

TITLE: Battery products information data sheets of Mitsubishi Electric AC Servo MR-J3 series and before

1. Outline

This document reports about products information (safety) data sheet, UN38.3 test summary, and EU battery directive (no-containing of mercury) of Mitsubishi Electric AC Servo MR-J3 series and before.

2. Batteries to be used

Table 1 shows Mitsubishi Electric's battery model and the lithium battery's supplier/model. Please refer to the attached products information (safety) data sheet, UN38.3 test summary, and EU battery directive (no-containing of mercury) supplied from the battery supplier.

Table 1 Battery supplier and model

| Mitsubishi Electric's battery model | Lithium battery model | Battery supplier | Number of batteries per unit | Reference |
|-------------------------------------|-----------------------|---|------------------------------|--|
| MR-BAT | ER17330V | Toshiba Lifestyle Products & Services Corporation | 1 | Products information (safety) data sheet : page 2 to 6 UN 38.3 test summary : page 7 to 8 EU battery directive (no-containing of mercury) : page 9 |
| 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)

The newest products information (safety) data sheet is available from the following website of the battery supplier.

<Toshiba Lifestyle Products & Services Corporation>

URL: [https://www.toshiba-lifestyle.com/sites/default/files/2024-01/Lithium\(ER\)_En_2024_1.pdf](https://www.toshiba-lifestyle.com/sites/default/files/2024-01/Lithium(ER)_En_2024_1.pdf)

Products information (safety) data sheet/UN38.3 test summary/EU battery directive (no-containing of mercury) as of January 1, 2024 are attached below.

3. Battery transportation

For details of battery transportation by air, refer to Sales and Service No. 14-30E.

FA global website: <http://www.mitsubishielectric.com/fa/>

Click "Technical Bulletin" from the "Download" section, then click "Drive Products" and "AC Servos-MELSERVO". Select "SALES AND SERVICE", and click No. 14-30E "Handling of AC Servo Amplifier Batteries for the United Nations Recommendations on the Transport of Dangerous Goods".

In SP188 which indicates conditions for non-dangerous goods during battery transportation by sea, the batteries listed above comply with the provisions of IMDG code 2.9.4.1 and 2.9.4.7 with UN 38.3 test summary, and also comply with the provisions of IMDG code 2.9.4.5.

The provisions of IMDG code 2.9.4.6 are not applicable.

However, MR-J2M-BT(-□), MR-JBAT4, and MR-JBAT8 which are assembled batteries with more than 2 g of lithium content must be handled as dangerous goods.

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 (Primary Battery)
 Products sizes : ER3V, ER4V, ER6V, ER17330V, ER17500V, ER17505V
 Company : TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORPORATION
 Address : 1310 Omiya-cho, Saiwai-ku, Kawasaki,
 Kanagawa 212-0014, Japan
 Telephone : +81-44-577-0142
 Fax : +81-44-576-6025

Section 2 - Hazards Identification

GHS Classification : Not applicable
 Toxicity : Vapor generated from burning cell/battery, it may irritate eyes, skin and throat.
 Hazard : Electrolytes are corrosive and lithium metal are inflammable, there is a risk of explosion or ignition if cells/batteries are disposed in fire or heated. If stacking or jumbling cells/batteries may cause heat generation, ignition and explosion by external short circuits.

Section 3 - 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 | 25~45wt% |
| Aluminum chloride (AlCl ₃) | 7446-70-0 | Not regulated | 2~5wt% |
| Lithium chloride (LiCl) | 7447-41-8 | Not regulated | Less than 2wt% |
| Carbon black (C) | 1333-86-4 | Not regulated | 1~5wt% |
| Others (Steel) Stainless Steel | — | Not regulated | 35~50wt% |

*1 : Lithium metal weight (g) as standard

| | | | |
|------|------|----------|------|
| ER3V | 0.31 | ER17330V | 0.48 |
| ER4V | 0.39 | ER17500V | 0.81 |
| ER6V | 0.65 | ER17505V | 0.92 |

Section 4 - First Aid Measures (In case of electrolyte leakage from the cell/battery)

Inhalation of electrolyte fume : If a person inhaled steam, move to the place where air is fresh immediately. If you feel unwell, immediately seek medical attention.
 Skin contacts by electrolyte : If the content adheres to skin, immediately wash it with a large amount of clean water and soap promptly. If you have pain, immediately seek medical attention.
 Eyes contacts by electrolyte : If the content enters eyes, rinse eyes with a large amount of clean water for more than 15 minutes, and immediately seek medical attention.
 Ingestion of electrolyte : If a cell/battery is swallowed, immediately seek medical attention.

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 hazards in case of fire | : | In the event of a fire, the contents of the cell/battery react with water and air to generate toxic hydrogen chloride gas and sulfurous acid gas. There is also a risk of ignition and explosion. |
| 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 wear the protective equipment. (fireproof gloves, protective mask, protective eyewear, protective clothing) |
| Protection of firefighting personnel | : | Be wear protective equipment (fireproof gloves, protective mask, protective eyewear, protective clothing) for the keeping safe. (If possible, use atmosphere-supplying respirator) |

Section 6 - Accidental Removing Measures

The cell/battery hermetically contains constituents in a vessel, so contents normally may not leak out. However, if the contents leak because of a mechanical or electrical stress, you should avoid a fire, wear protective equipment and collect the solids in an empty vessel. If it scatters, wipe it off with a dry cloth. If the lithium metal leaks, it reacts with the moisture in the air to generate heat and may ignite, so treat it immediately. At that time, be sure to put on a protective-breathing mask. (If possible, use atmosphere-supplying respirator)

Section 7 - Handling and Storage

| | | |
|----------|---|--|
| Handling | : | If the cell/battery leaks or has a strange odor, dispose of it properly. Do not solder a cell/battery body. Do not contact cell/battery terminals between each other, or with another conductor. Do not throw into fire, disassemble, heat, dent, deform, charge nor drop a battery. Do not dip a cell/battery in water or seawater. |
| Storage | : | Store cells/batteries 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/battery 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 - Exposure Controls/Personal Protection

| | | |
|----------------------------------|---|--|
| 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 |

(In case of electrolyte leakage from the cell/battery)

| | | |
|----------------------------------|---|--------------------------------|
| Protection of respiratory organs | : | Protective mask (For acid gas) |
| Protection of eyes | : | Protective eyewear |
| Other protective tools etc. | : | Impermeable protective gloves |

Section 9 - Physical and Chemical Properties

| | | |
|-----------------------------|---|--|
| Shape | : | Cylindrical. Contents are sealed in a stiff stainless-steel vessel. |
| PH | : | Not applicable because a cell/battery 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

If several cells/batteries are jumbled without insulating terminals, they may short and possibly electrolyte leakage, generate heat, rupture and ignite. If the cell/battery is charged, the electrolytic solution or the like may suddenly spurt out due to the generation of gas from the inside of the cell/battery. There is also the possibility of rupture and ignite. If the cell/battery is heated or thrown into a fire, it may splash the electrolyte, rupture and ignite. If the cell/battery is disassembled, it may short and possibly electrolyte leakage, generate heat, rupture and ignite.

Section 11 - Toxicological Information

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

Section 12 - Ecological Information

No information as the cells/batteries.

Section 13 - Disposal Considerations

Dispose of waste properly in accordance with laws and regulations such as the Industrial Waste Disposal Law. The business operator shall properly dispose of it after contracting with an industrial waste disposal company. The precautions for disposal are as follows.

- Even a used cell/battery sometimes stores electric energy. Therefore, to prevent the cell/battery from short-circuit, isolate cells/batteries from each other by a method such as taping +, - terminals of cells/batteries, or using the individual housing case of a cell/battery.
- Packing cells/batteries so that they are not shorted, and prevent the package from being wetted.

- If cells/batteries must be discarded in a country other than Japan, observe the instructions of the country and local government.
- The user, a business entity, must contract with a firm of disposing of industrial waste, and appropriately discard the substance.

Section 14 - Transportation Information

Handling :

When transporting cells/batteries, avoid high temperatures, high humidity and condensation. Pack the cell/battery so that it does not short-circuit and fix it so that the load does not collapse.

Cell/Batteries should be stored at room temperature (45 ° C or less: 10-25 ° C recommended) with low temperature changes and a relative humidity of 70% or less. Handle the container with care and do not subject it to shocks that could leave dents in the cell/battery.

UN Number and UN Class :

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

(Exemption)

Even though the cells/batteries are classified as lithium metal batteries (UN3090 or UN3091), they are not subject to some requirements of Dangerous Goods Regulations because they meet the following :

- For cell/battery, the lithium content is not more than 1g.
For cell/battery pack, the lithium content is not more than 2g.
- Each cell/battery and cell/battery pack is of type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3.
- Each cell/battery is manufactured in ISO9001 certified factory.

<Aircraft Transportation>

Lithium metal cells and batteries are prohibited from being transported by passenger aircraft.

The prohibition on the carriage on passenger aircraft only applies to lithium metal cells and batteries when shipped by themselves (PI968 Section IA, IB). 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 :

Prior confirmation is required as some countries, regions and shipping companies may have their own regulations.

It is required that the shipper is responsible for confirming the laws and regulations related to transportation. When the customer is transported as a shipper after delivery from us, it is necessary for the customer to check the latest laws and regulations by yourself. In addition, if you violate the law, you will be subject to punishment, so be careful. The above information is provided as reference information regarding transportation and is not guaranteed.

Section 15 - Regulatory Information

The laws and ordinances about the cell/battery shall obey the latest laws and ordinances.

- Recommendations on the Transportation of Dangerous Goods, Model Regulations 23rd revised Edition (UN)
- Recommendations on the Transportation of Dangerous Goods, Manual of Tests and Criteria (UN)
- Dangerous Goods Regulations, 65th Edition (IATA)
- Lithium Battery Shipping Regulations, 11th Edition (IATA)
- Technical Instructions for the Safety Transport of Dangerous Goods by Air, 2023-2024 Edition (ICAO)
- International Maritime Dangerous Goods (IMDG) Code, 2022 Edition (IMO)
- EU Battery Directive (2006/66/EC, 2013/56/EU) (Europe)
- EU Battery Regulation (2023/1542) (Europe)
- Regulation (EC)No.1907/2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) (Europe)
- Ship Safety Law, Regulations for the Carriage and Storage of Dangerous Goods in Ship (Japan)
- Best management practices for Perchlorate Materials (State of California Regulations)
- Act on Preventing Environmental Pollution of Mercury (Japan)

Section 16 - Other Information

Please take appropriate measures according to individual conditions, uses, and usages before using. In addition, the contents of this description were created based on the materials and information available to us at the time of creation and may be revised to new information.

Preparation This Sheet : TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORPORATION
Engineering Group
Planning & Procurement Dept.
Battery Business Div.

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Tel +81-44-577-0142 Fax +81-44-576-6025

Lithium Battery Test Summary / UN38.3 試験結果要約

1. Sales company / 販売会社

Toshiba Lifestyle Products & Services Corporation / 東芝ライフスタイル株式会社

Address 1310 Omiya-cho, Saiwai-ku, Kawasaki, Kanagawa 212-0014, Japan

住 所 神奈川県川崎市幸区大宮町 1310

Telephone +81-44-577-0142 / 電話番号 044-577-0142

Website <https://www.toshiba-lifestyle.com/jp/>

e-mail N/A / なし

2. Test laboratory / 試験場所 (Manufacturing company / 製造会社)

Toshiba Battery Co.,Ltd. / 東芝電池株式会社

Address 3000-2, Goubara, Annaka-shi, Gunma 379-0135 Japan

住 所 群馬県安中市郷原 3 0 0 0 番地 2

Telephone +81-27-385-5511 / 電話番号 027-385-5511

Website N/A / なし

e-mail N/A / なし

3. Description of Product / 製品情報

| 分類 Classification (UN No.) | 形 名 (Type name) 単電池 / 物理的形態 Cell / Physical description 円筒形 (Cylindrical) | 公称電圧 (Nominal voltage) | 電池質量 (*1) (Weight) | 標準容量 Standard capacity | リチウム含有量 (Lithium content) |
|---|---|---------------------------|-----------------------|---------------------------|------------------------------|
| リチウム金属電池 LITHIUM METAL BATTERIS (UN 3090) | ER3V | 3.6V | 8.5g | 1000mAh | >0.3g, <1g |
| | ER4V | 3.6V | 10g | 1200mAh | >0.3g, <1g |
| | ER6V | 3.6V | 16g | 2000mAh | >0.3g, <1g |
| | ER17330V | 3.6V | 13g | 1700mAh | >0.3g, <1g |
| | ER17500V | 3.6V | 19g | 2700mAh | >0.3g, <1g |
| | ER17505V | 3.6V | 19g | 3300mAh | >0.3g, <1g |
| | K6BAT | 3.6V | 16g | 2000mAh | >0.3g, <1g |
| | A6BAT | 3.6V | 13g | 1700mAh | >0.3g, <1g |
| | MR-BAT03 | 3.6V | 13g | 1700mAh | >0.3g, <1g |

(*1) : 質量は電池単体のものであり、仕様により異なる。

(*1) : The above weight information are limited to battery itself. Actual product weight depends on the final specifications

4. 国連勧告テスト結果/Test results

Identification number/番号 UN 20-01

Date of test report /レポート発行日 2020/10/01

| 国連勧告テストおよび判定基準 UN Recommendations tests (Manual of Tests and Criteria 7 th 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 | |
| T 1 | 高度シミュレーション/Altitude simulation | 合格/Pass | |
| T 2 | 温度試験/Thermal test | 合格/Pass | |
| T 3 | 振動/Vibration | 合格/Pass | |
| T 4 | 衝撃/Shock | 合格/Pass | |
| T 5 | 外部短絡/External short circuit | 合格/Pass | |
| T 6 | 圧壊試験/Crush | 合格/Pass | |
| T 7 | 過充電/Overcharge | N/A | 充電式組電池のみ Rechargeable battery only |
| T 8 | 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 7th 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 7th Revised Edition, Part III, sub-section 38.3).

Date :2024-01-12



Hideyuki Ogata / Group Manager

Engineering Group

Planning & Procurement Dept.

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| UNMTC-ER18 |
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December.3.2018

To whom it may concern;

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

Specialist
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