



## 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: Coin Type Lithium-ion Rechargeable Battery (CLB)	Sizes: All	Date of preparation: Jan. 1, 2019
Company: Maxell, Ltd., Energy Division, Micro Battery Design Department	Telephone Numbers: 81-(0)794-63-8054	
Address (Number, Street, City, State, and ZIP Code): 5, Takumidai, Ono-shi, Hyogo 675-1322, Japan	Fax Numbers: 81-(0)794-63-8445	

### **Section 2 – Hazards Identification Including Emergency Overview**

A lithium ion cell is normally stable under appropriate handling and storage conditions. If a lithium ion cell generates abnormal heat, keep away from the cell to avoid inhaling internal materials. Chemicals utilized in lithium ion cells do have some toxicity and inhalation may cause irritation.

### **Section 3 – Composition / Information on Ingredients**

Components	CAS#	Content (wt%)
Lithium Cobalt Dioxide (LiCoO <sub>2</sub> )	12190-79	5 to 30
Lithium Hexafluorophosphate (LiPF <sub>6</sub> )	21324-40-3	0.1 to 10
Ethylene Carbonate (C <sub>3</sub> H <sub>4</sub> O <sub>3</sub> )	96-49-1	1 to 4
Chain Carbonate (-)	-	1 to 6
Graphite (C)	7782-42-5	3 to 15

Model	Wh*	Model	Wh*
CLB2032	0.26	CLB3032	0.74
CLB2016	0.11	CLB937	0.07
CLB740	0.05	—	—

\*Nominal voltage x Nominal capacity

**Section 4 - First Aid Measures**

None unless internal materials exposure. If contents are leaked out, observe following instructions.

Inhalation	Fumes can cause respiratory irritation. Remove to fresh air and consult a physician.
Skin	Immediately flush skin with plenty of water. If itch or irritation by chemical burn persists, consult a physician.
Eyes	Immediately flush eye with plenty of water for at least 15 minutes. Consult a physician immediately.
Ingestion	If swallowing a battery, consult a physician immediately. If contents come into mouth, immediately rinse by plenty of water and consult a physician.

**Section 5 - Fire Fighting Measures**

Extinguishing Media	Extinguisher of alkaline metal fire is effective. Plenty of cold water is also effective to cool the surrounding area and control the spread fire. But hydrogen gas may be evolved by the reaction of water and lithium and it can form an explosive mixture. Therefore in the case that lots of lithium ion batteries are burning in a confined space use a smothering agent (e.g. carbon dioxide or dry sand).
Fire fighting procedure	Use self-contained breathing apparatus and full protective gear not to inhale harmful gas.

**Section 6 - Accidental Release Measures**

If the battery releases liquid, wipe it with a dry cloth.  
Keep the battery away from fire or heat.

**Section 7 - Handling and Storage****Handling:**

- Do not swallow. Always keep the battery out of the reach of infants and young children to prevent it from being swallowed. If swallowed, consult a physician immediately.
- Do not put the battery in a microwave oven or a pressure cooker. Sudden heat may damage the seal of the battery and may cause overheating, explosion or fire.
- Do not use the battery together with a primary battery such as a dry battery or other battery of a different capacity, type and/or brand. In such a case, over-discharge during use or over-charge during charging may occur and abnormal chemical reactions may cause heat generation, explosion or fire from the battery.
- Design your equipment so that the end user cannot replace the battery by mistake. If you are an equipment manufacturer and need to replace the battery, please use a new one of the same type and same model as the existing one. Because this is a rechargeable battery, its characteristics are completely different from other primary batteries (e.g. coin type lithium manganese dioxide batteries: CR) or other secondary batteries (e.g. lithium manganese dioxide

rechargeable batteries: ML) even though their shapes are alike. If a different battery is installed in the circuit in place of a CLB battery, gas could be generated or the primary battery could be short-circuited by charging. This could lead to distortion, leakage, overheating, explosion, or fire.

- If you notice any unusual odor, heat, discoloration, deformation or any other characteristic apart from what you are used to while using, charging or storing the battery, then take it out of the equipment or charger, and avoid using it. Using it in such state may result in overheating, explosion or fire.
- If the battery leaks or emits an unusual odor, remove it from the vicinity of any fire immediately. The electrolyte may catch fire, which may cause explosion or fire.
- Do not let leaked electrolyte come into contact with the eyes. In the event of such contact, flush the eyes with plenty of water immediately and consult a doctor. Otherwise prolonged contact may cause serious injury.
- When charging is not finished in the expected period of time, stop charging. Otherwise the battery may cause overheating, explosion or fire.

#### Storage:

- Never let the battery contact with water. Never store the battery in hot and high humid place.
- Charge the battery every 6 months to the amount specified by the manufacturer, even if the battery is not used.

#### **Section 8 - Exposure Controls, Personal Protection**

Respiratory Protection	NA
Ventilation	NA
Eye Protection	NA
Protective Gloves	NA
Other protective clothing	NA

#### **Section 9 – Physical/Chemical Characteristics**

The appearance is a coin shape and it is a rechargeable cell with 3.7V nominal voltage.

#### **Section 10 - Stability and Reactivity**

Stability: Stable (Performance deterioration depends on circumstance.)

Incompatibility: Water

Hazardous polymerization: Will not occur.

Condition to avoid: See section 7 , Do not heat above 100°C (212°F)

Hazardous Decomposition or Byproducts: Hydrogen (By moisture)

#### **Section 11 - Toxicological Information**

As the contents are sealed in the battery case, there is no toxicity.

#### **Section 12 - Ecological Information**

If the battery is disposed of on land or in water, the battery case may corrode and liquid leak from the battery. Ecological information has not been reported.

**Section 13 - Disposal Consideration**

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

**Section 14 - Transportation Information**

Shipping Name (UN Number)	Lithium ion batteries (UN3480) Lithium ion batteries packed with equipment (UN3481) Lithium ion batteries contained in equipment (UN3481)
Hazard Classification	Class 9 (Miscellaneous)

Organizations governing the transport of lithium batteries are as follows,

Area	Method	Organization	Packing Instruction or Special Provision
International	Air	IATA, ICAO	PI 965-967
International	Maritime	IMO	SP 188
U.S.A	Air, Rail, Road, Maritime	DOT	49 CFR Section 173.185

Their regulations are based on the UN Recommendations. The UN Recommendations require that lithium ion cells and batteries shall be manufactured under a quality management program and this requirement is adopted by IMDG Code and ICAO TI/IATA DGR. Since Maxell factories have been certified to ISO 9001, we meet this requirement.

Each packing instruction or special provision provides specifications on exceptions and packaging for lithium ion cells and batteries.

1) Air transportation: In IATA DGR (60<sup>th</sup> edition), the packing requirements for lithium ion cells and batteries transport is specified in PI 965, for lithium ion cells and batteries packed with equipment in PI 966, and for lithium ion cells and batteries contained in equipment in PI 967. Maxell coin type lithium ion cells which have a Watt-hour rating of 2.7Wh or less can be transported according to Section II (Exemption from Class 9 Dangerous Goods) of PI 965. Lithium ion cells and batteries, UN 3480, Packaging Instruction 965 only, are forbidden for carriage as cargo on passenger aircraft.

UN 3480, PI 965, Section IA and IB. Lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity. Cells and/or batteries at a SoC of greater than 30% may only be shipped with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

UN 3480, PI 965, Section II. Lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity.

2) Maritime transportation: Maxell coin type lithium ion cells which have a Watt-hour rating of not more than 20Wh can be transported as "Exemption from Class 9 Dangerous Goods" according to SP 188 of IMDG Code.

As the related district, country or airline may establish their special requirements, the shipper shall confirm them with the forwarder in advance.

**Section 15 - Regulatory Information**

Major applicable regulations for the transportation of lithium-ion cells and batteries are as follows:

- UN(United Nations) Recommendations on the Transport of Dangerous Goods: Model Regulations 20th revised edition
- UN(United Nations) Recommendations on the Transport of Dangerous Goods: Manual of Test and Criteria
- The International Civil Aviation Organization (ICAO): Technical Instructions for Safety Transport of Dangerous Goods by Air, 2019-2020 edition
- The International Air Transport Association (IATA): Dangerous Goods Regulations, 60th edition
- International Maritime Organization (IMO): International Maritime Dangerous Goods (IMDG) Code, 2018 edition

Major environmental regulations are as follows:

- EU BATTERY DIRECTIVE 2006/66/EC (2013/56/EU)

### **Section 16 - Other Information**

If you want further information, please contact Maxell sales representative