

MATERIAL SAFETY DATA SHEET

PowerTech Systems - Lithium Batteries

MSDS CREATION DATE: 9 April 2016

MSDS REV DATE: 20 April 2021

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: PowerBrick 48V – PowerBrick+ 48V
 PRODUCT CODES: 25Ah / 32Ah / 61Ah / 72Ah / 105Ah
 MANUFACTURER: PowerTech Systems
 ADDRESS: ZAC Charles Renard
 6 Rue Marie-Georges Guynemer – Bat A1
 78210 Saint-Cyr L'école
 FRANCE

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CHEMICAL NAME: Lithium Iron Phosphate
 CHEMICAL FAMILY: Lithium Ion
 CHEMICAL FORMULA: LiFePO₄

PRODUCT USE: Electrical

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical composition	Molecular formula	CAS No.	Weight (%)
Lithium Iron Phosphate	LiFePO ₄	15365-14-7	30-25 %
Graphite	C	7782-42-5	12-17%
Copper	Cu	7440-50-8	9-11%
Aluminium	Al	7429-90-5	5-7%
Electrolyte	Ethylene Carbonate Dimethyl Carbonate Ethyl Methyl carbonate Lithium Hexafluorophosphate	96-49-1 616-38-6 623-53-0 21324-40-30	14-18%

SECTION 3: HAZARDS IDENTIFICATION

HEALTH HAZARD (ACUTE AND CHRONIC)

Chemicals are contained in a sealed can. Risk of exposure only occurs if battery is mechanically, thermally or electrically abused. Contact of electrolyte and extruded lithium with skin and eyes should be avoided.

SIGNS/SYMPTOMS OF EXPOSURE

A shorted lithium battery can cause thermal and chemical burns upon contact with the skin. Maybe a reproductive hazard.

SECTION 4: FIRST AID MEASURES

EYES:

Flush affected eye with lukewarm water for at least 30 minutes. Seek medical attention.

SKIN:

Flush affected area with lukewarm water at least 30 minutes. If irritation or pain persists, seek medical attention.

INGESTION:

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

INHALATION:

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

SECTION 5: FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: dry chemical powder, carbon dioxide (CO₂) and foam are most effective to extinguish a battery fire.

FIRE-FIGHTING PROCEDURES: Wear full protective gear, including self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Battery may vent when subjected to excessive heat-exposing, fire or over voltage condition.

HAZARDOUS COMBUSTION PRODUCTS: Carbon monoxide, carbon dioxide, lithium oxide fumes.

SECTION 6: ACCIDENTIAL RELEASE MEASURES

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

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If the battery material is released, remove personnel from the area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Leave the area and allow the batteries to cool and vapors to dissipate. Avoid skin and eye contact or inhalation of vapors.

SECTION 7: HANDLING AND STORAGE

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

STORAGE: Insulate positive and negative terminals to avoid short circuit. Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subjected to little temperature changes. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATION PROTECTION: Not necessary under conditions of normal use. In case of battery venting or rupture, use a self-contained full face respiratory mask.

EYE PROTECTION: Not necessary under conditions of normal use. In case of battery rupture or leakage, use safety goggles.

SKIN/HAND PROTECTION: Not necessary under conditions of normal use. In case of battery rupture or leakage, wear rubber apron and Viton rubber gloves.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

Flash Point and Method	Not	Water/ Oil distribution coefficient:	Not Applicable
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SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID: Heating, mechanical and electrical abuse.

HAZARDOUS DECOMPOSITION PRODUCTS: N/A

HAZARDOUS POLYMERIZATION: N/A

INCOMPATIBILITY (MATERIALS TO AVOID): If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons.

SECTION 11: TOXICOLOGICAL INFORMATION

Inhalation, skin contact and eye contact are possible when the battery is opened. Exposure to internal contents, the corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibroid lung injury and membrane irritation.

SECTION 12: ECOLOGICAL INFORMATION

When properly used, or disposed, the batteries do not present environmental hazard.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Recycling is encouraged. Dispose of in accordance with local, state and federal laws and regulations.

USA: Dispose in accordance with local, state and federal laws and regulations.

Canada: Dispose of in accordance with local, state and federal laws and regulations.

EC: Dispose of in accordance with relevant EC Directives.

SECTION 14: TRANSPORT INFORMATION

Hazard Class: 9

UN Class :

- UN3480 Lithium ion Battery.

SHIPPING BY AIR:

IATA proper shipping name: Lithium Ion Batteries

Watt-hour exceeds the standard, so it belongs to dangerous goods. Cargo only. The goods are packaged according to the packing instructions 965 section I of DGR.

SHIPPING BY SEA:

IMDG proper shipping name: Lithium Ion Batteries

Watt-hour exceeds the standard, so it belongs to dangerous goods. The goods are packaged according to the special provision 188 of IMDG.

SHIPPING BY ROAD:

ADR proper shipping name: Lithium Ion Batteries

Watt-hour exceeds the standard, so it belongs to dangerous goods. The goods are packaged according to instructions P903 of ADR.



Use Class 9 Miscellaneous Dangerous Goods and UN Identification labels for transportation of lithium ion batteries which are assigned Class 9A. Refer to relevant transportation documents. Lithium and lithium ion cells and batteries are regulated in the U.S. in

accordance with Part 49 of the Code of Federal Regulations, (49 CFR Sections 105-180) of the U.S. Hazardous Materials Regulations.

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 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 in accordance with 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.

SECTION 16: ADDITIONAL INFORMATION

THE INFORMATION ABOVE IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, POWERTECH SYSTEMS MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES. ALTHOUGH REASONABLE PRECAUTIONS HAVE BEEN TAKEN IN THE PREPARATION OF THE DATA CONTAINED HEREIN, IT IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION. THIS MATERIAL SAFETY DATA SHEET PROVIDES GUIDELINES FOR THE SAFE HANDLING AND USE OF THIS PRODUCT; IT DOES NOT AND CANNOT ADVISE ON ALL POSSIBLE SITUATIONS, THEREFORE, YOUR SPECIFIC USE OF THIS PRODUCT SHOULD BE EVALUATED TO DETERMINE IF ADDITIONAL PRECAUTIONS ARE REQUIRED.