TITLE: Battery products information data sheets for MITSUBISHI AC SERVO MR-J3 series and before

1. Outline

This document shows products information data sheets of the batteries for MITSUBISHI AC SERVO MR-J3 series and before.

2. MITSUBISHI battery model name

List 1 indicates MITSUBISHI battery model name, lithium battery's supplier and model name.
Please refer attached products information data sheets supplied from the battery supplier.

List 1 Battery supplier, Model name

MITSUBISHI model name	Lithium battery model name	Battery supplier	pieces / unit	page number
MR-BAT	ER17330V	TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORPORATION	1	Products information data sheet :page 2～6 Certificate of UN test :page 7 EU battery directive (no-containing of mercury) :page 8
MR-J2M-BT(-□) (Note)	ER6V		7	
MR-J3BAT	ER6V		1	
MR-J3W03BATSET	ER6V		1	
MR-J3WBAT	ER6V		1	
MR-JBAT4	ER6V		4	
MR-JBAT8	ER6V		8	

Note. The symbol "□" indicates a blank or 2-digit alphanumeric characters. (Example: EB)

Best regards,

Products Information Data Sheet

These products are hermetically sealed state in a vessel, and are exempted from Safety Data Sheet regulations. However, this manual provides you with referential information to safety use the products.

Section 1 - Products and Company Identification

Products name	:	Thionyl Chloride Lithium Batteries (ER)
Products sizes	:	ER3V ER4V ER6V ER17330V ER17500V
Company	:	TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORPORATION
Address	:	25-1, Ekimae-honcho, Kawasaki-ku, Kawasaki, Kanagawa 210-8543, Japan
Telephone	:	+81-44-577-0142
Fax	:	+81-44-222-6264

Section 2 - Composition/ Information on Ingredients

Ingredients	CAS#	PRTR	Weight/Content
Lithium metal (Li)	7439-93-2	Not regulated	Shown at *1
Thionyl chloride ($SOCl_2$)	7719-09-7	Not regulated	25~45 wt%
Aluminum chloride ($AlCl_3$)	7446-70-0	Not regulated	2~5 wt%
Lithium chloride (LiCl)	7447-41-8	Not regulated	Less than 2 wt%
Carbon black (C)	1333-86-4	Not regulated	1~5 wt%

*1 : Lithium metal weight (g) as standard

ER3V	0.31	ER17330V	0.48
ER4V	0.39	ER17500V	0.81
ER6V	0.65		

Section 3 - Summary of Danger and Toxicity

Fatal danger and toxicity	:	No information available
Danger and toxicity	:	Chemical ingredient is hermetically sealed in a vessel, so the product is neither dangerous nor toxic as a cell. If the lithium metal of contents touches the skin, a chemical burn is caused. In addition, the lithium metal is oxidized and creates corrosive lithium oxide. If reacting with water, lithium metal produces hydrogen gas that may fire as a combustible gas. Thionyl chloride, contained in a battery, is a corrosive, acutely toxic substance, and reacts with water and produces hydrogen chloride gas and sulfur dioxide gas. If a cell burnt, generated steam may stimulate eyes, skin, and throat.
Effect to environment	:	No information available
Overview of prospective emergency	:	A cell may break or be shorted by an external mechanical or electrical stress.

Section 4 - First Aid Measures

There is no problem in the normal state. But take the following measures when the contents have begun to leak by the destruction of the battery.

Inhalation	:	If a person inhaled steam, move to the place where air is fresh immediately. If he/her feels ill, immediately call a doctor for therapy and treatment.
Skin	:	If the content adheres to skin, immediately wash it with a large amount of clean water and soap promptly. If irritating, consult a doctor.
Eyes	:	If the content enters eyes, rinse eyes with a large amount of clean water for more than 15 minutes, and consult a doctor.
Ingestion	:	If a cell is swallowed, immediately call a doctor for therapy and treatment.

Section 5 - Fire Fighting Measures

Fire extinguishers	:	Dry sand, dry chemical, graphite powder
Prohibited fire extinguishers	:	Do not use water, CO_2, CCl_4 and halides. Thionyl chloride, among other contents, reacts with water and air and produces toxic gas. Lithium metal, once reacting with water, produces firing or combustible hydrogen gas, and may dangerously spread fire.
Specific firefighting method	:	In the initial state of a fire, move cells/batteries from near the fire source, to a safe location. At that time, work at a windward location, as far as possible, and be sure to put on a protective breathing mask.
Protection of firefighting personnel	:	Be sure to have them wear protective breathing masks. (Preferably, use a self-feeding type mask.)

Section 6 - Action upon Leakage and Removing Method

A cell hermetically contains constituents in a vessel, so contents normally may not leak out. However, if the contents leaks because of a mechanical or electrical stress, scatter dry sand to absorb it, and collect the sand in a vessel. After that, neutralize the site by scattering sodium carbonate and slaked lime, and flush the site with a large amount of water. At that time, be sure to put on a protective-breathing mask. (Preferably, use a self-feeding type mask.)

Section 7 - Handling and Storage

Handling	:	If a cell is leaking or smells, wear protective gloves and breathing mask, move the cell into a hermetically sealed vessel and dispose of the vessel. Never solder a cell self. Any leakage or obnoxious odor of a cell may lead to corrosion, so immediately dispose of the cell. Do not contact cell terminals between each other, or with another conductor. Neither throws into fire, decompose, heat, dent, deform, charge nor drop a cell. Do not dip a cell in water or seawater.
Storage	:	Store cells without direct sunlight, high temperature, high humidity, rain, dew, etc., and select a storage location with a temperature as low as possible (preferable temperature 10-25°C and relative humidity 70% or less). In addition, keep cells away from dangerous matter such as combustible or ignitable materials. Absolutely never place a cell in contact with a combustible or conductive substance. Prepare appropriate firefighting equipment.

Note	:	See handling and storing precautions described in the product catalog, specification, etc.

Section 8 - Prevention from Exposure

Protection of respiratory organs	:	Not required in a normal operating state
Protection of eyes	:	Not required in a normal operating state
Other protective tools etc.	:	Not required in a normal operating state

Section 9 - Physical and Chemical Properties

Shape	:	Cylindrical-shape. Contents are sealed in a stiff stainless steel vessel.
PH	:	Not applicable because a cell is not soluble with water.
Boiling point/boiling range	:	No information
Melting point	:	No information
Decomposition temperature	:	No information
Flash point	:	No information

Section 10 - Stability and Reactivity

Conditions to be avoided	:	If a number of cells are mixed up without insulating terminals, they may short and possibly heat, break and ignite. When a cell is charged, the gas released vent of the cell may operate resulting possibly in bursting the electrolyte etc. Or, it may possibly burst or fire. If a cell is heated or thrown into fire, it may explode or fire with the electrolyte etc. bursting from inside of the cell. If decomposed, there is a possibility of overheating due to short circuit.

Section 11 - Information on Toxicity

There is no toxicity because chemical substances are hermetically sealed in a metal vessel.

As a reference, chemical substances composing a cell are described below.

Lithium metal

Acute toxicity	:	No appropriate report available
Local effect	:	A skin contact may result in inflammation.

Thionyl chloride

Acute toxicity	:	L_{C50}:500ppm (Rat inhalation)
Local effect	:	Cough, breathing difficulty and asthma may pass into a chronic state, and the lung may be affected by a disease.

Aluminum chloride

Acute toxicity	:	L_{D50}:3700 ppm (Rat oral)
Local effect	:	No information

Lithium chloride

Acute toxicity	:	L_{D50}:526 ppm (Rat oral)
Local effect	:	The central nervous system and the kidney may be affected.

Carbon black

Acute toxicity	:	L_{D50}:2,000mg/kg > (Rat)
Carcinogenic property	:	IARC group 2 (May be carcinogenic)

Section 12 - Ecological Information

No information as batteries.

Section 13 - Disposal Precautions

Dispose of the substance appropriately in conformity with laws and regulations such as the law to promote the development of specified facilities for the disposal of industrial waste. The user, a business entity, must contract with a firm of disposing of industrial waste, and appropriately discard the substance. If the user is not a firm that has been approved by government as a disposal business firm, the user cannot dispose of the substance.

- Absolutely neither throw the substance into fire, nor incinerate it.
- Even a used cell sometimes stores electric energy. Therefore, to prevent the cell from short-circuit, isolate cells from each other by a method such as taping +, - terminals of cells/batteries, or using the individual housing case of a cell, used when you bought the cell, and orderly encasing cells in a box, then submit an application of disposal to the local government of your residence, using the designated form.
- Packing cells so that they are not shorted, and prevent the package from being wetted.
- If cells must be discarded in a country other than Japan, observe the instructions of the country and local government.

Section 14 - Transportation Precautions

It is required to perform the confirmation such as laws and ordinances / the regulation about the transportation by shipper responsibility. After our product was delivered to a customer, if a customer transports a product as a shipper, it is necessary to confirm the latest laws and ordinances / regulation with the customer. The following information is not things to guarantee with a thing to offer as reference information about the transportation.

The Thionyl chloride lithium batteries are classified in UN recommendation as follows.

- Proper Shipping Name/Description : LITHIUM METAL BATTERIES
- UN Number : UN3090
  (When cell/butteries contained in equipment and packed with equipment, it is UN3091)
- Class or Div.(Sub Risk) : Class9（Miscellaneous Dangerous Goods）
- Packing Group : —

The other major transportation regulation is as follows.

Area	Method	Regulations
International	Air	ICAO-TI／IATA-DGR
International	Ocean	IMO-IMDG Code
U.S.A	Air, Rail, Highway, Water	US DOT-49 CFR
Europe	Rail, Highway	RID,ADR

These regulations are based on the UN Recommendations. Each special provision provides specifications on exceptions and packaging for lithium metal batteries shipping.

<Aircraft Transportation>

Lithium metal cells and batteries transported as cargo will be restricted to Cargo Airplane Only.
The prohibition on the carriage on passenger aircraft only applies to lithium metal cells and batteries when shipped by themselves (PI968 Section IA, IB and II). The prohibition does not apply to lithium metal cells and batteries packed with equipment (PI969) or contained in equipment (PI970).

<Ocean Transportation>

It is possible to transport lithium metal cells and batteries as Non-Dangerous Good by vessel if satisfied with SP188 of IMO-IMG Code.

Note:

The above information only shows the general trend of regulations for lithium metal batteries but not guarantee the transportation of your products, so that it is highly recommended to check the status on real time basis as it depends on the decision by transportation companies, regions, and countries.

Section 15 - Applicable Laws and Regulations

The laws and ordinances about the battery shall obey the latest laws and ordinances.
Major applicable regulations for the transportation of lithium metal cells and batteries are as follows:

- Recommendations on the Transport of Dangerous Goods, Model Regulations 20th (UN)
- Dangerous Goods Regulations, 60th Edition (IATA)
- Technical Instructions for the Safety Transport of Dangerous Goods by Air, 2019-2020 Edition (ICAO)
- International Maritime Dangerous Goods (IMDG) Code, 2018 Edition (IMO)

Section 16 - Other Information

The battery is considered to be an article for purposes of the TSCA and not a chemical. Therefore, the battery is exempt from the TSCA requirements.
Contents of this manual have been edited based on data, information, etc. that Toshiba could acquire when editing the manual, so the manual may be revised by new information, if any. Contents of the manual assume normal handling of batteries, and are provided as referential information. Therefore, the manual provides no warranties. The customer is requested to use batteries on the basis of appropriate measures established depending on individual conditions, application and operation. Any numerals such as contents and concentration ranges, and others are not guaranteed.

Revised Day	:	January 01, 2019
Preparation This Sheet	:	TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORPORATION Engineering Group Planning & Procurement Dept. Battery Business Div.

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国連勧告テスト適合証明書／Certificate

1．仕様／Specification

分類 Classification (UN No.)	形名 Type name	公称電圧 Nominal voltage	リチウム含有量 Lithium content	備考 Remark
リチウム金属電池 LITHIUM METAL BATTERIS (UN 3090)	ER3V	3.6V	＞0.3g,＜1g	
	ER4V	3.6V	＞0.3g,＜1g	
	ER6V	3.6V	＞0.3g,＜1g	
	ER17330V	3.6V	＞0.3g,＜1g	
	ER17500V	3.6V	＞0.3g,＜1g	
	K6BAT	3.6V	＞0.3g,＜1g	
	A6BAT	3.6V	＞0.3g,＜1g	

2．国連勧告テスト結果／Test results

国連勧告テストおよび判定基準 UN Recommendations tests (Manual of Tests and Criteria 6th Revised Edition, Part III, sub-section 38.3)		判定結果 Test results	備　考 Remark
No.	試験項目 Test items	合／否 Pass / Failure	
T1	高度シミュレーション Altitude simulation	合格 Pass	
T2	温度試験 Thermal test	合格 Pass	
T3	振動 Vibration	合格 Pass	
T4	衝撃 Shock	合格 Pass	
T5	外部短絡 External short circuit	合格 Pass	
T6	圧壊試験 Crush	合格 Pass	
T7	過充電 Overcharge	N/A	充電式組電池のみ Rechargeable battery only
T8	強制放電 Forced discharge	合格 Pass	

上記の弊社製リチウム電池について国連勧告テスト（UN Manual of Tests and Criteria 6th Revised Edition, Part III, sub-section 38.3）の要求事項に適合していることを証明いたします。
We certify that above our Lithium Cells comply with the requirements of the UN Recommendations Tests (UN Manual of Tests and Criteria 6th Revised Edition, Part III, sub-section 38.3).

Date：2019-01-25

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Certification of Containing / No-containing of Certain Hazardous 6 Substances

We, Toshiba Lifestyle Products & Services Corporation, hereby certify that contents of Mercury, Cadmium and Lead and Hexavalent chromium and PBB and PBDE of below listed our product branded TOSHIBA are as follows :

For batteries and accumulators are covered by the EU Battery Directives 2006/66/EC and the above our batteries can continue to be sold in the EU in compliance with the EU Battery Directive.

Model No.

Thionyl chloride Lithum Battery

ER6V

ER17330V

No.	Substance	EU Battery Directive.	EU RoHS Directive.
1	Cadmium and its compounds	Non contain	-
2	Hexavalent chromium and its compounds	-	Non contain
3	Lead and its compounds	Our battery can meet with EU Battery Directives	-
4	Mercury and its compounds	Non contain	-
5	PBB	-	Non contain
6	PBDE	-	Non contain

Sincerely yours

Tatsuya Daigo

TATSUYA DAIGO

Specialist

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