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## Safety Data Sheet (SDS)

## Lithium-Ion (Li-Ion) Batteries

The information and recommendations below are believed to be accurate at the date of document preparation. Dantona Industries Inc makes no warranty express or implied, with respect to this information and assumes no liability resulting from its use. This SDS provides guidelines for safe use and handling of product. All specific uses of this product must be evaluated by the end user to determine if additional safety precautions should be taken. It does not, and cannot, address all possible situations.

### SECTION 1 - IDENTIFICATION

Product Name Lithium-Ion Battery  
Common Name(s) Li-Ion Battery  
Synonyms Li-Ion Secondary Battery; Li-Ion Rechargeable Battery  
DOT Description Dry Battery  
Chemical Name Lithium-Ion

#### Emergency Number

CHEMTREC 1-800-424-9300

#### International Emergency Number

CHEMTREC +1 703-741-5970

Distributed By **Dantona Industries**

Address **3051 Burns Ave.  
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### SECTION 2 – HAZARD(S)

For the battery cell, chemical materials are stored in a hermetically sealed metal or metal laminated plastic case, designed to withstand temperatures and pressures encountered under normal use. However if exposed to a fire, added mechanical shocks, decomposed, or added electrical stress by mis-use, the gas release vent will be operated. The battery cell case will be breached at the extreme, hazardous material may be released. Moreover, if heated strongly by fire, acrid gas may be released.

### SECTION 3 – COMPOSITION

Chemical Name	CAS No.	Percentage %
Lithium transition metal oxidate	12190-79-3, 12057-17-9, 182442-95-1	20-60
Iron for Outer Case	7439-89-6	15-25
Aluminum	7429-90-5	1-10
Graphite: Natural	7782-42-5	10-24
Copper	7440-50-8	1-15

### SECTION 4 – FIRST AID MEASURES

For Li-Ion Chemicals:

**Inhalation** Have the victim blow their nose, gargle. Seek medical attention if necessary.

**Eyes and Skin** **Skin:** Flush with copious quantities of flowing lukewarm water for a minimum of 15 minutes; wash contact region with soap and water. Remove contaminated clothing.  
**Eyes:** Do not rub eyes. Flush with copious quantities of flowing lukewarm water for a minimum of 15 minutes; Seek immediate medical attention.

**Ingestion** Ingestion of battery chemicals can be harmful. Call The National Battery Ingestion Hotline (202-625-3333) 24 hours a day, for procedures treating ingestion of chemicals. Dilute with plenty of water, do not induce vomiting, and seek immediate medical attention.

### SECTION 5 – FIRE-FIGHTING MEASURES

**Extinguisher Media** Use water, foam or chemical dry powder.

**Special 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.

## SECTION 6 – ACCIDENTAL RELEASE MEASURES

Damaged batteries that are *NOT* hot or burning should be placed in a sealed plastic bag or plastic-lined metal container. Chemical resistance gloves must be used to handle all battery components. If cells rupture and a thermal event follows: using shovel or broom, cover battery or spilled substances with dry sand or vermiculite, place in approved container (after cooling if necessary) and dispose in accordance with local regulations.

## SECTION 7 – HANDLING AND STORAGE

1. Use only approved chargers and charging procedures.
2. Do not disassemble a battery or bypass any safety device.  
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.
3. Do not place batteries near heating equipment; do not expose to direct sunlight for extended periods.
4. 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.
5. Do not store batteries in a manner that allows terminals to short circuit.

## SECTION 8 – EXPOSURE/PERSONAL PROTECTION

**Respiratory Protection** None required under normal handling conditions; see also *Section 5 – Fire Fighting Measures*.  
**Gloves** Wear chemical resistant gloves if cell is ruptured, corroded, or leaking materials.  
**Safety Glasses** Always wear safety glasses with working with battery cells.

## SECTION 9 – PHYSICAL/CHEMICAL PROPERTIES

Boiling Point	N/A	Melting Point	N/A
Vapor Pressure	N/A	Vapor Density	N/A
Specific Gravity	N/A	Evaporation Rate	N/A
Solubility in Water	N/A	Appearance and Odor	Geometric, solid object

## SECTION 10 – STABILITY & REACTIVITY

Reactivity in Water	N/A	Auto-Ignition Temperature	N/A
Flash Point	N/A	Flammable Limits in Air, by vol.	N/A
Percent Volatile By Volume	N/A		
Stable	Avoid electrically shorting the cell and prolonged exposure to humid conditions. See also <i>Section 7 – Handling and Storage</i> .		
Incompatibility (materials to avoid)	Conductive materials, water, seawater, strong oxidizers, and strong acids.		

## SECTION 11 – TOXICOLOGICAL INFORMATION

Threshold Limit Value	Exposure limit of $\text{LiCoO}_2 = 0.1\text{mg/m}^3$ (OSHA)
Signs and Symptoms of Exposure	None. (In fire or rupture situations, refer to sections 4, 5, & 8.)
Medical Conditions Generally Caused by Exposure	Chemicals may cause burns to skin, eyes, gastrointestinal tract and mucous membranes.
Routes of Entry	Skin, Eyes, Ingestion (swallowing), Inhalation (fumes)

## SECTION 12 – ECOLOGICAL INFORMATION

Hazardous Decomposition Products	None under normal conditions. During Fire: combustible vapors (including CO), formation of Hydrogen fluoride (HF) and phosphorous oxides. Reaction with Water: may produce irritant Hydrogen fluoride (HF)
Hazardous Polymerization	Will not occur

When properly used and disposed, these batteries are not hazardous to the environment. Do not carelessly discard. Never discard Li-Ion batteries into a fire. Dispose of properly or recycle.

## SECTION 13 - DISPOSAL

When completely discharged, Li-Ion batteries have no hazardous waste characteristics and can be landfilled. This product does not contain any materials listed by the EPA as requiring specific waste disposal procedures. When disposing of large quantities of Li-Ion batteries or cells, consult local/state/federal guidelines. Fully discharge the battery and tape/cap terminals prior to disposal.

Dantona Industries encourages battery recycling. Our Lithium Ion batteries are recyclable through the Rechargeable Battery Recycling Corporation (RBRC) Charge Up to Recycle Program. For information, call 1-800-8-Battery or see their website at [www.rbrc.org](http://www.rbrc.org). Li-Ion batteries must be handled in accordance with all applicable state and federal laws and regulations.

DO NOT INCINERATE or subject battery cells to temperatures in excess of 212 degrees F. Such treatment can vaporize the liquid electrolyte causing cell rupture and injury.

## SECTION 14 – TRANSPORT

This product complies with the UN Recommendations on the Transport of Dangerous Goods; IATA Dangerous Goods regulations, and applicable U.S. DOT regulations for the safe transport of Li-Ion Battery.

This product has been tested under the provisions of the UN Manual of Tests and Criteria, Part III, sub-section 38.3 and is classified as a non-dangerous good.

Lithium ion cell/battery = UN3480 with Section II of PI965  
Lithium ion cell/battery packed with equipment = UN3481 with Section II of PI966  
Lithium ion cell/battery contained in equipment = UN3481 with Section II of PI967

Land transport: DOT Code of Federal Regulations (USA)  
Sea transport: IMDG according to Special Provision 188 and 230.  
Air transport: ICAO-TI and IATA-DGR Li-Ion Battery according to NEW PACKING INSTRUCTION 965-967 of IATA DGR

## SECTION 15 – REGULATORY INFORMATION

Regulations specifically applicable to the product.

- IATA-DGR (Air Transportation)
- IMO-IMDG Code (Sea Transportation)
- US DOT 49 Code of Federal Regulations (USA)

## SECTION 16 - OTHER

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