FDK

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SAFETY DATA SHEET (SDS)

1. Product and Company identification

Product Category : Lithium Rechargeable Battery (Lithium Ion Battery)
Product name : Small All-Solid-State SMD Battery
Nominal Voltage : 3 V

Type	Watt-hour rating (mWh)
SCC4532K	≦0.45
SCD4532K	≦0.3

Supplier's Name : FDK CORPORATION
Supplier's Address : 1-6-41, Konan, Minato-ku, Tokyo 108-8212 Japan
Telephone +81-3-5715-7420

Note: SDS is not applicable to the product used under sealed conditions as dry battery. The battery has no risk to life and health under normal use or transportation because constituent materials of battery are not leaked out by virtue of sintered sealing.
This SDS notify possible risk of our battery under abnormal use but mainly aim to provide information about constituent materials, notification of handling and transportation regulations as a useful reference.
The contents described herein are based on the information available at the time of preparation of this document, and we do not guarantee the safety of the battery by this document.

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 mainly consist of sintered ceramics. Therefore, risk of exposure never occurs unless battery is mechanically or electrically abused. If the battery is exposed to situations such as being put into fire, high pressure, high humidity, chemical immersion, strong shock, disassembling or electrical stress, the sealing may deteriorate and its contents may come out.

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

3. Principal Composition/information on Constituent materials

Part	Material	CAS No.	Contents
Positive electrode	Lithium cobalt phosphate	N/A	1 ～ 30 wt%
Negative electrode	Titanium oxide	13463-67-7	1 ～ 30 wt%
Electrolyte	Oxide-based solid electrolyte	N/A	20 ～ 70 wt%
Dielectric material	Carbon	7782-42-5	1 ～ 10 wt%
Constituent	Glass oxide	CAS:65997-17-3 (Pb free)	1 ～ 10 wt%
External electrode	Silver	7440-22-4	5 ～ 20 wt%
	Nickel	7440-02-0	< 4 wt%
	Tin	7440-31-5	< 6 wt%

4. First-aid measures

Chemical contents are sealed in sintered ceramics. But if the battery is mechanically or electrically abused or damaged, contents may leak out.

Inhalation	If constituent material leaked out from inside of a battery and if certain constituent material is inhaled, move to a place where fresh air is provided. Refer for medical attention.
Skin contact	If constituent material leaked out from inside of a battery and certain constituent material sticks 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 constituent material leaked out from inside of a battery and certain constituent material come into eyes, flush the eyes with running water for at least 15 minutes without rubbing. Take off contact lenses if appropriate. When washing the eye, open the eyelid well with fingers so that water reaches all parts of the eyeball and eyelid. Take a medical treatment. If appropriate procedures are not taken, this may cause an eye irritation.
Swallowing	If possible, insert a finger into the throat to make it vomit., and immediately refer for medical attention. Do not give anything by mouth if the victim is unconscious.

5. Fire-fighting measures

Fire extinguishing agents	Effective extinguishing agents include dry powder, water-soluble liquid foam, foam extinguishing agents, water spray, carbon dioxide and dry sand.
Fire extinguishing agents that should not be used	Direct strike of rod-shaped running water
Specific hazards	Oxides of phosphorus, lithium oxide, cobalt/cobalt oxide, etc., may release irritating and toxic gases and vapors in a fire.
Specific fire-extinguishing method	Firefighting should be done from upwind, and respiratory protection should be worn in some cases. Firewater may cause environmental pollution. Prevent spillage as much as possible so as not to affect the environment.
Protection of fire fighters	Wear personal protective equipment. Firefighters should wear self-contained breathing apparatus and fire extinguishing equipment.

6. Measures to be taken in case of leakage

Although the chemical components are hermetically sealed inside sintered ceramics, mechanical or electrical mishandling can destroy the battery and cause leakage of the components. In this case, the following measures should be taken:

Precautions for human body	Avoid dust generation. Even if it adheres to the skin, it will not cause serious health problems. However, wash off promptly.
Protective equipment and emergency measures	Avoid inhalation of vapors, mists, or gases. Wear protective equipment such as dust-proof mask and protective gloves, and wipe up.
Environmental precautions	Clean up promptly. No special environmental precautions are required.
Recovery and neutralization	Sweep up the dust, collect it in an empty container, treat it with an aqueous solution of slaked lime and soda ash, and rinse it off with plenty of water.
Methods and equipment for containment and cleanup	Place collected material in a sealed container. Dispose of the collected materials according to the instructions of the local government. Ask a specialized contractor to collect.

7. Handling and storing

Handling	Do not short-circuit, disassemble, deform, heat or incinerate. 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. Do not mix the different type of batteries, the new and old batteries of the same type, or the different manufacture of the same type batteries. Do not hit the battery. Do not use batteries for unspecified purposes.
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. Keep batteries out of reach of children.

8. Exposure controls and personal protection

There is no need of personal protective equipment on regular handling and storage. However, if a large amount of battery component powder or the like is leaked due to abnormal mechanical or electrical use, the following protective equipment should be used. Respiratory protection : Mask (with a filter preferably)
Hand protection : Synthetic rubber gloves
Eye protection : Goggles or glasses
Skin and body protection : Protective clothing

9. Physical and chemical properties

State : Solid
Shape : Prismatic (chip type)
Smell : No odor

10. Stability and reactivity

Stability: Stable on regular handling
Hazardous Reactivity : No information available
Conditions to avoid: External short circuit of the battery, deformation or destruction by mechanical stress such as shock or bending, high humidity
Hazardous decomposition products : No available

11. Toxicological information

The chemical components are sealed as a solid battery and are not harmful in normal use.

12. Ecological information

Aquatic environmental toxicity (acute toxicity) : No available information
Aquatic environmental toxicity (long-term hazardousness) : No available information
Hazardous to Soil : No available information
Hazardous to the ozone layer : No available information

13. Disposal considerations

Dispose of the product in accordance with the relevant laws and regulations and the standards of the local government. If an industrial waste disposal company licensed by the prefectural governor, etc., or a local public body is involved in the disposal of industrial waste, entrust the disposal to such a company.
For used waste mounted on boards, do not collect individual batteries, but dispose of them as mounted boards.

14. Transportation Information

Our all solid-state rechargeable batteries are transported in accordance with the transportation regulations for lithium-ion batteries.
Lithium-ion single batteries and battery assemblies are classified as Class 9 Dangerous Goods by the UN Recommendations and are assigned UN numbers as shown in the table below.
When transporting lithium-ion single batteries and battery assemblies, it is necessary to meet all the requirements of the relevant regulations in addition to the requirements of the UN Recommendations.
Our batteries (shown in Chapter 1) and their shipping packages satisfy the requirements of the UN Manual of Test and Criteria, Part III, subsection 38.3, and furthermore the following requirements, and therefore can be transported.

＜Air Transport＞

Since our batteries are equivalent to single batteries with a watt-hour rating of 20Wh or less or a pair of batteries with a watt-hour rating of 100Wh or less, they can be transported without using a packaging class II container by meeting all the transportation requirements of IATA Dangerous Goods Regulations (IATA-DGR) Packing Instruction 965 Section IB.

＜Maritime Transport＞

Since our batteries are equivalent to a single battery with a watt-hour rating of 20Wh or less or a pair of batteries with a watt-hour rating of 100Wh or less, they can be transported as exempted dangerous goods by meeting all the transport requirements of the International Maritime Dangerous Goods Regulations (IMDG-Code) Special Regulations 188.

Shipping names / Packing requirements

Proper Shipping Name	UN ID No.	Air transport	Maritime transport
Lithium ion batteries	3480	Packing Instruction 965	Special Provision 188
Lithium ion batteries packed with equipment	3481	Packing Instruction 966	Special Provision 188
Lithium ion batteries contained in equipment	3481	Packing Instruction 967	Special Provision 188

Related regulations: Following regulations shall be cited and considered.

	Organization / Issue documents
UN	UN / Recommendations on the Transport of Dangerous Goods ・Model Regulations ; 23rd revised edition ・Manual of Tests and Criteria: Subsection 38.3; 8th revised edition Amendment 1
Air transport	IATA（International Air Transport Association）/ IATA Dangerous Goods Regulations ; 67th Edition *1
Maritime transport	IMO（International Maritime Organization）/ 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.

15. Applicable legislation

EU Battery Regulation 2023/1542

16. Other information

Reference

・IATA Dangerous Goods Regulations, latest edition *1

Notes to this document

*1 Dangerous Goods Regulations - 67th Edition: International Air Transport Association (IATA)

*2 IMDG Code -2024 Edition: International Maritime Organization (IMO)

This document is guidance based on the assumption of normal conditions of use of the batteries concerned and does not provide any guarantee.