Energy Device Business Division
Automotive & Industrial Systems Company
Panasonic Corporation

1-1 Matsushita, Moriguchi City, Osaka
570-8511, Japan
Tel +81-6-6991-1141
http://panasonic.net/ec/

This product is a consumer product which is used in a hermetically sealed state. So, it is not an object of the SDS system. This document is provided to customers as reference information for the safe handling of the product. The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Panasonic Corporation makes no warranty expressed or implied.

PRODUCT SAFETY DATA SHEET

1 Product and Company Identification

Name of Product	: Manganese Titanium lithium rechargeable battery (MT Series)
Name of Company	: Panasonic Corporation, Automotive & Industrial Systems Company
Address	: 1-1 Matsushita-cho, Moriguchi City, Osaka, 570-8511, Japan
Division	: Energy Device Business Division
Department	: Product Engineering Group
Telephone number	: +81-6-6994-4537
For emergency	: +81-6-6991-1141

2 Hazards Identification

GHS Classification : Not applicable

Hazard : Electrolyte and lithium metal are inflammable.
Risk of explosion by fire if batteries are disposed in fire or heated above 100 degrees C.
Stacking or jumbling batteries may cause external short circuits, heat generation, fire or explosion.

Toxicity : Vapor generated from burning batteries, may make eyes, skin and throat irritate.

3 Composition/Information of Ingredients

Components	Material	CAS No.	Content
Positive electrode	Lithium manganese complex oxide	12057-17-9	5～18wt%
Negative electrode	Lithium titanium complex alloy	7439-93-2	3～14wt%
Electrolyte	1,2-dimethoxyethane	110-71-4	0.11～1wt%
	Organic electrolyte	-	3～14wt%

Lithium content per cell

Model Number	Lithium content(g)	Model Number	Lithium content(g)	Model Number	Lithium content(g)	Model Number	Lithium content(g)
MT416F	0.0005	MT516F	0.0005	MT616	0.001	MT920	0.004
				MT621	0.002	MT1620	0.01

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4 First Aid Measures

The product contains organic electrolyte. In case of electrolyte leakage from the battery, actions described below are required.

Eye contact	: Flush the eyes with plenty of clean 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.
Skin contact	: 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.
Inhalation	: Remove to fresh air immediately. Take a medical treatment.

5 Fire Fighting Measures

Extinguishing method	: Since vapor, generated from burning batteries may make eyes, nose and throat irritates, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.
Fire extinguishing agent	: Alcohol-resistant foam and dry sand are effective.

6 Accidental Release Measures (in case of electrolyte leakage from the battery)

- Take up with absorbent cloth.
- Move the battery away from the fire.

7 Handling and Storage

- When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals. Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.
- Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.
- Do not mix different type of batteries.
- Do not solder directly onto batteries.
- Do not let water penetrate into packaging boxes during their storage and transportation.
- Do not store the battery in places of the high temperature or under direct sunlight or in front of a stove. Please also avoid the places of high humidity. Be sure not to expose the battery to condensation, water drop or not to store it under frozen condition.
- Fire fighting apparatus should be installed.

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8 Exposure Controls and Personal Protection (in case of electrolyte leakage from the battery)

Acceptable concentration	: Not specified in ACGIH.
Facilities	: Provide appropriate ventilation system such as local ventilator in the storage place.
Protective clothing	: Gas mask for organic gases, safety goggle, and safety glove.

9 Physical and Chemical Properties

Appearance	: Coin shape
Voltage	: 1.5 volts

10 Stability and Reactivity

Since batteries utilize a chemical reaction they are actually considered a chemical product.
As such, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, the various usage conditions such as discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage.

11 Toxicological Information (in case of electrolyte leakage from the battery)

Acute toxicity	: Oral(rat)　LD50 = 200～2,000mg/kg　(estimated)
Irritation	: Irritating to eye and skin.
Mutagenicity	: Not specified.
Chronic toxicity	: Not specified.

12 Ecological Information

In case of the worn-out battery was disposed in land, the battery case may be corroded, and leak electrolyte. But, we have no ecological information.

13 Disposal Considerations

When the battery is worn out, dispose of it under the ordinance of each local government or the law issued by relating government.

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14 Transport Information

During the transportation of a large amount of batteries by ship, trailer or railway, do not leave them in the places of high temperatures and do not allow them to be exposed to condensation.

During the transportation do not allow packages to be fallen down or damaged.

UN Number : Even though the cells are classified as lithium metal batteries(UN3090/UN3091), they are exempted from Dangerous Goods because they meet the following:

1. for cells, the lithium content is not more than 0.3g;
2. each cell is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, PartⅢ, sub-section 38.3.
3. each cell is manufactured in ISO9001 certified factory.

Proper shipping Name : Lithium metal batteries

UN Class : Not Applicable

Please refer to the following reference information about concrete ways of transportation. Actual content of packaging label and shipping documents varies by shipping companies. Make sure to confirm in advance with your shipping company.

Information of reference

	Reference (Reference number)	Special provision	Note
Air transport	IATA (2)	Packing Instruction 968 SectionⅡ	Cells
		Packing Instruction 969 SectionⅡ	Cells packed with equipment
		Packing Instruction 970 SectionⅡ	Cells contained in equipment
Marine transport	IMDG (3)	Special provision 188	

15 Regulatory Information

IATA Dangerous Goods Regulations
IMO International Maritime Dangerous Goods Code

16 Other Information

This PSDS is provided to customers as reference information in order to handle batteries safely.
It is necessary for the customer to take appropriate measures depending on the actual situation such as the individual handling, based on this information.

References

(1) UN Recommendations on the Transportation of Dangerous Goods, Model Regulations 17th revised edition
(2) IATA Dangerous Goods Regulations 55th Edition（2014）
(3) IMO International Maritime Dangerous Goods Code 2012 Edition
(4) UN Recommendations on the Transportation of Dangerous Goods, Manual of Tests and Criteria 5th revised edition Amendment 1

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