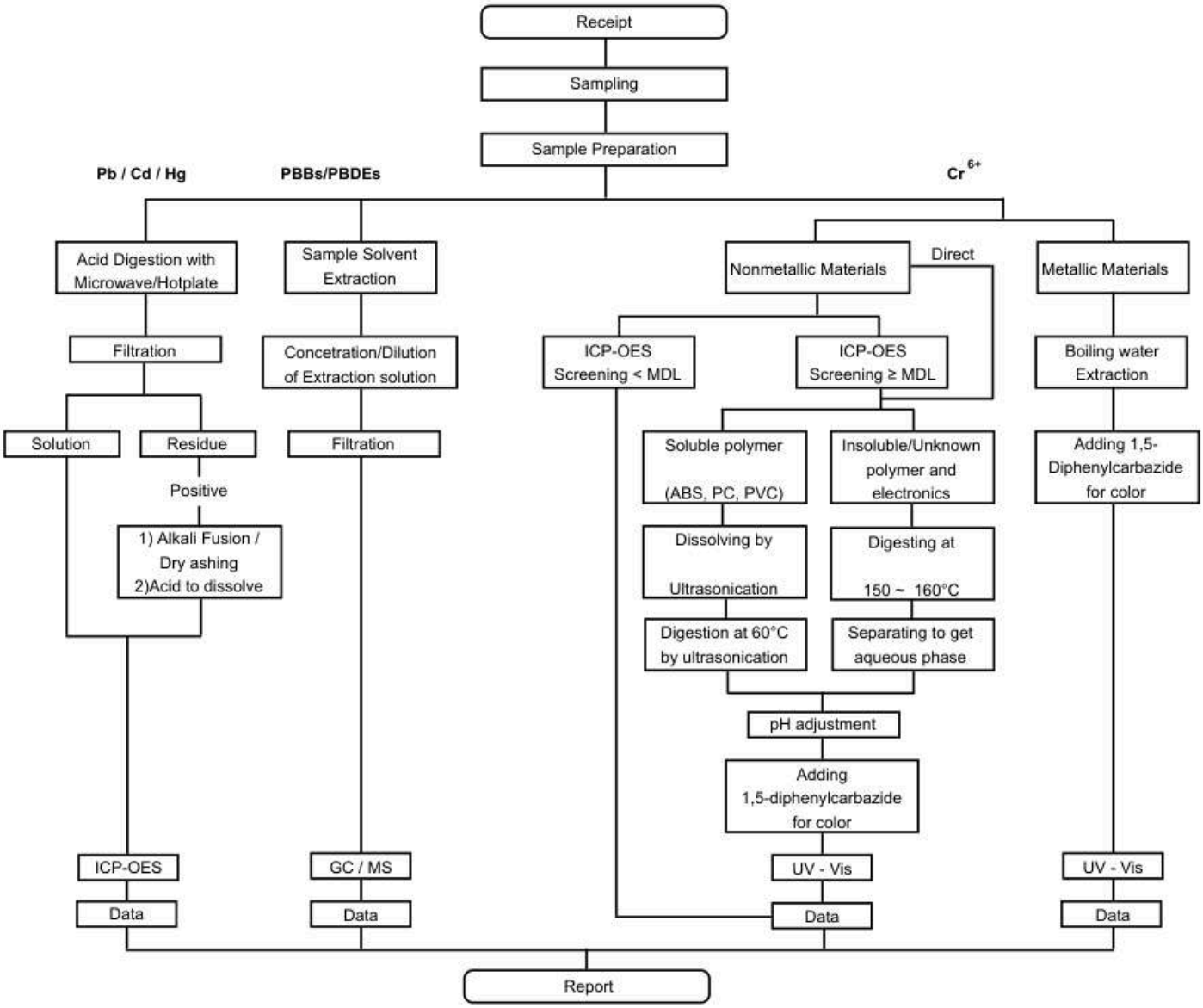
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## Flow Chart for RoHS Pb / Cd / Hg / $Cr^{6+}$ / PBBs&PBDEs Test




The samples were dissolved totally at the acid digestion step of the above flow chart for Cd, Pb, Hg.

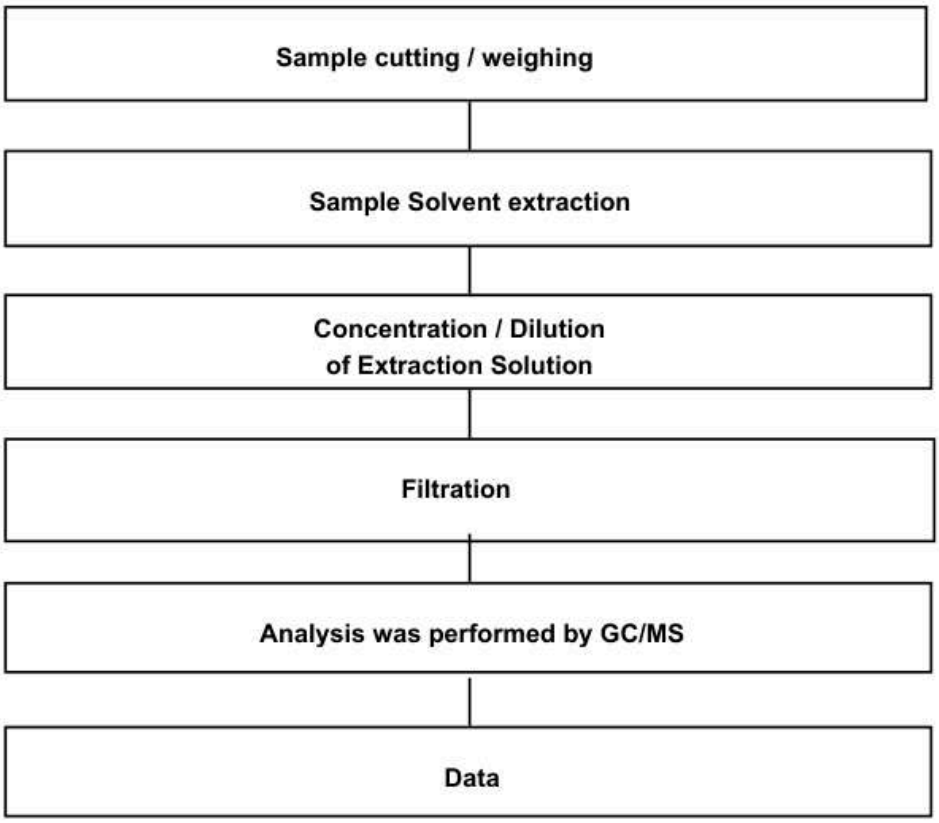
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## Flow Chart for PhthalateTest




*** End of Report ***

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空运 By Air




仅限货机
CAO

NO.212600314203210

CNAS 中国认可 检验 INSPECTION CNAS IB0071

# 运输危险性鉴定书

## Hazard Classification and Identification Report for Transport of Goods

## 危险品

样品名称 ： 锂金属电池 ML621-TZ1 3V 5.8mAh

Sample name: Lithium Metal Cell ML621-TZ1 3V 5.8mAh

委托单位 ： FDK株式会社
FDK CORPORATION

生产单位 ： FDK株式会社
FDK CORPORATION

上海化工院检测有限公司 检验检测专用章

Witness Better Life SICIT 上海化工院检测有限公司
SHANGHAI INSTITUTE OF CHEMICAL INDUSTRY TESTING CO.,LTD.

空运 By Air

空运 By Air

# 运输危险性鉴定书

Hazard Classification and Identification Report for Transport of Goods

NO. 212600314203210



| | | |
|---|---|---|
| 样品名称 Sample Name | 中文 Chinese | 锂金属电池 ML621-TZ1 3V 5.8mAh |
| | 英文 English | Lithium Metal Cell ML621-TZ1 3V 5.8mAh |
| 委托单位 Applicant | | FDK株式会社 FDK CORPORATION |
| 生产单位 Manufacturer | | FDK株式会社 FDK CORPORATION |
| 检验方法、程序 Inspection method and procedure | | 国际航空运输协会《危险品规则》67版 IATA Dangerous Goods Regulations (DGR) 67th Edition |
| 样品外观 Sample appearance | | 银色金属外壳 Silvery Metal shell |
| 包装件信息 Package information | | / |

| 序号 NO. | 电池种类 Battery type | 型号 Model | 容量Capacity /锂含量Li content | 放置方式 Placement | 单颗重量kg Unit weight | 数量 Quantity |
|---|---|---|---|---|---|---|
| 1 | 可充电锂金属电池芯 Rechargeable Li-metal cell | ML621-TZ1 | 5.8mAh / ≤0.3g | 电池单独运输 Battery only | 0.00026 | 12000 |

鉴定结论 IDENTIFICATION CONCLUSION

1. 危险性识别(Hazards identification)

杂项。
Miscellaneous.

2. 空运按照国际航空运输协会《危险品规则》办理的类项(Suggestion according to IATA DGR)

Proper Shipping Name:Lithium metal batteries
Class or Division:9
UN Number:UN3090

3. 包装要求(Packaging requirements)

按968第IA部分包装说明的要求办理。
The article is packaged according to the Packaging Instruction of 968 section IA.

仅限货机
Cargo Aircraft Only

检验日期: Inspection Date: 2025-12-11　签发日期: Issue Date: 2025-12-11　生效日期: Effective Date: 2026-01-01

| | |
|---|---|
| 备注 Comment | / |

批准 Approver: 王泉　审核 Checker: 董学胜　主检 Appraiser: 孙倩

SRICI

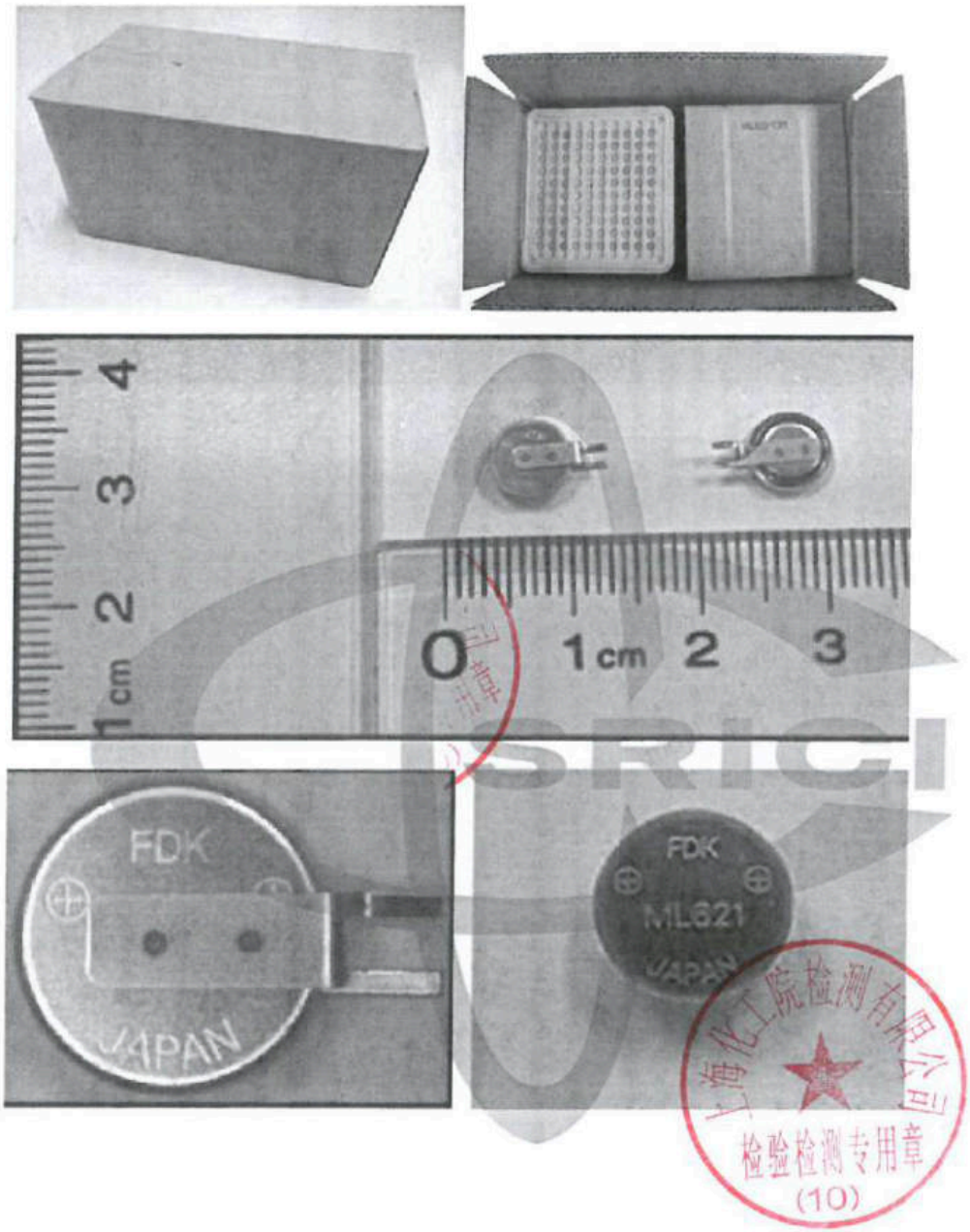
# 运输危险性鉴定书

Hazard Classification and Identification Report for Transport of Goods

NO. 212600314203210



| 序号 No. | 检验结果及其他事项 Inspection results and other things |
|---|---|
| 1 | 本鉴定书所述锂电池按照《危险品规则》(67版) 3.9.2.6.1(e)规定的质量管理体系进行制造。<br>本鉴定书所述锂电池不属于损坏或有缺陷的电池。<br>本鉴定书所述锂电池不进行以回收或处置为目的的航空运输，不属于废弃锂电池。<br>Lithium cells and batteries listed in this report were manufactured under the quality management program described in IATA DGR 67th 3.9.2.6.1(e).<br>Lithium cells and batteries listed in this report are not damaged or defective cells or batteries.<br>Lithium cells and batteries listed in this report are not waste lithium cells or batteries, and they will not be shipped for recycling or disposal. |
| 2 | 本鉴定书所述锂电池已通过联合国《试验和标准手册》第III部分38.3小节相应测试要求。<br>Lithium cells and batteries listed in this report are of the types proved to meet the requirements of each applicable test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3.<br>UN38.3试验概要编号<br>The UN38.3 Test Summary No. (s)<br>812300100711835<br>详细信息请扫描右侧二维码。<br>Please scan the QR code on the right for more information. |
| 3 | 锂电池必须完全封装在内包装内，位于外包装中。完成包装件必须满足II级包装性能标准。<br>Lithium cells and batteries must be placed in inner packagings that completely enclose the cell or battery and placed in an outer packaging. The completed package must meet the Packing Group II performance standards. |
| 4 | 电池具有适当的防短路措施。<br>Cells and batteries are properly protected to prevent short circuits. |
| 5 | 每个包装件必须使用9类锂电池或钠离子电池危险性标签(DGR图7.3.X)。<br>每个包装件必须贴有“仅限货机”标签(DGR图7.4.B)。<br>Each package must be labelled with the Class 9-Lithium Battery or Sodium Ion Battery hazard label(Figure 7.3.X in IATA DGR).<br>Each package must be labelled with the "Cargo Aircraft Only" label(Figure 7.4.B in IATA DGR). |
| 6 | 锂电池不得与第1类爆炸品(1.4S项除外)，2.1项易燃气体，第3类易燃液体，4.1项易燃固体或5.1项氧化性物质等危险品包装在同一外包装或集合包装内。<br>Lithium cells and batteries must not be packed in the same outer packaging or overpack with dangerous goods classified in Class 1 (explosives) other than Division 1.4S, Division 2.1 (flammable gases), Class 3 (flammable liquids), Division 4.1 (flammable solids) or Division 5.1 (oxidizers). |
| 7 | / |




***报告结束***

海 运
By Sea

NO.212600914803611

CNAS 中国认可 检验 INSPECTION CNAS IB0071

# 运输危险性鉴定书

## Hazard Classification and Identification Report for Transport of Goods

## 锂电池类物品

样品名称 ： 锂金属电池 ML621-TZ1 3V 5.8mAh

Sample name: Lithium Metal Cell ML621-TZ1 3V 5.8mAh

委托单位 ： FDK株式会社
FDK CORPORATION

生产单位 ： FDK株式会社
FDK CORPORATION

上海化工院检测有限公司 检验检测专用章

Witness Better Life SICIT 上海化工院检测有限公司
SHANGHAI INSTITUTE OF CHEMICAL INDUSTRY TESTING CO.,LTD.

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# 运输危险性鉴定书

Hazard Classification and Identification Report for Transport of Goods

NO. 212600914803611



| | | |
|---|---|---|
| 样品名称 Sample Name | 中文 Chinese | 锂金属电池 ML621-TZ1 3V 5.8mAh |
| | 英文 English | Lithium Metal Cell ML621-TZ1 3V 5.8mAh |
| 委托单位 Applicant | | FDK株式会社<br>FDK CORPORATION |
| 生产单位 Manufacturer | | FDK株式会社<br>FDK CORPORATION |
| 检验方法、程序 Inspection method and procedure | | 国际海事组织《国际海运危险货物规则》（2024版）<br>IMO International Maritime Dangerous Goods Code (2024 Edition) |
| 样品外观 Sample appearance | | 银色金属外壳<br>Silvery Metal shell |
| 包装件信息 Package information | | 重量≤30kg。<br>weight≤30kg. |

| 序号 NO. | 电池种类 Battery type | 型号 Model | 容量Capacity /锂含量Li content | 放置方式 Placement |
|---|---|---|---|---|
| 1 | 可充电锂金属电池芯 Rechargeable Li-metal cell | ML621-TZ1 | 5.8mAh / ≤0.3g | 电池单独运输 Battery only |

鉴定结论 IDENTIFICATION CONCLUSION

1. 危险性识别(Hazards identification)

锂金属电池。

Lithium metal battery.

2. 海运按照国际海事组织《国际海运危险货物规则》办理的类项(Suggestion according to IMO IMDG Code)

根据特殊规定188，该物品不受IMO IMDG Code其他条款限制。

The article is not subject to other provisions of IMO IMDG Code according to special provision 188.

3. 包装要求(Packaging requirements)

无。

None.

检验日期: Inspection Date: 2025-12-11　签发日期: Issue Date: 2025-12-11　生效日期: Effective Date: 2026-01-01

| | |
|---|---|
| 备注 Comment | / |

批准 Approver: 无象　审核 Checker: 董学胜　主检 Appraiser: 孙倩

SRICI

# 运输危险性鉴定书

Hazard Classification and Identification Report for Transport of Goods

NO. 212600914803611

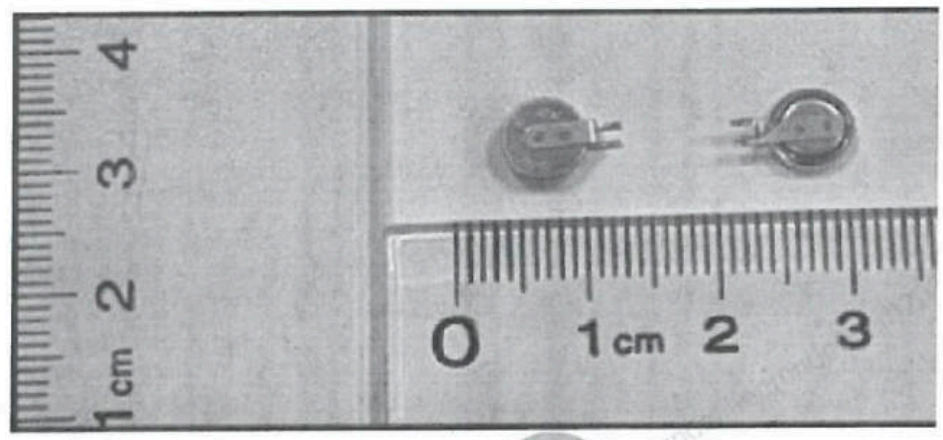


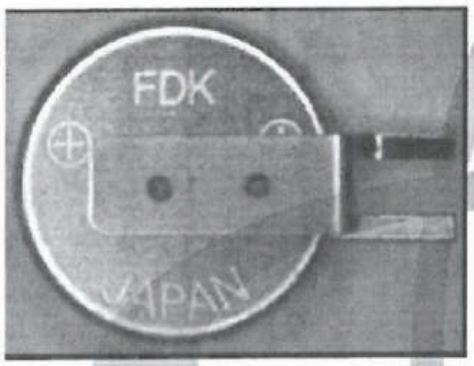
| 序号 No. | 检验结果及其他事项 Inspection results and other things |
|---|---|
| 1 | 本鉴定书所述锂电池按照《国际海运危险货物规则》(2024版) 2.9.4.5规定的质量管理体系进行制造。<br>Lithium cells and batteries listed in this report were manufactured under the quality management program described in IMDG CODE 2024 EDITION 2.9.4.5 . |
| 2 | 本鉴定书所述锂电池已通过联合国《试验和标准手册》第III部分38.3小节相应测试要求。<br>包装件能够承受1.2m跌落试验。<br>Lithium cells and batteries listed in this report are of the types proved to meet the requirements of each applicable test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3.<br>The package has passed the 1.2m drop test.<br>UN38.3试验概要编号<br>The UN38.3 Test Summary No.(s)<br>812300100711835<br>详细信息请扫描右侧二维码。<br>Please scan the QR code on the right for more information. |
| 3 | 锂电池完全封装在内包装内，位于坚固的外包装中。<br>Lithium cells and batteries are packed in inner packagings that completely enclose the cell or battery and placed in a strong outer packaging. |
| 4 | 电池具有适当的防短路措施。<br>Cells and batteries are properly protected to prevent short circuits. |
| 5 | 每个包装件必须标示恰当的锂或钠离子电池标记。<br>装有锂电池的包装件，符合国际民航组织《危险物品安全航空运输技术细则》第4部分第II章的包装说明965或968第IB部分规定的，黏贴5.2.1.10(锂或钠离子电池标记)和5.2.2.2所示的9A型标签，应视为符合本特殊规定188的规定。注：《国际海运危险货物规则》(2020版)5.2.1.10中显示电话号码附加信息的锂电池标记，可继续使用至2026年12月31日。<br>Each package shall be marked with the appropriate lithium or sodium ion battery mark.<br>Packages containing lithium batteries packed in conformity with the provisions of part 4, chapter II, packing instructions 965 or 968, section IB of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by air that bear the mark as shown in 5.2.1.10(lithium or sodium ion battery mark) and the label shown 5.2.2.2, Model No.9A shall be deemed to meet the provisions of this special provision 188. Note: The mark shown in 5.2.1.10(lithium battery mark) of the IMDG CODE 2020 EDITION, showing the telephone number for additional information, may continue to be applied until 31 December 2026. |
| 6 | / |
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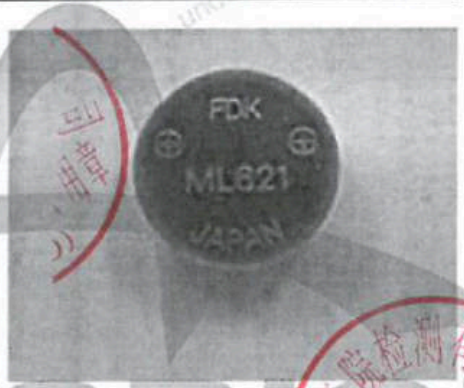
# 运输危险性鉴定书

Hazard Classification and Identification Report
for Transport of Goods






***报告结束***

# UN Test Data Model: ML621-TZ1

November 8,2023
D-B-062-09

**1.Test Item:** Drop Test

**2.Test Purpose:** This test simulates the drop of the packaging during transport.

**3.Test Procedure:**

Number of Test Samples (Per design type, Manufacturer ) and Drop Orientation For other than flat drops the centre of gravity must be vertically over the point of impact. Where more than one orientation is possible for a given drops, the orientation most likely to result in failure of the packaging must be used.

| Packaging | Number of test samples | Drop orientation |
|---|---|---|
| Boxes of natural wood<br>Plywood boxes<br>Reconstituted wood boxes<br>Fibreboard boxes<br>Plastic boxes<br>Steel or aluminum boxes<br>Composite Packagings which are in the shape of a box. | Five (one for each drop) | First drop: flat on the bottom<br>Second drop: flat on the top<br>Third drop: flat on the long side<br>Fourth drop: flat on the short side<br>Fifth drop: on a corner |

**FDK Internal Procedure:**

Packaging: Fiberboard boxes. Number of test samples: Five(one for each drop). It may do the drop of five orientations with one sample if the packing does not have the big damage.

Drop orientation: As above.

**4.Test Requirements:**

A Package passes the test if it meets the following criteria:

Each package is capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents.

**5.Type of Lithium Battery :** Coin type rechargeable lithium cell

**6.Lithium Content :** 0.002g

**7.Transport Method :**AIR / BOAT

**8.Packing Instruction :** Section Ⅰ A

**9.Test Date:** 2015/11/19

**10.Test Data:** PASS(Drop height 1.2m)

after examination



after examination



| Packaging size: |
|---|
| 333*185*131 mm |
| Packaging weight (before): |
| 6 kg |
| Packaging weight (after): |
| 6 kg |

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# UN Test Data (Model: ML621-TZ1 )

**1.Test Item:** Altitude simulation (T1)

**2.Test Purpose:** This test simulates air transport under low-pressure conditions.

**3.Test Procedure:**

The cells and batteries shall be stored at a pressure of 11.6kPa or less for at least six hours at ambient temperature(20±5°C).

**FDK Internal Procedure:**

As above.

**4.Test Requirements:**

No mass loss(less than 0.5% or 0.2% or 0.1%),no leakage,no venting,no disassembly,no rupture and no fire,and the voltage retention is not less than 90%.

The requirement relating to voltage is not applicable to test cells at fully discharged states.

**5.Test Date:** 2022/3/22 2022/3/29

**6.Test Data and Results:**

| **Type of Lithium Battery:** coin type rechargeable lithium cell | | | | | | | **Lithium Content:** 0.002 g | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Cell No.** | | **Mass(g)** | | **Mass loss (< 0.5%)** | **Voltage(V)** | | **Voltage Retention (>90%)** | **Other event** | **Result** | **Judgement** |
| | | **Before test** | **After test** | | **Before test** | **After test** | | | | |
| first cycle, fully charged state | 1 | 0.2174 | 0.2177 | -0.14 | 2.933 | 2.934 | 100.03 | 0 | PASS | PASS |
| | 2 | 0.2180 | 0.2182 | -0.09 | 2.930 | 2.930 | 100.00 | 0 | PASS | |
| | 3 | 0.2183 | 0.2186 | -0.14 | 2.937 | 2.939 | 100.07 | 0 | PASS | |
| | 4 | 0.2176 | 0.2178 | -0.09 | 2.935 | 2.936 | 100.03 | 0 | PASS | |
| | 5 | 0.2177 | 0.2178 | -0.05 | 2.928 | 2.930 | 100.07 | 0 | PASS | |
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| 25th cycle, fully charged state | 6 | 0.2184 | 0.2184 | -0.01 | 2.683 | 2.684 | 100.04 | 0 | PASS | |
| | 7 | 0.2172 | 0.2173 | -0.03 | 2.692 | 2.690 | 99.93 | 0 | PASS | |
| | 8 | 0.2179 | 0.2179 | -0.01 | 2.664 | 2.666 | 100.08 | 0 | PASS | |
| | 9 | 0.2205 | 0.2205 | -0.02 | 2.684 | 2.684 | 100.00 | 0 | PASS | |
| | 10 | 0.2186 | 0.2187 | -0.03 | 2.681 | 2.683 | 100.07 | 0 | PASS | |
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Notes: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire,
0-No leakage, no venting, no disassembly, no rupture & no fire

**Note: Reference Edition:**

This UN test data meets test requirement of "UN Manual of Test and Criteria 7th revised edition part Ⅲ, sub-section 38.3".

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# UN Test Data (Model: ML621-TZ1 )

**1.Test Item:** Thermal Test (T2)

**2.Test Purpose:** This test assesses cell and battery seal integrity and internal electrical connections. The test is conducted using rapid and extreme temperature changes.

**3.Test Procedure:**

Test cells and batteries are to be stored for at least six hours at a test temperature equal to 72±2℃, followed by storage for at least six hours at temperature equal to -40±2℃.The maximum time internal between test temperature extremes is 30 minutes.This procedure is to be repeated 10 times after which all test cells and batteries are to be storedfor 24 hours at ambient temperature (20 ±5℃)For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours.

**FDK Internal Procedure:**

As above.

**4.Test Requirements:**

No mass loss(less than 0.5% or 0.2% or 0.1%),no leakage,no venting,no disassembly,no rupture and no fire,and the voltage retention is not less than 90%.

The requirement relating to voltage is not applicable to test cells at fully discharged states.

**5.Test Date:** 2022/3/23-2022/3/29 2022/3/31-2022/4/11

**6.Test Data and Results:**

| **Type of Lithium Battery:** coin type rechargeable lithium cell | | | | | | | **Lithium Content:** 0.002 g | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Cell No.** | | **Mass(g)** | | **Mass loss (< 0.5%)** | **Voltage(V)** | | **Voltage Retention (>90%)** | **Other event** | **Result** | **Judgement** |
| | | **Before test** | **After test** | | **Before test** | **After test** | | | | |
| first cycle, fully charged state | 1 | 0.2177 | 0.2175 | 0.09 | 2.933 | 2.901 | 98.91 | 0 | PASS | PASS |
| | 2 | 0.2181 | 0.2178 | 0.14 | 2.931 | 2.883 | 98.36 | 0 | PASS | |
| | 3 | 0.2185 | 0.2182 | 0.14 | 2.939 | 2.882 | 98.06 | 0 | PASS | |
| | 4 | 0.2178 | 0.2176 | 0.09 | 2.936 | 2.874 | 97.89 | 0 | PASS | |
| | 5 | 0.2175 | 0.2174 | 0.05 | 2.929 | 2.861 | 97.68 | 0 | PASS | |
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| 25th cycle, fully charged state | 6 | 0.2184 | 0.2185 | -0.05 | 2.684 | 2.653 | 98.85 | 0 | PASS | |
| | 7 | 0.2172 | 0.2176 | -0.18 | 2.691 | 2.662 | 98.92 | 0 | PASS | |
| | 8 | 0.2179 | 0.2178 | 0.05 | 2.663 | 2.629 | 98.72 | 0 | PASS | |
| | 9 | 0.2205 | 0.2202 | 0.14 | 2.683 | 2.635 | 98.21 | 0 | PASS | |
| | 10 | 0.2186 | 0.2180 | 0.27 | 2.633 | 2.597 | 98.63 | 0 | PASS | |
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Notes: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire,
0-No leakage, no venting, no disassembly, no rupture & no fire

**Note: Reference Edition:**

This UN test data meets test requirement of "UN Manual of Test and Criteria 7th revised edition part Ⅲ, sub-section 38.3".

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# UN Test Data (Model: ML621-TZ1 )

**1.Test Item:** Vibration (T3)

**2.Test Purpose:** This test simulates vibration during transport.

**3.Test Procedure:**

Cells and batteries are firmly secured to the platform of the vibration machine without distorting the cells in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes.
This cycle shall be repeated 12 times for total of 3 hours for each of the three mutually perpendicular mounting positions of the cell. One of the directions of vibration must be perpendicular to the terminal face.
The logarithmic frequency sweep is as follows: from 7 Hz a peak acceleration of 1gn is maintained frequency increased until a peak acceleration of 8gn occurs (approximately 50Hz).A peak acceleration of 8 $g_n$ is then maintained until the frequency is increased to 200Hz.

**FDK Internal Procedure:**

As above.

**4.Test Requirements:**

No mass loss(less than 0.5% or 0.2% or 0.1%),no leakage,no venting,no disassembly,no rupture and no fire,and the voltage retention is not less than 90%.
The requirement relating to voltage is not applicable to test cells at fully discharged states.

**5.Test Date:** 2022/4/13 2022/4/15-2022/4/18

**6.Test Data and Results:**

| **Type of Lithium Battery:** coin type rechargeable lithium cell | | | | | | | **Lithium Content:** 0.002 g | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Cell No.** | | **Mass(g)** | | **Mass loss (< 0.5%)** | **Voltage(V)** | | **Voltage Retention (>90%)** | **Other event** | **Result** | **Judgement** |
| | | **Before test** | **After test** | | **Before test** | **After test** | | | | |
| first cycle, fully charged state | 1 | 0.2175 | 0.2177 | -0.09 | 2.876 | 2.876 | 100.00 | 0 | PASS | PASS |
| | 2 | 0.2177 | 0.2178 | -0.05 | 2.877 | 2.879 | 100.07 | 0 | PASS | |
| | 3 | 0.2183 | 0.2183 | 0.00 | 2.874 | 2.876 | 100.07 | 0 | PASS | |
| | 4 | 0.2175 | 0.2176 | -0.05 | 2.873 | 2.872 | 99.97 | 0 | PASS | |
| | 5 | 0.2175 | 0.2175 | 0.00 | 2.872 | 2.875 | 100.10 | 0 | PASS | |
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| | | | | | | | | | | |
| 25th cycle, fully charged state | 6 | 0.2185 | 0.2187 | -0.09 | 2.640 | 2.638 | 99.92 | 0 | PASS | |
| | 7 | 0.2177 | 0.2175 | 0.09 | 2.650 | 2.649 | 99.96 | 0 | PASS | |
| | 8 | 0.2178 | 0.2177 | 0.05 | 2.628 | 2.624 | 99.85 | 0 | PASS | |
| | 9 | 0.2202 | 0.2198 | 0.18 | 2.642 | 2.641 | 99.96 | 0 | PASS | |
| | 10 | 0.2182 | 0.2176 | 0.27 | 2.607 | 2.604 | 99.88 | 0 | PASS | |
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Notes: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire,
0-No leakage, no venting, no disassembly, no rupture & no fire

**Note: Reference Edition:**

This UN test data meets test requirement of "UN Manual of Test and Criteria 7th revised edition part Ⅲ, sub-section 38.3".

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# UN Test Data (Model: ML621-TZ1 )

**1.Test Item:** Shock (T4)

**2.Test Purpose:** This test assesses the robustness of cells and batteries against cumulative shocks.

**3.Test Procedure:**

Test cells and batteries shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. Each cell shall be subjected to a half-sine shock of pack acceleration of 150 $g_n$ and pulse duration of 6 milliseconds. Each cell or battery shall be subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the cell or battery for a total of 18 shocks.

**FDK Internal Procedure:**

As above.

**4.Test Requirements:**

No mass loss(less than 0.5% or 0.2% or 0.1%),no leakage,no venting,no disassembly,no rupture and no fire,and the voltage retention is not less than 90%.

The requirement relating to voltage is not applicable to test cells at fully discharged states.

**5.Test Date:** 2022/4/14 2022/4/21

**6.Test Data and Results:**

| **Type of Lithium Battery:** coin type rechargeable lithium cell | | | | | | | **Lithium Content:** 0.002 g | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Cell No.** | | **Mass(g)** | | **Mass loss (< 0.5%)** | **Voltage(V)** | | **Voltage Retention (>90%)** | **Other event** | **Result** | **Judgement** |
| | | **Before test** | **After test** | | **Before test** | **After test** | | | | |
| first cycle, fully charged state | 1 | 0.2178 | 0.2174 | 0.18 | 2.876 | 2.876 | 100.00 | 0 | PASS | PASS |
| | 2 | 0.2181 | 0.2179 | 0.09 | 2.878 | 2.878 | 100.00 | 0 | PASS | |
| | 3 | 0.2182 | 0.2178 | 0.18 | 2.875 | 2.876 | 100.03 | 0 | PASS | |
| | 4 | 0.2175 | 0.2173 | 0.09 | 2.873 | 2.873 | 100.00 | 0 | PASS | |
| | 5 | 0.2175 | 0.2174 | 0.05 | 2.873 | 2.873 | 100.00 | 0 | PASS | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 25th cycle, fully charged state | 6 | 0.2188 | 0.2187 | 0.05 | 2.638 | 2.637 | 99.96 | 0 | PASS | |
| | 7 | 0.2173 | 0.2171 | 0.09 | 2.649 | 2.647 | 99.92 | 0 | PASS | |
| | 8 | 0.2178 | 0.2175 | 0.14 | 2.625 | 2.623 | 99.92 | 0 | PASS | |
| | 9 | 0.2197 | 0.2195 | 0.09 | 2.641 | 2.641 | 100.00 | 0 | PASS | |
| | 10 | 0.2174 | 0.2173 | 0.05 | 2.605 | 2.604 | 99.96 | 0 | PASS | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |
| | | | | | | | | | | |

Notes: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire,
0-No leakage, no venting, no disassembly, no rupture & no fire

**Note: Reference Edition:**

This UN test data meets test requirement of "UN Manual of Test and Criteria 7th revised edition part Ⅲ, sub-section 38.3".

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# UN Test Data (Model: ML621-TZ1 )

**1.Test Item:** External short circuit (T5)

**2.Test Purpose:** This test simulates an external short circuit.

**3.Test Procedure:**

The cell or battery to be tested shall be heated for a period of time necessary to reach a homogeneous stabilized ttemperature of 57±4℃, measured on the external case. This period of time depends on the size and design of the cell or battery and should be assessed and documented. If this assessment is not feasible, the exposure time shall be at least 6 hours for small cells and small batteries, and 12 hours for large cells and large batteries. Then the cell or battery at 57±4℃ shall be subjected to one short circuit condition with a total external resistance of less than 0.1 ohm.

**FDK Internal Procedure:**

As above.

**4.Test Requirements:**

External temperature of test batteries does not exceed 170°C and there is no disassembly, no rupture and no fire within six hours of this test.

**5.Test Date:** 2022/4/18-2022/4/19 2022/4/25-2022/4/26

**6.Test Data and Results:**

**Type of Lithium Battery:** coin type rechargeable lithium cell

**Lithium Content:** 0.002 g

| Cell No. | | Maximum Temperature (°C) | Other event | Result | Judgement |
|---|---|---|---|---|---|
| first cycle, fully charged state | 1 | 58.6 | 0 | PASS | PASS |
| | 2 | 58.6 | 0 | PASS | |
| | 3 | 58.5 | 0 | PASS | |
| | 4 | 58.7 | 0 | PASS | |
| | 5 | 58.6 | 0 | PASS | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 25th cycle, fully charged state | 6 | 58.3 | 0 | PASS | |
| | 7 | 58.0 | 0 | PASS | |
| | 8 | 58.3 | 0 | PASS | |
| | 9 | 58.1 | 0 | PASS | |
| | 10 | 58.3 | 0 | PASS | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Notes: D-Disassembly, R-Rupture, F-Fire, 0-No disassembly, no rupture & no fire

**Note: Reference Edition:**

This UN test data meets test requirement of "UN Manual of Test and Criteria 7th revised edition part Ⅲ, sub-section 38.3".

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# UN Test Data (Model: ML621 )

**1.Test Item:**Crush (T6)

**2.Test Purpose:** This test simulate mechanical abuse from crush that may result in an internal short circuit.

**3.Test Procedure:** (applicable to prismatic, pouch, coin/button cells and cylindrical cells not more than 18.0 mm in diameter)

A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5 cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached.

(a) The applied force reaches 13 kN±0.78 kN;

(b) The voltage of the cell drops by at least 100 mV;

(c) The cell is deformed by 50% or more of its original thickness.

Once the maximum pressure has been obtained, the voltage drops by 100 mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure shall be released.

Each test cell or component cell is to be subjected to one crush only. The test sample shall be observed for a further 6h.

The test shall be conducted using test cells or component cells that have not previously been subjected to other tests.

**FDK Internal Procedure:**

As above.

**4.Test Requirements:**

External temperature of test batteries does not exceed 170°C and there is no disassembly,and no fire within six hours of this test.

**5.Test Date:** 2022/5/10

**6.Test Data and Results:**

**Type of Lithium Battery:** coin type rechargeable lithium cell

**Lithium Content:** 0.002 g

| Cell No. | | Event | Result | Judgement |
|---|---|---|---|---|
| first cycle, 50% charged state | 1 | 0 | PASS | PASS |
| | 2 | 0 | PASS | |
| | 3 | 0 | PASS | |
| | 4 | 0 | PASS | |
| | 5 | 0 | PASS | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| 25th cycle, 50% charged state | 6 | 0 | PASS | |
| | 7 | 0 | PASS | |
| | 8 | 0 | PASS | |
| | 9 | 0 | PASS | |
| | 10 | 0 | PASS | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Notes: D-Disassembly, F-Fire, 0-No disassembly & no fire & not exceed 170°C

**Note: Reference Edition:**

This UN test data meets test requirement of "UN Manual of Test and Criteria 7th revised edition part Ⅲ, sub-section 38.3".

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# UN Test Data (Model: ML621 )

**1.Test Item:**Forced discharge (T8)

**2.Test Purpose:** This test evaluates the ability of a primary or a rechargeable cell to withstand a forced discharged condition.

**3.Test Procedure:**

Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer. The specified discharge current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell. Each cell shall be forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in Ampere).

**FDK Internal Procedure:**

As above.

**4.Test Requirements:**

There is no disassembly and no fire within seven days of this test.

**5.Test Date:** 2022/5/10-2022/5/10 2022/4/5-2022/4/13

**6.Test Data and Results:**

**Type of Lithium Battery:** coin type rechargeable lithium cell

**Lithium Content:** 0.002 g

| Cell No. | | Event | Result | Judgement |
|---|---|---|---|---|
| first cycle, fully discharged state | 1 | 0 | PASS | PASS |
| | 2 | 0 | PASS | |
| | 3 | 0 | PASS | |
| | 4 | 0 | PASS | |
| | 5 | 0 | PASS | |
| | 6 | 0 | PASS | |
| | 7 | 0 | PASS | |
| | 8 | 0 | PASS | |
| | 9 | 0 | PASS | |
| | 10 | 0 | PASS | |
| 25th cycle, fully discharged state | 11 | 0 | PASS | |
| | 12 | 0 | PASS | |
| | 13 | 0 | PASS | |
| | 14 | 0 | PASS | |
| | 15 | 0 | PASS | |
| | 16 | 0 | PASS | |
| | 17 | 0 | PASS | |
| | 18 | 0 | PASS | |
| | 19 | 0 | PASS | |
| | 20 | 0 | PASS | |

Notes: D-Disassembly, F-Fire, 0-No disassembly & no fire

**Note: Reference Edition:**

This UN test data meets test requirement of "UN Manual of Test and Criteria 7th revised edition part Ⅲ, sub-section 38.3".

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# UN38.3 试验概要
# UN38.3 Test Summary

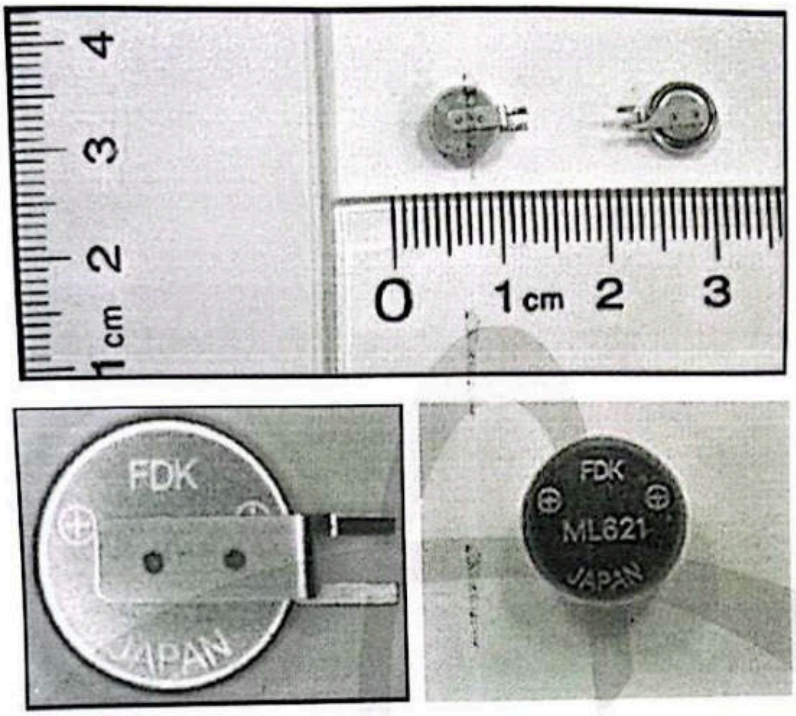
812300100711835

| 单位信息 Company information | | | |
|---|---|---|---|
| 委托单位 Consignor | FDK 株式会社 FDK CORPORATION<br>東京都港区港南一丁目 6 番 41 号 Shibaura Crystal Shinagawa, 1-6-41 Konan, Minato-ku, Tokyo 108-8212 Japan<br>13701796588 thomas.fu@fdk.co.jp www.fdk.co.jp | | |
| 生产单位 Manufacturer | FDK 株式会社 FDK CORPORATION<br>東京都港区港南一丁目 6 番 41 号 Shibaura Crystal Shinagawa, 1-6-41 Konan, Minato-ku, Tokyo 108-8212 Japan<br>13701796588 thomas.fu@fdk.co.jp www.fdk.co.jp | | |
| 测试单位 Test lab | FDK 株式会社 FDK CORPORATION<br>東京都港区港南一丁目 6 番 41 号 Shinagawa Crystal Square Bldg.,1-6-41 Konan, Minato-ku, Tokyo 108-8212 Japan<br>13701796588 thomas.fu@fdk.co.jp www.fdk.co.jp | | |
| **电池信息 Battery information** | | | |
| 名称 Name | 锂金属电池 Lithium metal cell | 品牌 Brand | FDK |
| 型号 Type | ML621-TZ1 | 原始测试型号 Original tested type | ML621 |
| 标称电压(V) Nominal voltage | 3 | 容量/能量 Capacity/energy | 5.8mAh |
| 描述 Description | 可充电锂金属电池芯 Rechargeable Li-metal cell | 锂含量(g) Li content | 0.002 |
| 质量(kg) Mass | 0.000251 | 外观 Appearance | 银色金属外壳 Silvery metal shell |
| **测试信息 Test information** | | | |
| 原报告编号 Original test report No. | UN-20230215-01 | 测试报告日期 Date of test report | 2023-02-15 |
| 测试标准 Test standard | 联合国《试验和标准手册》第 38.3 章 UNITED NATIONS Manual of Tests and Criteria 38.3 | | ST/SG/AC.10/11/Rev.7 |
| T.1 高度模拟 Altitude simulation | 合格 Passed | T.2 温度测试 Thermal test | 合格 Passed |
| T.3 振动测试 Vibration | 合格 Passed | T.4 冲击测试 Shock | 合格 Passed |
| T.5 外部短路 External short circuit | 合格 Passed | T.6 挤压 Crush | 合格 Passed |
| T.7 过度充电 Overcharge | / | T.8 强制放电 Forced discharge | 合格 Passed |
| 38.3.3 (f) | / | 38.3.3 (g) | / |

# UN38.3 试验概要
# UN38.3 Test Summary

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**样品图片 Sample Picture**




| | |
|---|---|
| 结论 Conclusion | 测试样品符合联合国《试验和标准手册》ST/SG/AC.10/11/Rev.738.3 标准要求。The tested samples meet the requirements of test items of the UNITED NATIONS Manual of Tests and CriteriaST/SG/AC.10/11/Rev.7 38.3 |
| 备注 Remark | / |
| 签名 Signature 职务 Title | 王寅 副总工程师 Vice chief engineer |
| 签发日期 Issued date | 2023-02-24 |

-验证码:139202-

***报告结束***

UN-20230215-01

Issue: February 15, 2023

FDK

# Certificate of UN Test for Lithium Metal Cell

| Specifications | | | |
|---|---|---|---|
| Model : ML621-TZ1 [ Shape : Coin] | | | |
| Nominal voltage | 3V | Product mass | 0.3g |
| Nominal capacity | 5.8mAh | Lithium equivalent content | 0.002g |

**Manual of Tests and Criteria / Rev.7 / 38.3 Lithium metal and lithium ion batteries**

Test report number :C-105-00 Date of test report : February 15, 2023

| No. | Test items | Test results | Note | Number of test cells | |
|---|---|---|---|---|---|
| T1 | Altitude simulation | Pass | | 1st cycle, Fully charged 5 cells | 25th cycle, Fully charged 5 cells |
| T2 | Thermal test | Pass | | | |
| T3 | Vibration | Pass | | | |
| T4 | Shock | Pass | | | |
| T5 | External short circuit | Pass | | | |
| T6 | Crush | Pass | | 1st cycle, 50% charged 5 cells | 25th cycle, 50% charged 5 cells |
| T7 | Overcharge | — | | — | |
| T8 | Forced discharge | Pass | | 1st cycle, Fully discharged 10 cells | 25th cycle, Fully discharged 10 Cells |

| Information | | |
|---|---|---|
| Manufacturer / Seller | FDK CORPORATION<br>Konan, Minato-ku, Tokyo 108-8212 Japan<br>TEL: +81-3-5715-7400 E-mail: lithium_battery_info@fdk.co.jp<br>Website: http://www.fdk.com/ | |
| Test laboratory | FDK CORPORATION (Tottori Plant)<br>28 Ohta, Iwami-cho, Iwami- gun,Tottori, 681-0063,Japan<br>TEL: +81-857-73-1771 E-mail: lithium_battery_info@fdk.co.jp<br>Website: http://www.fdk.com/ | |

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