Issued on 2017-01-01

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
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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 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.)

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 19th (UN)
- Dangerous Goods Regulations, 58th Edition (IATA)
- Technical Instructions for the Safety Transport of Dangerous Goods by Air, 2017-2018 Edition (ICAO)
- International Maritime Dangerous Goods (IMDG) Code, 2016 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.

Prepared Day	:	December 24, 2008
Revised Day	:	January 01, 2017
Preparation This Sheet	:	TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORPORATION Engineering Group Planning & Procurement Dept. Battery Business Div.