

MATERIAL SAFETY DATA SHEET

SECTION 1: Product and company identification

Name of the Material MS Lithium Rechargeable Battery

Nominal Voltage is 3.0V

Nominal Capacity: 11.0mAh (3.1V-2.0V)

Model name: MS920SE with Tab

PREPARATION : Please refer to the ingredients list in Section 3

Manufacturer Seiko Instruments Inc. Micro-Energy Division

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SECTION 2: Hazards identification

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 ; PREPARATION

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 amide salt	-
Solvent:	Cyclic carbonate and Chain ether	-
Cases:	Stainless Steel with Nickel-plated (out side)	-

Terminal:	Stainless Steel with solder plated(partial)	-
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 of 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 high voltage or high current.

Do not heat, disassemble nor dispose of in fire.

Do not solder directly to the battery.

Do not short.

Keep batteries out of children's reach.

Do not reverse placement of (+) and (-).

Do not discharge by force.

In case of leakage or 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 immediatery.

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 sun-light nor in high-temperature areas.

Do not apply strong pressure to the batteuries nor handle roughly.

Avoid contact with water.

Keep batteries away from direct sunlight, high temperature and humidity.

Storage: Store out of the reach of children.

Store in a cool , dark, and well-ventilated area.

Do not place the battery on an area that is exposed to high temperature like direct Sunlight for an extended time, or in a car in summer time.

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

Model name: MS920SE with Tab

Chemical system: Lithium-Manganese composite oxide. / Lithium-Silicon composite oxide

Rechargeable: YES / NO

	Can and Tabs	Positive electrode	Negative electrode	Lithium amide salt	Cyclic carbonate and Chain ether
Appearance	Metal	Solid	Solid	Powder	Liquid
Color	Silver	Black	Black	-	No color
Smell	None	None	None	-	Stink
Melting point	About 1,500deg-C	-	-	-	-
Boiling point	About 2,700 deg-C	-	-	-	-
Density	7.8	-	-	-	-
Vapor pressure	-	-	-	-	-
Viscosity	N/A, because of solid	-	-	-	-
Solubility	NO	-	-	-	-
pH	N/A	-	-	-	-

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). Shipment product name : Lithium battery. United Nations classification: Class 9. These batteries are exempted from becoming dangerous materials by United Nations (UN) recommendation 188, 230, 310. We can usually transport the batteries if we satisfy A45. A45, A88 and A99 of IATA (International Air Transport Association) are the rules that obeyed UN recommendation. ICAO, IMO, ADR, RID, DOT almost follow UN. Please be careful to revision, and please apply the latest. SP A154 has been added in reference to UN 3090 (lithium batteries and UN 3091) lithium batteries contained in equipment and packed with equipment.

A154 states lithium batteries subject to safety recall by the manufacturer, or lithium batteries that have been damaged are forbidden for transport. This additional provision reflects the concerns of regulatory authorities about recent battery recalls following fires. Please consult to us.

Transportation of Lithium rechargeable batteries is not subject to the provisions of dangerous goods, if they meet the following requirements.

- (a) **<Lithium content>**The Lithium content is not more than 1.0g. (satisfy)
- (b) **<Safety Certification>**Each battery is of a type proved to meet the requirements of each test in the UN Manual of Tests and Criteria, Part 3, sub-section 38.3. (satisfy)
- (c) **<Strong packaging>**Batteries are separated so as to prevent short circuits and are packed in strong packaging. (The cell together with apparatus is excepted.)
- (d) **<Caution Label>**Each package must be marked indicating that it contains lithium batteries and that special procedures should be followed in the event that the package is damaged. (The cell together with apparatus is excepted.)
- (e) **<Not Restricted Declaration>**Each shipment must be accompanied with a document indicating that the packages contain lithium batteries and that special procedures should be followed in the event that a package is damaged. (The cell together with apparatus is excepted.)

(f) **<Package Drop Test>** Each package is capable of withstanding a 1.2 m drop test in any orientation without damage to batteries contained. (The cell together with apparatus is excepted.)

(g) **<Weight Limit>** Except in the case of packed with equipment, packages may not exceed 30 kg gross mass. (What was mounted in apparatus, and the enclosed battery are excepted. .)
Gross weight is changed into 30 to 2.5kg of lightweight transportation from January 1, 2009.

The Lithium content of this battery is not more than 1.0g.
The battery was proved to meet the requirements of each test in the UN Manual of Tests and Criteria, Part 3, sub-section 38.3.
We will issue the "Safety Certification" for your transporting.

SECTION 15: Regulatory information

UN special clause 188, 230, 310 – 3.
United Nations provision issued in December 2000.
IATA Dangerous Goods Regulation 49th Edition
ICAO Technical Instruction for the safe transport of dangerous good by air

SECTION 16: Other information

MSDS 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 Transportation of Dangerous Goods Model Regulations (ST/SG/AC.10/1Rev.12)
- (2) Federal Resister/ Vol.65, No. 174/ September 7, 2000/ Notices
Transportation of Lithium Batteries
- (3) IATA Dangerous Goods Regulations 49th Edition

(End of Documents)