

MATERIAL SAFETY DATA SHEET

MSDS032

Section 1. Chemical Product And Company Identification

Ultralife Part Number:	Ultralife Lithium Ion Cells or Battery Packs	
Description:	Lithium Cobalt Dioxide Chemistry	
Size:	Lithium Ion Liquid Series of Batteries	
Customer Description:	N/A	
Customer Part Number:	N/A	
National Stock Code:	N/A	
Manufactured by	<input checked="" type="checkbox"/> Ultralife Batteries (UK) Ltd.	<input checked="" type="checkbox"/> Ultralife Batteries, Inc.
	18 Nuffield Way	2000 Technology Pkwy
	Abington, Oxfordshire, OX14 1TG, England	Newark, NY 14513-2175
CAGE Code	U6734	0UU59
Emergency Telephone Number:	Chemtrec for Spills, Leaks, Fires	
	USA	1-800-424-9300
	International	703-527-3887
Technical Contact Telephone Number:	1-800-332-5000	
MSDS Prepared by:	Stanton Mesh	
Date Prepared:	April 3, 2006	
Date Reviewed:	April 3, 2006	

Section 2. Composition/Information on Ingredients

Chemical Name	CAS #	ACGIH TLV	Percent of Content
Lithium Cobalt Oxide	12190-79-3	.02 mg/m ³ as Co	33-34%
Carbon, as Graphite	7440-44-0	3.5 mg/m ³	16-17%
Organic Carbonates:			
EC	96-49-01		10-11% Total all 4
PC	108-32-7		
DMC	616-38-6		
DEC	105-58-8		
Lithium Salts LiPF ₆	21324-40-2		1-2%

The balance of the battery is inert materials

ACGIH: American Council of Government Industrial Hygienists

TLV: Threshold Limit Value are personal exposure limits determined by the ACGIH

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Section 3. Hazards Identification

Emergency overview: Caution, do not open or disassemble. Do not expose to fire or open flame. Do not mix with batteries of varying sizes, chemistries or types. Do not puncture, deform incinerate or heat above 85°C.

Potential health effects: The materials contained in this battery may only represent a hazard if the integrity of the battery is compromised or if the battery is physically or electrically abused. **Acute exposure:** Electrolyte may irritate skin and eyes.

Section 4. First Aid Measures

If materials from a ruptured or otherwise damaged cell or battery contact skin, flush immediately with water and wash affected area with soap and water. For eye contact, flush with copious amounts of water for 15 minutes and see physician at once. Avoid inhaling any vented gases. If irritation persists, seek medical assistance.

5. Fire Fighting Measures

Extinguishing Media:

Dry chemical type extinguishers or water are the most effective means to extinguish a cell or battery fire. A CO₂ extinguisher will also work effectively.

Fire Fighting Procedures

Use a positive pressure self-contained breathing apparatus if batteries are involved in a fire. Full protective clothing is necessary. During water application, caution is advised as burning pieces of flammable particles may be ejected from the fire.

Unusual Fire and Explosion Hazards

Cells or batteries may flame or leak potentially hazardous organic vapors if exposed to excessive heat or fire.

Hazardous combustion products

Fire, excessive heat, or over voltage conditions may produce hazardous decomposition products.

Damaged or opened cells or batteries can result in rapid heating and the release of flammable vapors. Vapors may be heavier than air and may travel along the ground or be moved by ventilation to an ignition source and flash back.

Section 6. Accidental Release Measures

Damaged batteries that are not hot or burning should be placed in a sealed plastic bag or container.

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Section 7. Handling and Storage

Batteries are designed to be recharged. However, improperly charging a cell or battery may cause the cell or battery to flame. Use only approved chargers and procedures.

Never disassemble a battery or bypass any safety device.

Should a battery unintentionally be crushed, thus releasing its contents, rubber gloves must be used to handle all battery components. Avoid inhalation of any vapors that may be emitted.

In the event of skin or eye exposure to the electrolyte, refer to Section 4, First Aid Information.

Batteries should be separated from other materials and stored in a non-combustible, well ventilated, sprinkler-protected structure with sufficient clearance between walls and battery stacks. Do not place batteries near heating equipment, nor expose to direct sunlight for long periods.

Do not store batteries above 60 °C or below -32°C. Store batteries in a cool (below 21°C (70°F)), dry area that is subject to little temperature change. Elevated temperatures can result in reduced battery service life. Battery exposure to temperatures in excess of 130°C will result in the battery venting flammable liquid and gases.

Do not store batteries in a manner that allows terminals to short circuit.

More than a momentary short circuit will cause temporary battery voltage loss until the battery is subjected to a charge. Batteries have re-settable fuses that can be reactivated through applying a charge to the battery.

Extended short-circuiting creates high temperatures in the cell. High temperatures can cause burns in skin or cause the cell to flame.

Avoid reversing battery polarity within the battery assembly. To do so may cause cell to flame or to leak.

Section 8. Exposure Controls/Personal Protection

No engineering controls are required for handling batteries that have not been damaged.

Personal protective equipment for damaged batteries should include chemical resistant gloves and safety glasses. In the event of a fire, SCBA should be worn along with thermally protective outer garments.

Section 9. Physical And Chemical Properties

Not Applicable

Section 10. Stability And Reactivity

- (1) This product is stable under ordinary conditions of use and storage.
- (2) It is not recommended that this product be stored above 60°C (140°F).
- (3) Hazardous decomposition products: Carbon Monoxide (CO) and other VOC's.

Section 11. Toxicological Information

- (1) Irritancy: The electrolytes contained in this battery can irritate eyes with any contact. Prolonged contact with the skin or mucous membranes may cause irritation.
- (2) Sensitization: No information is available at this time.
- (3) Carcinogenicity: No information is available at this time.
- (4) Reproductive toxicity: No information is available at this time.
- (5) Teratogenicity: No information is available at this time.
- (6) Mutagenicity: No information is available at this time.

Section 12. Ecological Information

Not applicable to this material/product.

Section 13. Disposal Considerations

Batteries should be completely discharged prior to disposal and/ or the terminals taped or capped to prevent short circuit. When completely discharged it is not considered hazardous.

This product does not contain any materials listed by the United States EPA as requiring specific waste disposal requirements. These are exempted from the hazardous waste disposal standards under Universal Waste Regulations. Disposal of large quantities of Lithium Ion batteries or cells may be subject to Federal, State, or Local regulations. Consult your local, state and provincial regulations regarding disposal of these batteries.

Section 14. Transport Information

(1) Product is shipped as:

Ground (DOT)	Air (IATA/ICAO)	Water(IMDG)
Non-Hazardous	UN3090	UN3090
	Lithium Batteries	Lithium Batteries
	Class 9, PG II	Class 9, PG II

(2) Special shipping information. This battery has been tested to Section 38.3 of 'UN Manual of Tests and Criteria'. The amount of Lithium contained in these batteries is below the limits set by the DOT in Section 49CFR173 and IATA. These can be shipped with the following label:

**LITHIUM ION or LITHIUM POLYMER
RECHARGEABLE BATTERIES**

(No Lithium Metal)

Do not damage or mishandle this package

If package is damaged, batteries must be
quarantined, inspected and repacked.

For emergency information, call CHEMTREC

1-800-424-9300 North America

Section 15. Regulatory Information

See ACGIH exposure limits information as noted in Section 2.

USA: This MSDS meets/exceeds OSHA requirements.

Canada: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

International: This MSDS conforms to European Union (EU), the International Standards Organization (ISO) and the International Labour Organization (ILO) and as documented in ANSI (American National Standards Institute) Standard Z400.1-1993.

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Section 16. Other Information

The information contained herein is furnished without warranty of any kind. Users should consider this data only as a supplement to other information gathered by them and must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.