Ascent Battery Supply, LLC
1325 Walnut Ridge Drive
Hartland, WI 53029

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. Ascent Battery Supply makes no warranty or merchantability or any other 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. It does not, and cannot, advise all possible situations. All specific uses of this product must be evaluated by the end user to determine if additional safety precautions should be taken.

The following information is provided as a courtesy to Ascent customers.

SECTION 1 – IDENTIFICATION

Product Name	Lithium-Ion Battery
Common Name(s)	Li-Ion Battery
Synonyms	Lithiated Cobalt Oxide; Li-Ion Secondary Battery; Li-Ion Rechargeable Battery
DOT Description	Dry Battery
Chemical Name	Lithium-Ion
Distributed By	Ascent Battery Supply, LLC
Address	1325 Walnut Ridge Drive, Hartland, WI 53029
Emergency number	CHEMTREC 1-800-424-9300
International Emergency Number	CHEMTREC +1 703-741-5970 (Collect)

SECTION 2 – HAZARD(S)

Hazard Statements	
Intact Batteries	No specific health hazard. If battery exhibits signs of leaking avoid contact without proper protection.
Eyes	Severe irritation or chemical burns if contact with internal material.
Skin	Severe irritation or chemical burns if contact with internal material.
Inhalation	Irritation of respiratory system if exposed to fumes.
Ingestion	Harmful if swallowed; internal battery chemicals will cause severe chemical burns to mouth, esophagus and GI system.
Acute Effects	Irritation, burns, dizziness, headache.
Chronic Effects	NA

SECTION 3 – COMPOSITION

Ingredients	CAS No.	Content by Weight
Lithium Nickel Cobalt Manganese Oxide	NA	≈ 20-60%
Lithium Tetrafluoroborate	14283-07-9	≈ 0-5%
Oxalic Acid	144-62-7	≈ 0-1%
Propylene Carbonate	108-32-7	≈ 0-15%

n-Methyl Pyrrolidinone	872-50-4	≈ 0-1%
Lithium Cobalt Oxide	12190-79-3	≈ 0-30%
Polyvinylidene Fluoride (PVDF)	24937-79-9	≈ 0-10%
Aluminium (Al)	7429-90-5	≈ 1-12%
Graphite	7782-42-5	≈ 10-24%
Styrene-Butadiene Rubber (SBR)	61789-96-6	≈ 1.14- 10.36%
Carboxymethylcellulose	9000-11-7	≈ 0.43%
Copper (Cu)	7440-50-8	≈ 2-15%
Nickel (Ni)	7440-02-0	≈ 0.41- 0.79%
Carbon	7440-44-0	≈ 0-30%
Polyethylene	9002-88-4	≈ 4.01%
Phosphate(1-), Hexafluoro-, Lithium	21324-40-3	≈ 1.27%
1,3-Dioxolan-2-one	96-49-1	≈ 7.45%
Diethyl carbonate	105-58-8	≈ 4.76%

Section 4 – first aid measures

Inhalation	Remove from exposure and move to fresh air immediately. If symptoms persist seek medical attention immediately.
Eyes Contact	Rinse immediately with plenty of water for at least 15-30 minutes, occasionally lifting the upper and lower eyelids. Check for and remove contact lenses, if easily possible. Seek medical attention immediately.
Skin Contact	Flush with copious quantities of flowing lukewarm water for a minimum of 15 minutes; wash with soap and water.
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

Hazardous Properties – Burning batteries may emit toxic fumes

Hazardous Combustion Products – NA

Firefighter PPE - Firefighters should wear fire-fighting suits with self-contained breathing apparatus.

Extinguisher Media – Water, Foam, Class-D dry chemical powder,

Extinguishing Methods - If cells rupture and a thermal event follows: Promptly isolate the scene by removing all persons from the vicinity of the incident. 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 6 – accidental release measures

General Information - See Section 8

Personal Safety Precautions - No action should be taken involving personal risk without suitable training. Review Sections 5 and 7 before proceeding with spill clean-up. Use proper PPE as indicated in Section 8. Ventilate area adequately. If electrolyte leaks or spills, do not touch or walk through the spill material.

Environmental Protection - In the event of battery rupture, capture all released material in an approved container. Dispose of the container in accordance with local laws and regulations. Do not allow leached substances to seep into the earth or waterways.

Cleaning/Collecting - Pack the battery, including all battery materials, as described above. Clean the affected area with water (diluted acetic acid may also be helpful).

SECTION 7 – HANDLING AND STORAGE

This product should be stored, handled, and used in accordance with all Federal, State, and Local laws and regulations. Use only approved chargers and charging procedures. Do not disassemble a battery or bypass any safety device. Do not dispose of this product in a fire or furnace. Do mix this product with other battery types. Do not overcharge. Use effective anti-short circuit measures. Do not connect improperly or short circuit, which may result in overheating, explosion, or leakage of cell contents. Accidental short circuit may cause temperature elevation to the battery as well as shortened battery life. Be sure to avoid a prolonged short circuit, as this can rupture the battery case and cause burns and/or fire. Do not handle near conductive objects, such as coins, metal jewelry, belts or use a metal worktable or any other material that may cause an electrical short circuit. Do not use organic solvents or other chemical cleaners on the battery. Do not disassemble or tear down. Avoid battery contact with water and direct sunlight.

Store this product in a cool, dry, and clean area. 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; do not expose to direct sunlight for extended 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.

SECTION 8 – EXPOSURE/PERSONAL PROTECTION

PPE: Facilities - Facilities storing or utilizing this product should be equipped with an eyewash station and safety shower.

PPE: Eyes - Under normal use, no protection is required. Safety glasses and face shield should be used in the event of leakage or battery case rupture.

PPE: Clothing - Under normal use, no special clothing is required. Gloves, boots, apron or other protective clothing should be used in the event of leakage or battery case rupture.

PPE: Respiration - Under normal conditions, no special gear is required. Use appropriate respirator if excessive airborne dust or mist concentrations are present.

SECTION 9 – PHYSICAL/CHEMICAL PROPERTIES

Boiling Point	NA	**Melting Point**	NA
Vapor Pressure	NA	**Vapor Density**	NA

Appearance	Geometric	**Solubility in Water**	NA
Physical State	Solid	**Odor**	Odorless
Relative Density	NA	**NA**	NA

SECTION 10 – STABILITY & REACTIVITY

Chemical Stability - Stable under normal conditions. Avoid electrically shorting the cell and prolonged exposure to humid conditions. See also see Section 7- Handling and Storage.

INCOMPATIBILITY (MATERIALS TO AVOID) – NA

Hazardous Reaction Conditions: External short circuit, crushing, high temperature, open flames, incompatible material contact, direct sunlight, and high humidity may case heat generation and ignition or fire.

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) Thermal decomposition may produce fumes of metal oxides or harmful gases.

Hazardous Polymerization: NA

SECTION 11 – TOXICOLOGICAL INFORMATION

Exposure limit of $LiCoO_2$= 0.1mg/m^3 (OSHA)

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

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.

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

Air transport: ICAO-TI and IATA-DGR Li-Ion Battery according to NEW PACKING INSTRUCTION 965-967 of IATA DGR

SECTION 15 – REGULATORY INFORMATION

No additional

SECTION 16 – OTHER INFORMATION

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