

MATERIAL SAFETY DATA SHEET



Product Name:	High Energy Lithium Ion Battery, Phosphate Based
Model:	K2B24V11EB Battery (8s3p/26650ev cell battery pack with circuit)
Product Use:	Electrical
Chemical Family:	Mixture
Synonyms:	LFP Battery, Lithium Iron Phosphate Battery
Manufacturer:	K2 Energy Solutions. 7461 Eastgate Rd., Henderson, NV 89011
Phone Number:	702-478-3590
Fax:	702-558-0180
24-Hour Emergency:	Chemtrec: 800-424-9300

Section 1 - Product Identification

Section 2 - Composition and Ingredient Information

Under normal use, this battery is not expected to expose the user to hazardous ingredients.

USA: This battery is an article according to 29 CFR 1910.1200 and, as such, is not subject to the OSHA Hazard Communication Standard requirement. The information contained in this Material Safety Data Sheet contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

Canada: This is not a controlled product under WHMIS. This product meets the definition of a "manufactured article" and is not subject to the regulations of the Hazardous Products Act.

Section 3 - Hazards Identification

Preparation Hazards and Classification: Not dangerous with normal use. The battery should not be disassembled or incinerated. Exposure to the ingredients contained within or their combustion products could be harmful.

Appearance, Color, and Odor: Solid object, no odor.

Primary Route(s) of Exposure: The risk of exposure will only occur if the battery or cell is mechanically, thermally, or electrically abused and the enclosure is compromised. If this occurs, exposure to electrolyte solutions contained within the battery or cell may occur by inhalation, eye contact, skin contact, and ingestion.

Potential Health Effects:

Inhalation: Inhalation of material from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation.

Ingestion: Swallowing material from a sealed battery is not an expected route of exposure. Swallowing mists from a ruptured battery may cause respiratory irritation, chemical burns of the mouth, and gastrointestinal tract irritation.

Skin: Contact between the battery and skin will not cause any harm. Skin contact with positive and negative terminals of high voltages may cause burns to the skin. Skin contact with a ruptured battery can cause skin irritation.

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Eye: Contact between the battery and eye will not cause any harm. Eye contact with the contents of a ruptured battery can cause severe irritation to the eye.

Medical Conditions Aggravated by Exposure: Not Available

Section 4 – First Aid Measures

Skin Contact: Wash the affected area with lukewarm water for at least 30 minutes. If irritation or pain persists, seek medical attention.

Eye Contact: Wash the affected eye with lukewarm water for at least 30 minutes. Rinse with saline solution if possible. Seek medical attention.

Inhalation: Move victim to fresh air and remove the source of contamination from the area. Seek medical attention.

Caution: In all cases, if irritation persists, seek medical assistance at once.

Section 5 - Fire Fighting Measures

Extinguishing Media: Water, carbon dioxide, dry chemical powder, and foam are the most effective means to extinguish a battery fire.

Fire Fighting Procedure: Put on full protective gear, including self-contained breathing apparatus, goggles, fireproofing jacket, and gloves.

Unusual Fire and Explosion Hazards: Exposing battery pack or cell to excessive heat, fire, or over voltage condition may cause a leak, fire, hazardous vapors, and hazardous decomposition products. Damaged or opened cells or batteries can result in rapid heating and the release of flammable vapors.

Section 6 - Accidental Release Measures

The material contained within the batteries or cells is only expelled under abusive conditions. Use a shovel and cover the battery with sand or vermiculite, place it in an approved container and dispose of it under section 13.

Section 7 – Handling and Storage

Handling: Do not expose the battery or cell to extreme temperatures or fire. Do not disassemble, crush or puncture the battery.

Storage: Insulate positive and negative terminals to avoid short circuits. Store in a cool and well-ventilated area and avoid direct sunlight. Elevated temperatures can result in reduced battery life.

Section 8 – Exposure Controls and Personal Protection

Respiratory Protection: Not necessary under normal use. In case of battery or cell rupture, use a self-contained full-face respiratory mask.

Eye Protection: Not necessary under normal use. Wear safety goggles if handling a ruptured or leaking cell or battery pack.

Hand Protection: Not necessary under normal use. Wear Viton rubber gloves if handling a ruptured or leaking cell or battery pack.

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Skin Protection: Not necessary under normal use. Wear a rubber apron and Viton rubber gloves if handling a ruptured or leaking cell or battery pack.

Section 9 – Physical and Chemical Properties

Physical State:	Solid	Odor Type:	Odorless
Appearance:	Battery	Odor Threshold:	Not Applicable
pH:	Not Applicable	Evaporative Rate: (n-Butyl Acetate = 1)	Not Applicable
Relative Density:	Not Applicable	Auto Ignition Temperature (C°):	Not Applicable
Boiling Point:	Not Applicable	Flammability Limits: (%)	Not Applicable
Melting Point:	Not Applicable	Vapor Pressure: (mm Hg @ 20 C°)	Not Applicable
Viscosity:	Not Applicable	Vapor Density: (Air = 1)	Not Applicable
Oxidizing Properties:	Not Applicable	Solubility in Water:	Insoluble
Flash Point and Method: (C°)	Not Applicable	Water/Oil Distribution coefficient:	Not Applicable

Section 10 – Stability and Reactivity

Stability: Stable

Conditions to Avoid: Avoid exposing the battery to high temperatures. Do not incinerate, deform, mutilate, crush, pierce, short circuit, or disassemble.

Materials to Avoid: Not Applicable

Hazardous Decomposition Products: Combustible vapors may be released if exposed to fire.

Possibility of Hazardous Reactions: Not available.

Section 11 – Toxicological Information

Irritation: The risk of irritation only occurs if cells or batteries are mechanically, thermally, or electrically abused and the enclosure is compromised.

Neurological Effects: Not applicable.

Sensitization: Not applicable.

Teratogenicity: Not applicable.

Reproductive Toxicity: Not applicable.

Mutagenicity (Genetic Effects): Not applicable.

Toxicologically Synergistic Materials: Not available

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Section 12 – Ecological Information

Bioaccumulative potential: Not available.

Persistence and degradability: Not available.

Mobility: Not available.

Ecotoxicity: Not available.

Other adverse effects: Not available.

Section 13 – Disposal Considerations

Waste Disposal Method: Recycling is encouraged. Dispose of under local, state, and federal laws and regulations.

USA: Dispose of under local, state, and federal laws and regulations.

Canada: Dispose of under local, state, and federal laws and regulations.

EC: Dispose of by following relevant EC Directives.

Section 14 – Transport Information

Hazardous Classifications: Based on lithium content:

Some single lithium-ion cells and multi-cell battery packs are exempted from Class 9. No class 9 marking, specification packaging or Class 9 labels are required by ground transport. (Refer to 49 CFR Parts 105-180 for specifications)

Lithium ion batteries are always classified as Class 9 Dangerous goods by Air Transport.

Use lithium-ion battery labels for the transport of lithium-ion batteries which are not assigned Class 9. Use Class 9 Miscellaneous Dangerous Goods and UN Identification labels for transportation of lithium-ion batteries which are assigned Class 9. Refer to relevant transportation documents.

Lithium and lithium-ion cells and batteries are regulated in the U.S. under Part 49 of the Code of Federal Regulations, (49 CFR Sections 105-180) of the U.S. Hazardous Materials Regulations.

K2 Energy Solutions uses UN3480, Lithium ion batteries, 9 when transporting Hazmat shipments.

Section 15 – Regulatory Information

USA

TSCA Status: All ingredients in the product are listed on the TSCA inventory.

SARA Title III:

Sec. 302/304: None

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Sec. 311/312: None

Sec. 313 : None

CERCLA RQ : None

California Prop 65 :

This product does not contain chemicals known to the State of California to cause cancer or reproductive toxicity.

Canada

This product has been classified under the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Classification: Not Controlled

New Substance Notification Regulations: All ingredients in the product are listed, as required, on Canada's Domestic Substance List.

NPRI Substances (National Pollutant Release Inventory): This product does not contain any NPRI chemicals.

EC Classification for the Substance/ Preparation:

Symbol: This product is not classified as dangerous according to Directive 1999/45/EC and its amendments.

Risk Phrases: None

Safety Phrases: S2: Keep out of the reach of children.

Section 16 – Other Information

Preparation Date:	May 30, 2010
Revision Date:	March 3, 2021
Revision Summary:	1: Engineering Pre-Release
Prepared by:	K2 Energy Solutions. 7461 Eastgate Rd., Henderson, NV 89011
Phone:	702-478-3590

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