



Product Name ..... : Li-Ion Battery

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**Section 3 - Composition / Information On Ingredients**

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This battery cell is contained in a hermetically sealed case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, hazardous materials are fully contained inside the battery cell. However, if exposed to a fire, explosion, extreme abuse, misuse or improper disposal that results in breaching of the battery cell case, hazardous materials may be released. The following physical data relating to the hazardous materials contained within the battery cell are provided for the user's information.

Substance: Lithium Ion Battery - rechargeable  
CAS - Number: not specified  
UN - Class: Lithium batteries; Exempt from Dangerous Goods classification because of low lithium content.

(UN-Recommendations on the Transport of Dangerous Goods Model Regulations: (ST/SG/AC.10/1 Rev.11)

\*\* Lithium ion rechargeable batteries are not subject to the UN Regulations if they meet the following provision. The equivalent Lithium content is not more than 8g per battery pack (and not more than 1.5g per cell.)

Composition: - Positive electrode; Lithium cobalt oxide 20-35wt%  
- Negative electrode; Carbon 5-20wt%  
- Electrolyte; organic electrolyte mainly composed of alkyl carbonate 10-20wt%

**CARCINOGENIC COMPONENTS:** Cobalt compounds.

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**Section 4 - First Aid Measures**

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**EYE CONTACT:** If contents from an opened battery comes in contact with the eyes, immediately flush eyes thoroughly with water and continue flushing for at least 15 minutes without rubbing. Seek medical attention.

**SKIN CONTACT:** If the contents from an opened battery come in contact with the skin, wash with soap and water. If irritation persists or contact has been prolonged, seek medical attention. If appropriate procedures are not followed, skin contact may cause sores on skin.

**INHALATION:** If potential for exposure to fumes or dusts occurs, remove immediately to fresh air and seek medical attention.

**INGESTION:** If contents from an opened battery are swallowed, do not induce vomiting. Seek medical attention immediately.

**NOTE TO PHYSICIANS:** No further data known.

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**Section 5 - Fire Fighting Measures**

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**FIRE AND EXPLOSIVE PROPERTIES:**Flashpoint.....: N/A Flammability Limits : LEL - N/A  
UEL - N/A**EXTINGUISH MEDIA:** It is permissible to use dry chemical, alcohol-resistant foam or carbon dioxide extinguishing mediums.**FIRE-FIGHTING PROCEDURES AND EQUIPMENT:** Since inhalation of vapors may irritate eyes, nose and throat, use self-contained breathing apparatus.

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**Section 6 - Accidental Release Measures**

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**PERSONAL PRECAUTIONS:** Use rubber gloves and safety glasses, and a gas mask for organic gases when handling leaking battery. Move batteries and contents away from open fire.**CLEAN-UP MEASURES:** Spills and leaks are unlikely because cells are contained in a hermetically sealed case. If the battery case is breached, don protective clothing that is impervious to caustic materials and absorb or pack spill residues in inert material. Dispose of as a hazardous waste in accordance with applicable state and federal regulations. Resultant spill residues may be characterized as D002 (caustic) pursuant to the federal Resource Conservation and Recovery Act (RCRA). Provide appropriate ventilation.

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**Section 7 - Handling And Storage**

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**HANDLING:** Accidental short circuit (contacting positive and negative battery terminals with a conductive object) will bring high temperature evaluation to the battery as well as shorter battery life. Be sure to avoid prolonged short circuit since the heat can burn attendant skin and can even rupture the battery cell case. Batteries placed in bulk containers should not be shaken. Metallic objects in tool boxes can cause short circuit. (1)(2)(3)**CHARGING:** This battery is designed for recharging. Charge battery before use. Observe the specified charging instructions since incorrect charging can cause a rise in internal gas pressure which may result in damaging heat generation or cell rupture and/or venting.**STORAGE:** Store in a cool, well-ventilated location. Prevent condensation on cell or battery terminals. Elevated temperatures may result in reduced battery life. Optimum storage temperatures are between 32°F (0°C) and 95°F (35°C). Avoid exposure to static electricity so that no damage will be caused to the protective circuitry of the battery pack.

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**CAUTION:** Do not dispose in fire, mix with other battery types, charge above specified rate, connect improperly, or short circuit, which may result in overheating, explosion, or leakage of cell contents.

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### Section 8 - Exposure Controls / Personal Protection

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Acceptable concentration: not specified in ACGIH (4)

Facilities: Provide appropriate ventilation system such as local ventilator.

Engineering Controls: None required under conditions of normal use.

#### PERSONAL PROTECTIVE EQUIPMENT:

- **Eye Protection:** None required under conditions of normal use.
- **Skin Protection:** None required under conditions of normal use.
- **Ventilation / Respiratory Protection:** None required under conditions of normal use.

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### Section 9 - Physical And Chemical Properties

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Physical Appearance:..... : Sealed Battery  
Odor..... :N/A Physical State..... :N/A  
Water Solubility..... :N/A Specific Gravity..... :N/A

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### Section 10 - Stability And Reactivity

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**STABILITY:** Since batteries utilize a chemical reaction they are considered a chemical product. As such, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. The battery is stable under normal operating conditions.

**CONDITIONS TO AVOID:** Open flames, heat, sparks and moisture. Battery should not be incinerated or abused. Do not subject battery to temperatures in excess of 140°F (60°C). Such treatment can vaporize electrolyte and cause cell rupture.

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### Section 11 - Toxicological Information

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**ACUTE TOXICITY:** oral LD50 >2g/kg (estimated)

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**IRRITATION:** Irritating to skin and eyes

**MUTAGENICITY:** not specified

**CHRONIC TOXICITY:** not specified

**OTHER:** not specified

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### Section 12 - Ecological Information

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**ECOTOXICOLOGICAL INFORMATION:** Resultant spill residues may be characterized as D002 (caustic) pursuant to the federal Recovery and Recovery Act (RCRA).

**HEAVY METAL QUANTITY PER CELL:**

Hg	<0.5 ppm	Measure Analysis: atomic absorption spectrometer
Cd	< 4.0 ppm	Measure Analysis: atomic absorption spectrometer

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### Section 13 - Disposal Consideration

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**WASTE DISPOSAL:**

Li-Ion batteries should not be incinerated or subjected to temperatures in excess of 140°F (60°C). Such treatment can cause cell rupture. In the event of disposal, dispose only in accordance with federal, state and local regulations.

These Li-Ion batteries are classified as hazardous waste and are not safe for disposal in the normal waste stream. The Ridge Tool Company encourages recycling, as these batteries do contain recyclable materials that can be reused. The battery packs bear the Rechargeable Battery Recycling Corporation (RBRC ) symbol, indicating RIDGID has already paid the cost of recycling the lithium-ion battery packs once they have reached the end of their useful life. For recycling center locations, call 1-800-822-8837.

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### Section 14 - Transportation Information

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**U.S. DOT HAZARDOUS MATERIAL INFORMATION:**

Sealed Li-Ion batteries are considered non-hazardous goods and are unregulated for purposes of transportation by the U.S. Department of Transportation (DOT), International Civil Aviation Administration (ICAO), International Air Transport Association (IATA) and the International Maritime Dangerous Goods regulations (IMDG). It is recommended that batteries are in a less than 50% charged state (SOC). For air shipment that contain more than 40 new lithium ion rechargeable cells, or more than 20 new lithium ion rechargeable batteries, they are recommended to be subject to the following Federal Register/ Vol. 65, No. 174/Thursday, September 7, 2000/Notices (2):

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1. Each package shall be marked indicating that it contains Li-Ion batteries and special procedures shall be followed in the event that the package is damaged.
2. Each shipment shall be accompanied with a document indicating that the packages contain Li-Ion batteries and that the special procedures shall be followed in the event that the package is damaged.
3. The same documents shall be provided to air carriers.
4. Packages shall not exceed 30 Kg.
5. Packages shall be strong boxes, at the packing group II performance level.

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### Section 15 - Regulatory Information

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- IATA Dangerous Goods Regulations
- ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air.

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### Section 16 - Other Information

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References:

- (1) UN Recommendations on the Transportation of Dangerous Goods Model Regulations
- (2) Federal Register/Vol. 65, No. 174/Thursday, September/, 2000/Notices
- (3) IATA Dangerous Goods Regulations 42<sup>nd</sup> Edition Effective 1 January 2001
- (4) TLVs und BEIs 1999 ACGIH

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