



Issued date: January 1, 2014

SAFETY DATA SHEET (SDS)

1. Product and Company identification

Product Category : Cobalt Titanium Rechargeable Lithium Battery

Nominal Voltage : 3 V

Product name

Type	Lithium (g)
UT614	0.003
UT621	0.004

Supplier's Name : FDK CORPORATION

Supplier's Address : 5-36-11, Shimbashi, Minato-Ku, Tokyo, 105-8677, Japan

Telephone +81-3-3434-1279

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 aim to provide information about ingredients, notification of handling and transportation regulations as a useful reference.

2. Hazards identification

The important hazards and adverse effects of the chemical product	No information available
Chemical product - 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. Risk of explosion by fire is anticipated if batteries are disposed of in fire or heated above 100 degree Celsius. Stacking or jumbling of batteries may cause external short circuits, heat generation, in some case, allowing fire or explosion.

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

3. Composition/ information on Ingredients

Material	CAS No.	Contents
Lithium titanate	12031-95-7	1 ~ 25 wt%
Lithium cobaltate	12190-79-3	5 ~ 25 wt%
Electrolyte[Mixture of organic solvent]	—	5 ~ 20 wt%

4. First-aid measures

Inhalation	If ingredient leaked out from inside of a battery and if inhaled it, move to a place where fresh air is provided. Refer for medical attention.
Skin contact	If ingredient leaked out from inside of a battery and stuck on skin, wash the contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, this may cause sores on the skin. Refer for medical attention.
Eyes contact	If ingredient leaked out from inside of a battery and came into eyes, flush the eyes with plenty of water for at least 15 minutes immediately without rubbing. Take a medical treatment. If appropriate procedures are not taken, this may cause an eye irritation.
Swallowing	In case of swallowing of battery, immediately refer for medical attention.

5. Fire-fighting measures

Fire extinguishing agent:

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

Extinguishing method:

Escape batteries to safe place prevent from ignition by spreading fire.

Because packaging material of battery is paper, use water extinguisher, CO2 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 the respiratory protection equipment in some cases.

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 case, take action as showing below.

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

Environmental precautions: Clean up it quickly. Specific environmental precaution is 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 above 100°C or incinerate. Do not pile up or mingle batteries with each other. Do not place battery on metal case, metal plate or antistatic material. In case of multi cell application, replace all batteries to new at once when replacing used batteries.
Storage	Be sure to store batteries in well-ventilated, dry and cool conditions. Keep away from water, rain, snow, frost or dew condensation. Do not store batteries near source of heat or nozzle of hot air. Do not store batteries in direct sunshine. Take care not to get wet packing by dew condensation when packing is removed from cold to warm and humid condition. Enough number of fire fighting apparatuses should be installed in warehouse.

8. Exposure controls and personal protection

There is no need of personal protective equipment on 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 circuit.

11. Toxicological information

Since chemicals are contained in a sealed can, there are no hazards.
 Toxicological information of main components of battery is shown below as reference.

Lithium titanate

Acute toxicity: No information at present

Local effects: Stimulus to a skin, to mucous membrane in particular. Touching on a skin or mucous membrane may cause disorders.

Chronic toxicity or long-term toxicity: Inhalation of powder dust or fume for a long time (at least 3 months) may cause specific central nerve symptom like Parkinson's disease.

Lithium cobaltate

Acute toxicity: No information at present (Reference: Cobalt oxide :Rabbit :Oral intake: LD₅₀=20mg/kg)
 Impairment of liver function and hypertrophied thyroid gland resulting from an excessive intake of cobalt compounds have been reported.

Local effects: No information at present

Skin sensitivity: An eczema and papules caused by cobalt allergy are known.

Electrolyte

Acute toxicity: No information at present

Local effects: Slight stimulus to an eye

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, battery should be insulated in proper manner; covering both terminals by tape, wrapping of battery in insulative bag or packing battery in original package is recommended in order to prevent ignition or explosion due to short-circuit.

14. Transportation Information

Lithium metal cells and batteries are classified as Class 9 Dangerous Goods in the United Nations Recommendation, 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 United Nations Recommendation is required.

Our battery (listed on section 1) and its shipping package complies with the requirement of UN Manual of Test and Criteria, Part III, subsection 38.3 as well as the requirements described below, so it is permitted to transport.

<Air Transport>

Our battery is applicable to IATA Dangerous Goods Regulations (IATA-DGR) Packing Instruction 968 section II because it corresponds to the cell (or battery) -lithium content is less than 0.3g. Our battery and its shipping package is permitted to transport as Exempted Dangerous Goods when it complies with all requirements of the transport conditions for Section II.

<Sea Transport>

Our battery is applicable to the International Maritime Dangerous Goods Code (IMDG-Code) Special provision 188 because it corresponds to either case that the cell – lithium content is less than 1g or the battery – lithium content is less than 2g, so it is permitted to transport as Exempted Dangerous Goods when it complies with all requirements of the transport conditions.

UN No.	Proper Shipping Name/Description
3090	Lithium metal batteries
3091	Lithium metal batteries contained in equipment
3091	Lithium metal batteries packed with equipment

Related regulations: Following regulations shall be cited and considered.

Transportations	Related organization / Issue documents
Air transport (by airplane)	ICAO (International Civil Aviation Organization) / TI (Technical Instruction) IATA (International Air Transport Association) / DGR (Dangerous Goods Regulations) * ¹
Maritime transport (by ship)	IMO (International Maritime Organization) / IMDG Code (International Maritime Dangerous Goods Code) * ²
Land transport (Intra-European)	RID (International Carriage of Dangerous Goods by Rail) , ADR (International Carriage of Dangerous Goods by Road)
USA / UN	USDOT (US Department of Transportation) / DOT 49 CFR (US law) UN: Recommendations on the transport of dangerous goods: Manual of Tests and Criteria 5th revised edition Amendment 1 [ST/SG/AC.10/11/Rev.5/Amend.1]: Part III, Subsection 38.3

15. Regulatory information

Environment-related law of batteries: EU nations have applicable law in accordance with Directive 2006/66/EC and other some countries, China, Korea, Brazil, some provinces of USA and Canada or so have similar law.

16. Other information

Reference

- IATA Dangerous Goods Regulations, latest edition *¹

Notes on this sheet

*1 Dangerous Goods Regulations – 55th Edition Effective 1 January 2014: International Air Transport Association (IATA)

*2 IMDG Code – 2012 Edition: International Maritime Organization (IMO)

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



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2. Hazards identification

The important hazards and adverse effects of the chemical product	No information available
Chemical product - 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. Risk of explosion by fire is anticipated if batteries are disposed of in fire or heated above 100 degree Celsius. Stacking or jumbling of batteries may cause external short circuits, heat generation, in some case, allowing fire or explosion.

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	Lithium cobaltate	12190-79-3	5 ~ 25 wt%
Negative electrode	Lithium titanate	12031-95-7	1 ~ 25 wt%
Electrolyte	Mixture of organic solvent	N/A	5 ~ 20 wt%

4. First-aid measures

Inhalation	If ingredient leaked out from inside of a battery and if inhaled it, move to a place where fresh air is provided. Refer for medical attention.
Skin contact	If ingredient leaked out from inside of a battery and stuck on skin, wash the contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, this may cause sores on the skin. Refer for medical attention.
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Dry chemical, alcohol-resistant foam, powder, atomized water, carbon dioxide and dry sand are effective.

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

Environmental precautions: Clean up it quickly. Specific environmental precaution is not necessary.

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

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Handling	Do not short-circuit, disassemble, deform, heat above 100°C or incinerate. Do not pile up or mingle batteries with each other. Do not place battery on metal case, metal plate or antistatic material. In case of multi cell application, replace all batteries to new at once when replacing used batteries.
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9. Physical and chemical properties

State : Solid

Shape : Coin-type

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Stability: Stable on regular handling

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Materials to avoid: Substances that cause short circuit.

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Acute toxicity: No information at present

Local effects: Stimulus to a skin, to mucous membrane in particular. Touching on a skin or mucous membrane may cause disorders.

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Acute toxicity: No information at present (Reference: Cobalt oxide :Rabbit :Oral intake: LD₅₀=20mg/kg)
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Local effects: No information at present

Skin sensitivity: An eczema and papules caused by cobalt allergy are known.

Mixture of organic solvent

Acute toxicity: No information at present

Local effects: Slight stimulus to an eye

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, battery should be insulated in proper manner; covering both terminals by tape, wrapping of battery in insulative bag or packing battery in original package is recommended in order to prevent ignition or explosion due to short-circuit.

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Our battery (listed on section 1) and its shipping package complies with the requirement of UN Manual of Test and Criteria, Part III, subsection 38.3 as well as the requirements described below, so it is permitted to transport.

<Air Transport>

Our battery is applicable to IATA Dangerous Goods Regulations (IATA-DGR) Packing Instruction 968 section II because it corresponds to the cell (or battery) -lithium content is less than 0.3g. Our battery and its shipping package is permitted to transport as Exempted Dangerous Goods when it complies with all requirements of the transport conditions for Section II.

Lithium metal batteries transported as cargo will be restricted to cargo aircraft only. Our products can be transported by cargo aircraft only since our products are classified into lithium metal batteries. Such lithium metal batteries contained in or packed with equipment are exempted

<Sea Transport>

Our battery is applicable to the International Maritime Dangerous Goods Code (IMDG-Code) Special provision 188 because it corresponds to either case that the cell – lithium content is less than 1g or the battery – lithium content is less than 2g, so it is permitted to transport as Exempted Dangerous Goods when it complies with all requirements of the transport conditions.

UN No.	Packing Instruction	Proper Shipping Name/Description
3090	968	Lithium metal batteries
3091	969	Lithium metal batteries packed with equipment
3091	970	Lithium metal batteries contained in equipment

Related regulations: Following regulations shall be cited and considered.

Transportations	Related organization / Issue documents
Air transport (by airplane)	ICAO (International Civil Aviation Organization) / TI (Technical Instruction) IATA (International Air Transport Association) / DGR (Dangerous Goods Regulations) * ¹
Maritime transport (by ship)	IMO (International Maritime Organization) / IMDG Code (International Maritime Dangerous Goods Code) * ²
Land transport (Intra-European)	RID (International Carriage of Dangerous Goods by Rail) , ADR (International Carriage of Dangerous Goods by Road)
USA / UN	USDOT (US Department of Transportation) / DOT 49 CFR (US law) UN: Recommendations on the transport of dangerous goods: Manual of Tests and Criteria 5th revised edition Amendment 2 [ST/SG/AC.10/11/Rev.5/Amend.2]: Part III, Subsection 38.3

15. Applicable legislation
EU Directive 2006/66/EC

16. Other information

Reference

- IATA Dangerous Goods Regulations, latest edition *¹

Notes on this sheet

*1 Dangerous Goods Regulations – 57th Edition Effective 1 January 2016: International Air Transport Association (IATA)

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