



Ascent Battery Supply, LLC
925 Walnut Ridge Drive
Hartland, Wisconsin 53029

Material Safety Data Sheet

Lithium Polymer

The information and recommendations below are believed to be accurate at the date of preparation. Ascent Battery Supply makes no warranty of merchantability or any other warranty, express or implied, with respect to such information and we assume no liability resulting from its use. This MSDS provides guidelines for safe use and handling of the product. It does not and cannot advise all possible situations. Your specific use of this product should be evaluated to determine if additional precautions must be taken.

Distributed By	Ascent Battery Supply, LLC	Emergency Number	INFOTRAC (800) 535-5053
Address	Ascent Battery Supply 925 Walnut Ridge Drive Hartland, Wisconsin 53029	Overseas Emergency Number	INFOTRAC (352) 323-3500 (Collect)
Revision Date	April/2011		

SECTION 1 – IDENTITY

Product Name	Rayovac Lithium Polymer Battery
Common	Li-Poly, Li-Polymer
Synonyms	
DOT Description	Dry Battery
Chemical Name	Lithiated Cobalt Oxide

SECTION 2 – HAZARDOUS INGREDIENTS

Chemical Name	CAS No.	Percentage %
Lithium Cobalt Oxide	12190-79-3	25-50
Carbon	n/a	10-30
Aluminum	7429-90-5	2-10
Nickel	n/a	0.5-5
Polyvinylidene Fluoride (PVDF)	n/a	0-5
Aluminum Packing Foil	n/a	5-15
Copper	7440-50-8	5-15
Organic Solvents	n/a	10-20

SECTION 3 – PHYSICAL AND CHEMICAL CHARACTERISTICS

Boiling Point	NA	Melting Point	NA
Vapor Pressure	NA	Vapor Density	NA
Specific Gravity	NA	Percent Volatile By Volume	NA
Solubility in Water	NA	Reactivity in Water	NA
Appearance and Odor	Geometric, solid object	Evaporation Rate	NA
Flash Point	NA	Flammable Limits in Air % by Volume	NA
Extinguisher Media	CO2, Dry chemical.	Auto-Ignition Temperature	NA
Special Fire Fighting Procedures	Use a positive pressure self-contained breathing apparatus if batteries are involved in a fire. Full protective clothing is necessary.		
Unusual Fire and Explosion Hazards	Cells or batteries may flame or leak potentially hazardous organic vapors if exposed to excessive heat or fire. 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. Possible formation of hydrogen fluoride (HF) and phosphorous oxides during fire. LiPF6 salt contained in the electrolyte releases hydrogen fluoride (HF) in contact with water. During water application, caution is advised as burning pieces of flammable particles may be ejected from the fire.		

SECTION 4 – PHYSICAL HAZARDS

Stable or Unstable	Stable	Conditions to Avoid	Heat above 70°C or incinerate. Do not deform, mutilate, crush, pierce, or disassemble. Do not short circuit or expose to humid conditions.
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Incompatibility (Materials to Avoid)	NA
Hazardous Decomposition Products	Corrosive/Irritant Hydrogen fluoride (HF) is produced in case of reaction of <i>lithium hexafluorophosphate (LiPF₆)</i> with water. Combustible vapors and formation of Hydrogen fluoride (HF) and phosphorous oxides during fire.

SECTION 5 – HEALTH HAZARDS

Threshold Limit Value	NA
Signs and Symptoms of Exposure	Following cell overheating due to external source or due to improper use, electrolyte leakage or battery container rupture may occur and release inner component/material in the environment. Electrolyte solution contained in the battery causes ocular tissue and skin irritation. Ingestion of electrolyte solution causes tissue damage to throat and gastro/respiratory tract. Contents of a leaking or ruptured battery can cause respiratory tract, mucus, membrane irritation and edema.
Medical Conditions Generally Caused by Exposure	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.
Routes of Entry	Skin, eyes, swallowing, and inhalation

Emergency and First Aid Procedures for

1. Inhalation	Get fresh air. If symptoms persist seek medical attention
2. Eyes and Skin	If a cell ruptures, flush with copious quantities of flowing lukewarm water for a minimum of 15 minutes. Get immediate medical attention for eyes. Wash skin with soap and water.
4. 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. Do not induce vomiting.

SECTION 6 – SPECIAL PROTECTION INFORMATION

Respiratory Protection	In case of battery rupture, use self-contained full-face respiratory equipment				
Ventilation	N/A	Local Exhaust	NA	Mechanical (General)	NA
Gloves	Use Viton rubber gloves if handling a leaking or ruptured battery	Safety Glasses	Wear safety goggles or glasses with side shields if handling a leaking or ruptured battery.		
Other Protective Equipment	Use self-contained breathing apparatus to avoid breathing irritant fumes. Wear protective clothing and equipment to prevent body contact with electrolyte solution.				

SECTION 7 – SPECIAL PRECAUTIONS – SPILL AND LEAKAGE PROCEDURES

Precautions to be Taken when Handling and Storing	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.
Other Precautions	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.

Steps to be Taken if chemicals are spilled

If cells are leaking or rupture, prevent skin and eye contact and collect all released material in a plastic lined metal container. Personal protective equipment for damaged batteries should include chemical resistant gloves and safety glasses.

Waste Disposal

To prevent short circuit, batteries should be completely discharged prior to disposal, terminals taped and/or capped. 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 Local, State or Federal / Provincial regulations. Consult your Local, State and Federal / Provincial regulations regarding disposal of these batteries.

SECTION 8 – TRANSPORTATION AND REGULATORY INFORMATION

Shipping and Transportation

1) Product is shipped as:

Ground (DOT)

Non-Hazardous by ground UN3090

Air (IATA/ICAO)

Lithium ion Batteries – Not restricted UN3090

Sea (IMDG)

Lithium ion Batteries – Not restricted

(2) Special shipping information. These batteries have been tested to Section 38.3 of 'UN Manual of Test and Criteria'.

It is below the limits set by the 2010 IATA Dangerous Goods Regulations 51st edition Packing Instruction 965 Section II is applied. And they are out of scope for Special Provision A154. Also the consignment complies with the current edition – 51st 2010 of the IATA regulation

- 1) Section II of Packing Instruction - PI965 for Lithium Ion Batteries (UN3480)
- 2) UN manual of Tests and Criteria, Part III, sub-section 38.3 (withstanding a 1.2m drop (test);
- 3) Watt-hour rating is not more than 100 Wh which shown on the batteries
- 4) Labeled with a lithium battery handling label
- 5) Package permissible gross weight has been observed (Cargo Aircraft is 10kg Gross)

Regulatory Information

The transport of rechargeable lithium-ion batteries is regulated by various bodies (IATA, IMO, ADR, US-DOT) that follow the United Nations *"Recommendations on the Transport of Dangerous Goods, Model Regulations, 13th Revised edition - 2003 - Ref. ST/SG/AC.10/1 Rev. 13"*. Depending on their lithium metal equivalent weight content, design, and ability to pass safety tests defined by the UN in the *"Recommendations on the Transport of Dangerous Good - Manual of Tests and Criteria - 3rd Revised edition - 2002 - Ref. ST/SG/AC.10/11 Rev.3 Amendment 1 «Lithium Batteries»"*, the lithium-ion cells and the battery packs may or may not be assigned to the UN N° 3090 Class-9, that is restricted for transport. Individual lithium-ion cells and battery packs with respectively less than 1.5 and 8 grams of equivalent lithium metal content that pass the UN-defined safety tests, are not restricted for transport (1.0 Ah of declared nominal capacity = 0.3 gram of Li equivalent weight content).

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.