

Product Safety Data Sheet

The batteries are exempt articles and are not subject to the OSHA Hazard Communication Standard Requirement. This sheet is provided as technical information only. The information and recommendations set forth are made in good faith and are believed to be accurate as of the date of preparation. However, **Maxell makes no warranty, expressed or implied.**

Section 1 - Product and Company Identification

Product Name Lithium Thionyl Chloride Batteries (ER)	Sizes: All	Date of preparation: Jan. 21, 2005
Company: Hitachi Maxell, Ltd. Ono Works	Telephone: 81-(0)794-63-8054	
Address (Number, Street, City, State, and ZIP Code): 5, Takumidai, Ono-shi, Hyogo 675-1322, Japan	Fax: 81-(0)794-63-8058	

Section 2 - Composition/Information on Ingredients

Ingredient	CAS#	Content (wt%)
Thionyl Chloride (SOCl ₂)	7719-09-7	20 to 45
Aluminum Chloride (AlCl ₃)	7446-70-0	2 to 6
Lithium Chloride (LiCl)	7447-41-8	0 to 2
Lithium (Li)	7439-93-2	2 to 6
Carbon (C)	1333-86-4	2 to 8

Section 3 - Hazards Identification

This is a high energy density sealed battery containing dangerous (Lithium) and deleterious (Thionyl Chloride) materials. For this reason, improper handling of the battery could lead to distortion, leakage*, overheating, explosion, fire, or generation of irritating/corrosive gases and cause human injury or equipment trouble. Please strictly observe safety instructions.

* (Leakage is defined as an unintended escape of liquid from a battery.)

Section 4 - First Aid Measures

None unless exposed to internal materials. If contents leak, observe the following instructions

Inhalation	Fumes can cause nausea or difficulty in breathing. Ensure the person has fresh air and consult a physician.
Skin	Immediately wash the skin with plenty of water. If itchiness or irritation due to chemical burns persists, consult a physician.
Eyes	Immediately rinse the eye with plenty of water and continue for at least 15 minutes. Consult a physician immediately.
Ingestion	If a battery is swallowed, consult a physician immediately. If the contents come into contact with the mouth, immediately rinse with plenty of water and consult a physician.

Section 5 - Fire Fighting Measures

Extinguishing Media	Alkaline metal fires can be effectively extinguished. Plenty of cold water is also effective to cool the surrounding area and control the spread of fire. But hydrogen gas may be generated by the reaction of water and lithium, forming a potentially explosive mixture. Therefore, use a smothering agent if many lithium batteries are burning in a confined space.
Fire fighting procedure	Use self-contained breathing apparatus and full protective gear to avoid inhaling harmful gases.

Section 6 - Accidental Release Measures

None under normal use conditions. If contents leak, observe the following instructions

Protection for person	Use full protective equipment to avoid breathing vapors or touching liquid.
Removing procedure	Put the leaked battery into large container filled with water. Rinse the leaked liquid with water.
Area	Evacuate the area except for operators. After above procedures, ventilate the contaminated area.

Section 7 - Handling and Storage

1) Handling

Do not: swallow, apply an excessive force to the positive terminal, drop, weld the terminal or wire to the body of the battery directly, short-circuit the battery, charge, forcibly discharge, heat, expose to open flame, disassemble, reverse the positive and negative terminals when mounting, use different batteries together, touch any liquid that leaks from the battery, or hold it for an extended period.

2) Storage

Keep the battery away from water. Never store the battery in a hot or very humid place.

Section 8 - Exposure Controls, Personal Protection

Respiratory Protection	NA	
Ventilation	Local Exhaust	NA
	Mechanical	NA
	Special	NA
	Other	NA
Eye Protection	NA	
Protective Gloves	NA	
Other protective clothing	NA	

Section 9 - Physical/Chemical Characteristics

NA

Section 10 - Stability and Reactivity

Stability	Stable
Incompatibility	Water
Hazardous polymerization	Will not occur.
Condition to avoid	See section 7.
Hazardous Decomposition or Byproducts	Sulfur Dioxide, Hydrogen Chloride, Hydrogen

Section 11 - Toxicological Information

NA

Section 12 - Ecological Information

NA

Section 13 - Disposal condition

The battery may be regulated by national or local regulations. Please follow the proper regulations. As electric capacity remains in a discarded battery it could lead to distortion, leakage, overheating, or explosion, if it comes into contact with other metals, so make sure to cover the (+) and (-) terminals with friction tape or some other insulator before disposal.

Section 14 - Transportation Information

Shipping Name	Lithium Batteries
UN Number	UN3090 (UN3091 for lithium batteries in equipment)
Hazard Classification	Class 9 (Miscellaneous)

Organizations governing the transport of lithium batteries

Area	Method	Organization	Special Provision
International	Air	IATA, ICAO	A45
International	Water	IMO	188
U.S.A	Air, Rail, Highway, Water	DOT	49 CFR Section 173.185

These regulations are based on the UN Recommendations. Each special provision provides specifications on exceptions and packaging for shipping lithium batteries. All Maxell's ER batteries meet all special provisions.

Ref) Summary of A45 (IATA Dangerous Goods Regulations 44th Edition)

If all of the following three requirements are satisfied, lithium batteries will not be considered as dangerous goods when transported.

1) Lithium weight or equivalent lithium content* must be less than the value in table.

	Lithium Cell/Battery (Lithium weight)	Lithium ion Cell/ Battery (Equivalent lithium content)
Cell	1g or less	1.5g or less
Battery	2g or less	8g or less

*Equivalent lithium content (g) is calculated as 0.3(g/Ah) times the rated capacity (Ah).

2) Cells and batteries must meet the requirements of the UN T1–T8 tests.**3) Each package containing more than 24 cells or 12 batteries shall:**

- a) Be marked to indicate that it contains lithium batteries, and that special procedures are to be followed in the event that the package is damaged.
- b) Be accompanied by a shipping paper explaining that the cells and batteries are exempt from regulations.
- c) Weigh no more than 30kg (gross weight).
- d) Be capable of withstanding a 1.2m drop test in any orientation without any shifting of the contents that would allow short-circuiting, and without release of package contents.

Because the consignor has to take responsibility, the customer has to confirm exceptional conditions when shipping.

Section 15 - Regulatory Information

NA

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.

For further information, please contact a Maxell sales representative.