

HYTORC LITHIUM ION BATTERY PRODUCT SAFETY DATA SHEET

Product Name: Lithium Ion Battery 36V (147.6 Watt Hours)

Section 1 - Product and Company Identification

Manufacturer Information

HYTORC
333 Rt. 17 North
Mahwah, NJ 07430

Phone: 201-323-3011

The batteries referenced in this document are considered "Articles," not "Materials," as defined by the Occupational Safety and Health Administration's Hazard Communication Standard, and as such are exempted from the requirements to publish Safety Data Sheets (SDS) per the Code of Federal Regulations 29 CFR 1910.1200 (b)(6)(v). This document is provided as a courtesy to our customers.

Section 2 - Hazards Identification

Emergency Overview

Not considered dangerous as manufactured. If battery is damaged, exposure to product components may cause eye, skin and respiratory tract irritation. Combustion products from a fire involving batteries may be harmful.

Potential Health Effects: Eyes

None anticipated under normal product use and handling conditions. If battery is damaged, exposure may cause severe irritation or burns.

Potential Health Effects: Skin

None anticipated under normal product use and handling conditions. If battery is damaged, exposure may cause severe irritation or burns.

Potential Health Effects: Ingestion

Not considered a likely route of exposure under normal product use and handling conditions. Ingestion of material from a damaged battery may cause serious burns to mouth, esophagus, and gastrointestinal tract.

Potential Health Effects: Inhalation

None anticipated under normal product use and handling conditions. If battery is damaged, exposure to vapors or mist may cause respiratory irritation.

HMIS Ratings: Health: 0 Fire: 0 HMIS Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

Section 3 - Composition / Information on Ingredients

- Substance or preparation: Preparation
- Information about the chemical nature of product: *1

Portion	Material name	CAS No.	Concentration range (wt %)
Positive electrode	Lithium transition metal oxidate (Li[M] _m [O] _n *2)	12190-79-3 12057-17-9 182442-95-1	20~60
Positive electrode's base	Aluminum	7429-90-5	1~10
Negative electrode	Carbon	7782-42-5 7440-44-0	10~30
Negative electrode's base	Copper	7440-50-8	1~15
Electrolyte	Organic electrolyte principally involves ester carbonate	—	5~25
Outer case	Iron	7439-89-6	1~30

*1 Not every product includes all of these materials.

*2 The letter M means transition metal and candidates of M are Co, Mn, Ni and Al. One compound includes one or more of these metals and one product includes one or more of the compounds. The letter m and n means the number of atoms.

Section 4 - First Aid Measures

EYES: Flush eyes with lukewarm water for at least 30 minutes while holding the eyelids open. Seek immediate medical care.

SKIN: Remove contaminated clothing, shoes and leather goods. Flush with water for at least 30 minutes. Seek medical attention if symptoms persist.

INGESTION: Never give anything by mouth if victim is unconscious. Rinse mouth thoroughly with water. Do not induce vomiting. Seek immediate medical attention.

INHALATION: Remove person to fresh air away from source of contamination.

Section 5 - Fire Fighting Measures

See Section 9 for Flammability Properties.

Battery cells may rupture when exposed to excessive heat. Electrolyte solution is flammable.

Hazardous Combustion Products

May release toxic fumes if burned or exposed to fire.

Extinguishing Media

Use appropriate extinguishing agent for surrounding fire. For damaged or ruptured cells, use Class D extinguisher or other appropriate agent. Class C fire extinguishers should be used to extinguish electrical fires. Do not use water to extinguish electrical or ruptured cell related fires.

Fire Fighting Equipment/Instructions

Firefighters should wear full protective gear.

NFPA Ratings: Health: 0 Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Section 6 - Accidental Release Measures

Containment Procedures

Stop the flow of material, if this is without risk.

Clean-Up Procedures

Absorb spill with inert material. Shovel material into appropriate container for disposal. Clean spill area with detergent and water; collect wash water for proper disposal.

Evacuation Procedures

Isolate area. Keep unnecessary personnel away.

Special Procedures

Avoid skin contact with the spilled material.

Section 7 - Handling and Storage

Avoid damaging or rupturing battery.

Storage Procedures

Store in a dry location at room temperature. Avoid extreme heat or fire. Keep out of reach of children.

Section 8 - Exposure Controls / Personal Protection

A: Component Exposure Limits

ACGIH, OSHA, and NIOSH have not developed exposure limits for any of this product's components.

Engineering Controls

Not necessary under normal product use conditions.

Personal Protective Equipment: Eyes/Face

Not necessary under normal product use conditions. Wear safety glasses if handling a damaged battery.

Personal Protective Equipment: Skin

Not necessary under normal product use conditions. Wear neoprene or natural rubber gloves when handling a damaged battery.

Personal Protective Equipment: Respiratory

Not necessary under normal product use conditions.

Personal Protective Equipment: General

Eyewash fountains and emergency showers are required.

Section 9 - Physical & Chemical Properties

Appearance: Physical State: Vapor Pressure: Boiling Point:	Solid, Various shaped battery N/A	Odor: None pH: Vapor Density: N/A Melting Point: N/A
Solubility (H2O): Evaporation Rate: Octanol/H2O Coeff.: Flash Point Method: Lower Flammability Limit (LFL): Auto Ignition:	Insoluble N/A N/A N/A	Specific Gravity: VOC: N/A Flash Point: N/A Upper Flammability Limit (UFL): N/A Burning Rate: N/A

Section 10 - Chemical Stability & Reactivity Information

Chemical Stability

This is a stable material.

Chemical Stability: Conditions to Avoid

Avoid exposure to elevated temperatures and fire.

Incompatibility

Not Available.

Hazardous Decomposition

May release toxic fumes if burned or exposed to fire.

Possibility of Hazardous Reactions

Not Available.

Section 11 - Toxicological Information**A: General Product Information**

If product is ruptured, material may cause irritation to the skin, eyes and respiratory tract.

B: Component Analysis - LD50/LC50

No LD50/LC50's are available for this product's components.

Carcinogenicity**A: General Product Information**

No information available for the product.

B: Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Section 12 - Ecological Information**A: General Product Information**

No information available for the product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

No ecotoxicity data are available for this product's components.

Section 13 - Disposal Considerations**Component Waste Numbers**

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions

Recycle battery. Do not dispose of in water bodies or sewer system. All wastes must be handled in accordance with local, state and federal regulations.

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Section 14 - Transportation Information

Shipments of lithium ion batteries must comply with all applicable dangerous goods and hazardous materials transport regulations listed below. **HYTORC's lithium ion battery has been tested in accordance with Section 38.3 of the UN Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria. A Certificate of Compliance with the UN lithium battery testing requirements is available upon request.**

Lithium ion Batteries

UN3480, Lithium Ion batteries, 9

- Air Shipments: IATA Dangerous Goods Regulations, Packing Instruction 965 Section IA
- Sea Shipments: IMDG Code, Packing Instruction P903
- Europe Road Transportation: ADR, Packing Instruction P903
- U.S. Shipments: 49 CFR 173.185(b) and 49 CFR 173.185(c)(1)(iv)

Lithium ion Batteries Packed with or Contained in Equipment

UN3481, Lithium ion batteries packed with equipment, 9

UN3481, Lithium ion batteries contained in equipment, 9

- Air Shipments: IATA Dangerous Goods Regulations, Packing Instruction 966 or 967, Section I
- Sea Shipments: IMDG Code, Packing Instruction P903
- Europe Road Transportation: ADR, Packing Instruction P903
- U.S. Shipments: 49 CFR 173.185(b) and 49 CFR 173.185(c)(1)(iv)

Section 15 - Regulatory Information

A: General Product Information

All components are on the U.S. EPA TSCA Inventory List.

B: Component Analysis

None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

State Regulations

A: General Product Information

No additional information available.

B: Component Analysis - State

None of this product's components are listed on the state lists from CA, MA, MN, NJ, PA, or RI.

Canadian WHMIS Information

A: General Product Information

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations.

B: Component Analysis - WHMIS IDL

No components are listed in the WHMIS IDL.

Section 16 - Other Information

Other Information

The information herein is presented in good faith and believed to be accurate as of the effective date given. However, no warranty, expressed or implied, is given. It is the buyer's responsibility to ensure that its activities comply with Federal, State or provincial, and local laws.

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration., NJTSR = New Jersey Trade Secret Registry, WHMIS = Workplace Hazardous Materials Information System (Canada)