

April 02, 2009

# Products Information Data Sheet

These products are hermetically sealed state in a vessel, and are exempted from Material Safety Data Sheet regulations. However, this manual provides you with referential information to safely 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 HOME APPLIANCES CORPORATION  
 Address : 2-15, Sotokanda 2-Chome, Chiyoda-Ku, Tokyo 101-0021, Japan  
 Telephone : +81-3-3257-5871  
 Fax : +81-3-3257-5916

## 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 <sub>2</sub> )  | 7719-09-7 | Not regulated | 25~45 wt%       |
| Aluminum chloride (AlCl <sub>3</sub> ) | 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.

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### Section 5 - Fire Fighting Measures

- Fire extinguishers : Dry sand, dry chemical, graphite powder
- Prohibited fire extinguishers : Do not use water, CO<sub>2</sub>, CCl<sub>4</sub> 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 fire fighting 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 fire fighting personnel : Be sure to have them wear protective breathing masks. (Preferably, use a self-feeding type mask.)

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### 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.)

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### 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 20+/-15°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.

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**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 |

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**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  |

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**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. |
|--------------------------|---|---|

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**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 <sub>50</sub> :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 <sub>50</sub> :3700 ppm (Rat oral)   |
| Local effect          | : | No information   |
| Lithium chloride      |   |  |
| Acute toxicity        | : | L <sub>50</sub> :526 ppm (Rat oral)  |
| Local effect          | : | The central nervous system and the kidney may be affected.   |
| Carbon black          |   |  |
| Acute toxicity        | : | L <sub>50</sub> :2,000mg/kg > (Rat )   |
| Carcinogenic property | : | IARC group 2 (May be carcinogenic)   |

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**Section 12 - Ecological Information**

No information as batteries.

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**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 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 battery falls under the following dangerous goods to prescribe by the international recommendation (UN ST/SG/AC.10/1/Rev.15) about the dangerous goods transportation.

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

There are the following things about the transportation regulation. Both regulations is prescribed based on the international recommendation (UN ST/SG/AC.10/1/Rev.15).

| Area          | Method                    | Organization | Special Provision |
|---------------|---------------------------|--------------|-------------------|
| International | Air                       | ICAO,IATA    | -                 |
| International | Water                     | IMO          | 188               |
| U.S.A         | Air, Rail, Highway, Water | DOT          | 49 CFR 173.185    |
| Europe        | Rail, Highway             | RID,ADR      | 188               |

The transportation regulation correspondence situation of our product is as follows.

- Rail, Highway : Our product satisfies special provision. Therefore, I can transport it as no dangerous goods.
- Water : Our product satisfies special provision. Therefore, I can transport it as no dangerous goods.
- Air : Shown at \*2

**\*2 : The air transport of the lithium battery**

A regulation (IATA/DGR 50<sup>th</sup>) about the air transport of the lithium battery was largely reinforced from January, 2009.

Attention is necessary so that there is the product that air transport is not possible as no dangerous goods in our product by this revision. For details, please confirm it in the sales department.

**<Note> About the air transport of the lithium metal battery**

If all of following 7 requirements is satisfied, lithium metal cell/battery can be transported as no dangerous goods.

- ① The lithium content of the lithium metal cell/battery being weight of the table.

|         | Lithium weight |
|---------|----------------|
| Cell    | 1g or less     |
| Battery | 2g or less     |

All our Thionyl chloride lithium metal cell/battery are less than this standard value.

- ② Each cell/battery must meet requirements of the UN recommendation (Manual of Tests and Criteria, Part III, sub-section 38.3).

All our Thionyl chloride lithium cell/battery pass this examination.

- ③ Package pass drop test (all courses) of 1.2m unless cell/batteries contained in equipment.

- ④ Each package must be labeled with a lithium battery handling label.

(Each package containing more than four cells or two batteries installed in equipment must be labeled with a lithium battery handling label.)

- ⑤ Each consignment must mention the following contents in an air waybill.

( i ) The package contains Lithium metal cell/battery, and is no dangerous goods.

( ii ) The package must be handled with care and that a flammability hazard exists if the package is damaged.

( iii ) Special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and telephone number for additional information.

- ⑥ Satisfying government escape clause, an operator escape clause.

It is necessary confirmation and correspondence so that there is a setting case in a special provision by the government or an airline.

- ⑦ If a person transports cell/battery, there be weight of the package within 2.5kgG.

**Others instructions**

Transportation regulation in U.S.A.

: The transportation of lithium primary batteries has been prohibited with a passenger plane that leaves, arrives at and flies via the U.S.A. However, the following articles are exempted from the regulation.  
Application exemption

- (1) Transportation means other than a passenger plane (Cargo aircraft, land transportation, marine transportation). However, the following message must be indicated on the side of outer pack.

「PRIMARY LITHIUM BATTERIES FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT」

- High-contrast character colors (example: black characters on yellow base) should be used.
- The height of a character is regulated depending on package mass.

Total mass more than 30 kg : Minimum 12 mm

Total mass of 30 kg or less : Minimum 6 mm

- (2) Lithium primary batteries for personal use, brought in the plane, or housed in a baggage already inspected. However, the lithium mass contained in a single battery shall be not more than 5g.
- (3) Lithium primary batteries packed together with or assembled in equipment. However, special clause A101 (packed together with equipment) or A102 (assembled in equipment) of 49CFR (U.S. Federal Code Chapter 49) shall be satisfied.

Storage/ Handling

: Avoid high temperature, high humidity and condensation. Store batteries at room temperature (45°C or less; recommendation is 20+/-15°C) with minimum temperature variations and a RH of not more than 70%. Carefully handle containers, and do not strike them so strongly as denting a cell. Packing cells and prevent them from short-circuit. Also fix cells so as not to result in a load shift during transportation.

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## Section 15 - Applicable Laws and Regulations

The laws and ordinances about the battery obey laws and ordinances set in each country.

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## Section 16 - Other Information

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.

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| Date of Preparation    | : | February 9, 2009  |
| Preparation This Sheet | : | TOSHIBA BATTERY CO., LTD.<br>Technology Promotion Division<br>Application Engineering & Marketing Group |

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