

# SAFETY DATA SHEET

## Lithium-Ion Battery

Date: October 31, 2013

Version: 1.0

### Section 1 – Product and Company Identification

**Product Name:** Lithium-ion rechargeable battery  
**Parts Identification:** Rechargeable batteries for Clight Hemiplus, 87DCPlus, 450Plus and Clipstrip Aqua;  
**Part Numbers:** 114303, 410190, 87DCPlus, 450DCPlus, 111113  
**Product Class:** Lithium-ion batteries for LED lights  
**Manufacturer:** Clight Manufacturing  
961 Alness Street  
Toronto, ON M3J 2J1, Canada  
**Telephone:** +1 416 736 9036  
**Emergency Telephone:** +1 613 996 6666 (Canutec)

### Section 2 – Hazards Identification

**NOTE: These lithium-ion rechargeable batteries are sealed units and are not harmful under conditions of normal use as recommended by the manufacturer. The information in this section relates to unusual conditions resulting from abuse in which the battery electrodes and electrolyte are exposed.**

#### **GHS Classification**

Skin irritation (Category 2)  
Skin sensitization (Category 1)  
Eye irritation (Category 2)  
Single target organ toxicity, single exposure (Category 3)  
Carcinogen (Category 1B)

#### **GHS Label elements, including precautionary statements**

Pictograms



Signal word

Danger

Hazard statements

H315 Causes skin irritation  
H317 May cause an allergic skin reaction  
H319 Causes serious eye irritation  
H335 May cause respiratory irritation  
H350 May cause cancer

Precautionary statements

P280 Wear protective gloves/protective clothing/eye protection / face protection.  
P312 Call a POISON CENTER or doctor/ physician if you feel unwell.  
P302 + P350 IF ON SKIN: Gently wash with plenty of soap and water.  
P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.  
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

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Precautionary statements (continued):

P362 + P352 Take off contaminated clothing and wash before re-use.

P501 Dispose of contents/container in accordance with local/national regulations.

**WHMIS Classification**

D2A Very toxic material causing other toxic effects

D2B Toxic material causing other toxic effects

Carcinogen

Moderate skin irritant

Skin sensitizer

Moderate respiratory irritant

Moderate eye irritant

**OSHA Classification**

Hazardous

**HMIS Classification**

Health Hazard: 2

Chronic Hazards: \*

Flammability: 2

Physical Hazards: 0

**Potential Health Effects**

Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.

Skin: May be harmful if absorbed through skin. May cause skin irritation.

Eyes: Causes eye irritation.

Ingestion: May be harmful if swallowed.

Other: May cause cancer.

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

Ingredient Name	CAS No.	EC No.	Composition, wt%
lithium cobalt oxide	12190-79-3	235-362-0	37
graphite	7782-42-5	231-955-3	25
copper foil	7440-50-8	231-159-6	10
1,3-dioxolan-2-one	96-49-1	202-510-0	5.7
diethyl carbonate	105-58-8	212-786-4	5.7
dimethyl carbonate	616-38-6	210-478-4	5.7
aluminum foil	7429-90-5	231-072-3	4
lithium hexafluorophosphate	21324-40-3	244-334-7	0.5

**Section 4 – First Aid Measures****Inhalation:** Remove person to fresh air.**Eye Contact:** Remove contact lenses and immediately flush eyes with copious amounts of water for at least 15 minutes. Obtain medical attention.**Skin Contact:** Immediately wash skin with soap and copious amounts of water. If irritation persists or if contact has been prolonged, obtain medical attention.**Ingestion:** Do NOT induce vomiting. Wash out mouth with water provided person is conscious. Call a physician.

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**Section 5 – Fire Fighting Measures****Extinguishing media**

Use carbon dioxide, dry chemical powder, or appropriate foam.

**Special hazards arising from the substance or mixture**

Battery may burst and release hazardous decomposition products when exposed to a fire situation.

Hazardous products formed on combustion include cobalt oxide, lithium oxide, copper oxide and aluminum oxide as well as carbon dioxide/monoxide and nitrogen oxides. Hydrogen fluoride and hydrofluoric acid may be present.

**Advice for firefighters**

Self-contained breathing apparatus and protective clothing as required.

**Section 6 – Accidental Release Measures****Personal Precautions**

Wear chemical-resistant gloves and chemical safety goggles. Use suitable respirator when high concentrations of vapours or fumes are present.

**Environmental Precautions**

Shut off all sources of ignition. Ensure adequate ventilation. Prevent runoff to sewers and waterways.

**Methods and materials for containment and cleaning up**

Sweep up using a method that does not generate dust. Collect as much of the spilled material as possible, placed the spilled material into a suitable disposal container. Dispose of waste as in Section 13.

**Section 7 – Handling and Storage****Precautions for safe handling**

Do not short batteries or install with incorrect polarity. Keep in original packaging until use. Batteries may explode or cause burns if disassembled, crushed or exposed to fire or high temperatures. Wash hands after handling. Keep away from food and drink.

**Conditions for safe storage**

Store in a cool, dry, well-ventilated place. Keep away from heat, sparks, flame and moisture. Avoid extended exposure to sunlight.

**Section 8 – Exposure Controls / Personal Protection****Control Parameters:**Components with workplace controls

<u>Graphite</u>	CAS 7782-42-5	TWA	2.5 mg/m <sup>3</sup>	USA, NIOSH recommended exposure limits
			5 mg/m <sup>3</sup>	USA, OSHA limits for air contaminants
			5 mg/m <sup>3</sup>	USA, OSHA occupational exposure limits
			3 mg/m <sup>3</sup>	Australian workplace exposure standards for airborne contaminants
		TWA	2 mg/m <sup>3</sup>	Canada, British Columbia OEL
		TWAEV	5 mg/m <sup>3</sup>	Canada, Alberta OEL Canada, Quebec OELs

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Components with workplace controls (continued)

Lithium hexafluorophosphate	CAS 21324-40-3	TWA	2.5 mg/m <sup>3</sup>	USA, OSHA limits for air contaminants USA, OSHA occupational exposure limits
		TLV	2.5 mg/m <sup>3</sup>	USA, ACGIH Threshold Limit Value
		TWA	2.5 mg/m <sup>3</sup>	Australian workplace exposure standards for airborne contaminants
		TWA	2.5 mg/m <sup>3</sup>	Canada, British Columbia OEL Canada, Alberta OEL
		TWAEV	2.5 mg/m <sup>3</sup>	Canada, Quebec OELs

**Engineering Controls:** Have eye bath available. Use non-sparking tools.

**Protective Equipment:** Wear chemical-resistant gloves and chemical safety goggles.

**Hygiene:** Follow good industrial hygiene procedures. Keep away from food, beverages and feed. Wash thoroughly after handling. Wash contaminated clothing before re-use.

**Section 9 – Physical and Chemical Properties**

Appearance	Blue or green
Odour	None
Odour threshold	No data available
pH	No data available
Melting point/freezing point	No data available
Initial boiling point/ boiling range	No data available
Flash point	No data available
Evaporation rate	No data available
Flammability or explosive limits	No data available
Vapour pressure	No data available
Vapour density	No data available
Density	No data available
Solubility	No data available
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available

**ELECTRICAL PROPERTIES**

PART No.	PRODUCT IDENTIFICATION	BATTERY CONFIGURATION	VOLTAGE (V)	mA-h RATING	W-h
114303	Hemiplus	4 in parallel	3.7	8800	32.6
410190	battery	4 in parallel	3.7	8800	32.6
87DCPlus	87DCPlus	Single cell	3.7	2200	8.15
450DCPlus	450Plus	Single cell	3.7	2200	8.15
111113	Clipstrip Aqua	Single cell	3.7	2200	8.15

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**Section 10 – Stability and Reactivity****Chemical stability:** Stable under recommended storage conditions.**Possibility of hazardous reactions:** Remote when battery is in undamaged condition.**Conditions to avoid:** Moisture; heat, flames and sparks. Do not incinerate.**Incompatible Materials:** Acids, bases, strong oxidizing agents**Hazardous decomposition products:** Fire produces carbon monoxide and dioxide, lithium oxide, copper oxide and aluminum oxide fumes. Hydrogen fluoride and hydrofluoric acid may be produced.**Section 11 – Toxicological Information**

The toxicological properties of this product have not been investigated. Information for components is provided below.

**Acute toxicity**

Intraperitoneal LD50 mouse: copper - 3.5 mg/kg

Subcutaneous LD50 rat: diethyl carbonate – 8500 mg/kg

Oral LD50 rat: 1,3-dioxolan-2-one - 10,000 mg/kg  
dimethyl carbonate – 13,000 mg/kgDermal LD50 rabbit: 1,3-dioxolan-2-one >3000 mg/kg  
dimethyl carbonate >5000 mg/kg**Skin corrosion/irritation**

No data available

**Serious eye damage/irritation**

No data available

**Respiratory or skin sensitization**

No data available

**Germ cell mutagenicity**

No data available

**Carcinogenicity**

lithium cobalt oxide: IARC 2B-Group 2B: Possibly carcinogenic to humans

diethyl carbonate: Equivocal tumorigenic agent by RTECS criteria  
Not identified as a human carcinogen by IARC

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#### Section 11 – Toxicological Information (continued)

##### Reproductive toxicity

diethyl carbonate: Developmental toxicity- hamster – intraperitoneal:  
Effect on embryo or fetus – fetotoxicity  
Specific developmental abnormalities - craniofacial

##### Specific target organ toxicity – single exposure

graphite - May cause respiratory tract irritation  
diethyl carbonate – May cause respiratory tract irritation

##### Aspiration Hazard

No data available

##### Potential Health Effects

Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.

Skin: May be harmful if absorbed through skin May cause skin irritation.

Eyes: Causes eye irritation.

Ingestion: May be harmful if swallowed.

Other: May cause cancer.

Target organs: Lungs

#### Section 12 – Ecological Information

##### Aquatic Toxicity

No data available

##### Persistence and degradability

No data available

##### Bioaccumulative potential

No data available

##### Mobility in soil

No data available

##### Other adverse effects

No data available

#### Section 13 – Disposal Considerations

##### Product and Contaminated Packaging

Contact a licensed professional waste disposal service to dispose of batteries, electrodes, electrolyte or contaminated packaging.  
Do not incinerate batteries. Observe all federal, state, and local environmental regulations.

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**Section 14 – Transport Information**

This battery has been tested to ensure compliance with subsection 38.3 of the UN Manual of Tests and Criteria. It meets the requirements of packing instruction 965 of IATA.DGR for transportation and special provision 188 of IMDG and DOT 49CF 173.02. This product is not classified as dangerous goods for transport.

Lithium batteries must be protected from short circuit during shipping. Keep in original packaging. Confirm no leakage from a container. Protect from moisture and rough handling. Do not ship damaged containers.

**Section 15 – Regulatory Information**

All components of this product are on the Canadian Domestic Substances List (DSL).

All components of this product are listed in the U.S. Toxic Substances Control Act (TSCA) Inventory.

All components of this product are on or in compliance with the Australian Inventory of Chemical Substances (AICS) Inventory.

**Section 16 – Other Information**

All information appearing herein is based upon data obtained from manufacturers and/or recognized technical sources. While the information is believed to be accurate, we make no representations as to its accuracy or sufficiency. Conditions of use are beyond our control therefore users are responsible for verifying the data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product. Users also assume all risks in regards to the publication or use of, or reliance upon information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or process.