

SAFETY DATA SHEET (SDS)

SECTION 1: Product and Company Identification

Product Name MS Lithium Rechargeable Battery

Model Name: MS412FE (with Tab)
 Nominal Voltage: 3.0 V
 Nominal Capacity: 1.0 mAh (3.1 V-2.0 V)

Manufacturer Seiko Instruments Inc.
 Micro-Energy Division

Address: 45-1, Aza Matsubara, Kamiyashi, Aoba-ku, Sendai-shi, Miyagi, Japan
 Telephone: +81-22-391-9331 Facsimile: +81-22-391-9330

Seller Seiko Instruments Inc.
 Micro-Energy Division Sales Department

Address: 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, Japan
 Telephone: +81-43-211-1735 Facsimile: +81-43-211-8034

Emergency Contact International / call +81-22-391-9331 (Seiko Instruments Inc.)
 North America / call 800-424-9300 (CHEMTREC)

SECTION 2: Hazards Identification

GHS Classification Not applicable

Effects to Human body When swallowed, the battery can melt, and it might cause inflammation in stomach or intestine.

Possibility of Fire ignition When exposed to fire or extreme heat, it may catch fire, generate heat, leakage or it may burst.

SECTION 3: Composition/Information on Ingredients

Substance/Preparation Article

Important Note The battery should not be opened or burned, because the following ingredients listed below are contained in it. Its post-discharge or its combustion products could be harmful.

Materials or Ingredients

Part Name	Material Name	CAS No.
Anode	Lithium-Silicon composite oxide	10097-28-6/based material
Cathode	Lithium-Manganese composite oxide	-
Solute	Lithium imide salt	-
Solvent	Cyclic carbonate and Chain ether	-
Cases	Nickel plated stainless steel	-
(Tab)	Nickel plated stainless steel	-
(Solder)	100% of Tin	7440-31-5

SECTION 4: First Aid Measures

None unless exposed to internal materials. If contents leak, observe the following instructions:

- Inhalation: Fumes can cause respiratory irritation. Ensure the person has fresh air and consult a physician.
- Skin: Immediately wash the skin with plenty of water. If itchiness or irritation due to chemical burns persists, consult a physician.
- Eyes: Immediately rinse the eye with plenty of water.
- Ingestion: If a battery is swallowed, consult a physician immediately. If the contents come into contact with the mouth, immediately rinse with water and consult a physician.

SECTION 5: Fire Fighting Measures

How to Extinguish Use fire extinguisher (for Lithium Battery) or Sand.

Keep away the batteries from heat sources to avoid a fire. Please do not expose the battery to very high temperature to prevent an explosion and the generation of harmful gas.

SECTION 6: Accidental Release Measures

N/A (Not Applicable)

SECTION 7: Handling and Storage

- Handling**
- Do not charge by higher current or higher voltage than specified.
 - Do not heat, disassemble nor dispose of in fire.
 - Do not solder directly to the battery. Do not short.
 - Do not reverse placement of (+) and (-).
 - Do not discharge by force.
 - In case of leakage or a strange smell, keep away from fire to prevent ignition of any leaked electrolyte.
 - In case of disposal, insulate between (+) and (-) of battery by an insulating material.
 - If leaked liquid gets in the eyes, wash them with clean water and consult a physician immediately.
 - Do not use new and used batteries together. Do not use different types of batteries together.
 - If you connect two or more batteries in series or parallel, please consult us in advance.
 - Do not use nor leave the batteries in direct sunlight nor in high-temperature areas.
 - Do not apply strong pressure to the batteries nor handle roughly.
 - Avoid contact with water.
- Storage**
- Keep batteries out of children's reach.
 - Keep batteries away from direct sunlight, high temperature and humidity.
 - Avoid having the batteries touch each other, because short-circuit causes ignition, leakage, or rupture.

SECTION 8: Exposure Controls / Personal Protection

The battery is sealed with a metal can in order to avoid leakage of harmful gas or liquid. Follow the instructions in the SECTION 7.

Respiratory Protection: N/A
 Protective Gloves: N/A
 Eye Protection: N/A
 Skin or Body Protection: N/A

SECTION 9: Physical and Chemical Properties

Shape Button battery
Chemical System Lithium-Manganese composite oxide/ Lithium-Silicon composite oxide
Rechargeable YES/ NO

SECTION 10: Stability and Reactivity

Stability: Stable
 Condition to Avoid: See section 7
 Hazardous Mixture: N/A
 Hazardous Decomposition or Byproducts: N/A

SECTION 11: Toxicological Information

N/A

SECTION 12: Ecological Information

N/A

SECTION 13: Disposal Considerations

Dispose of the battery in accordance with the respective national, federal, state, and local regulations.

SECTION 14: Transport Information

United Nations Number UN3090 (battery in apparatus :UN3091)
Shipping Name Lithium metal battery
UN Hazard Classification Class 9
Regulation Each organizations of transportation has defined the following regulations. Their regulations are based on the United Nations Regulations, Each special provision provides specifications on exceptions and packaging for lithium batteries shipping.

Method	Organization	Regulation	Special Provision
Air	IATA/ICAO	DGR/TI	Section II of PI968-970 A88, A99, A154, A165, A183, A201
Marine	IMO	IMDG Code	SP188
U.S.A	DOT	49CFR	49CFR Section 173, 185

When battery is conveyed with packing of SII ; This Lithium metal batteries, NOT RESTRICTED as per Section II of PI 968. (Only packing for overseas)

<Lithium Content>	The Lithium content is not more than 1.0 g. ※The Lithium of this battery is 0.0008 g, and conforms to a standard.
<Safety Certification>	Each cell is of a type proven to meet the requirement of each test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3. ※This battery has satisfied the UN38.3 test.
<Strong Packaging>	Cells are separated so as to prevent short circuits and are packed in strong packaging. (The cell together with apparatus is excepted.)
<Caution Label>	Each packages must be displayed a battery handling label. (Telephone number must be printed for emergency call on the handling label.)
<CAO Label>	Each packages for air transport must be displayed Cargo Aircraft Only label.
<Not Restricted Declaration>	Each consignment must be accompanied with a declaration of Not Restricted goods document. (Telephone number must be printed for emergency call on the handling label.)
<Package Drop Test>	Each package must be capable of withstanding a 1.2 m drop test. (The cell together with apparatus is excepted.)
<Weight>	The maximum net quantity of one package is restricted in air transport, 2.5 kg or less for lithium metal cells. (The cell together with apparatus is excepted.)

SECTION 15: Regulatory Information

- United Nations Regulations
- ICAO Technical Instructions for the safe transport of dangerous good by air
- IATA Dangerous Goods Regulations

SECTION 16: Other Information

SDS is not applied to products that are used in a sealed condition. So, we do not have the obligation to publish this document since the battery corresponds to the condition above. But, we offer this document for reference. The data and evaluation results written on this document was known at the time of preparation, but it is not something that is guaranteed.

References

- (1)UN Recommendations on the Transport of Dangerous Goods -Model Regulations(Rev.18) Manual of Tests and Criteria (ST/SG/AC. 10/11/Rev.5)
- (2) Federal Resister/ Vol.65, No.174/ Sep. 7, 2000/ Notices Transportation of Lithium Batteries
- (3) IATA Dangerous Goods Regulations 56th Edition

End of Documents.