SAFETY DATA SHEET

Section 1: Identification of the Substance/Preparation and of the Company/Undertaking

Product Name: High Power Lithium Ion Cell, Phosphate-Based

Product Codes: MD2, MD3, 9016682, 9017185

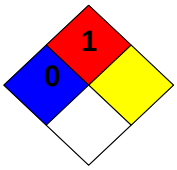
Product Use: Cell, cell packs and batteries

Synonyms: High Power Lithium Ion Battery, Phosphate-Based

Manufacturer: True Blue Power Division of
Mid-Continent Instrument Co, Inc
Wichita, KS, USA

Phone Number: (316) 630-0101
Fax: (316) 630-0723
24-hour Emergency: Chemtrec: (800) 424-9300 domestic, 011-1-703-527-3887 international

Section 2: Hazards Identification

Protective Clothing	NFPA Rating (USA)	EC Classification	WHMIS (Canada)	Transportation	GHS Hazard Symbol
Not required with normal use		**Not Classified as Hazardous**		**See Section 14**	**Signal Word: Warning**

Preparation Hazards and Classification: Not classified as dangerous or hazardous with normal use. The cell should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful. European Communities (EC): This product is not classified as hazardous according to Regulation (EC) No.1272/2008. This product contains dangerous ingredients however, there is no expected release during use of the product, and there is a barrier preventing exposure of the user and the environment.

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

Primary Route(s) of Exposure: These chemicals are contained in a sealed enclosure. Risk of exposure occurs only if the cell is mechanically, thermally, or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by Inhalation, Ingestion, Eye contact, and Skin contact.

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Section 2: Hazards Identification, continued

Potential Health Effects:

ACUTE (short term): see Section 8 for exposure controls

In the event that this cell has been ruptured, the electrolyte solution contained within the cell would be corrosive and can cause burns to skin and eyes.

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

Ingestion: Swallowing of materials from a sealed cell is not an expected route of exposure. Swallowing the contents of an open cell can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

Skin: Contact between the cell and skin will not cause any harm. Skin contact with contents of an open cell can cause severe irritation or burns to the skin.

Eye: Contact between the cell and the eye will not cause any harm. Eye contact with contents of an open cell can cause severe irritation or burns to the eye.

CHRONIC (long term): see Section 11 for additional toxicological data

Not applicable

Medical Conditions Aggravated by Exposure: Not available

Interactions With Other Chemicals: Immersion in high conductivity liquids may cause corrosion and breaching of the cell enclosure.

Potential Environmental Effects: Not available

Section 3: Composition/Information on Ingredients

As a solid, manufactured article, exposure to hazardous ingredients is not expected with normal use.

USA: This cell is an article pursuant to 29 CFR 1910.1200 and, as such, is not subject to the OSHA Hazard Communication Standard requirement. The information contained in this Safety Data Sheet contains valuable information critical to the safe handling and proper use of the product. This SDS 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.

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Section 4: First Aid Measures

Inhalation: If contents of an opened cell are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice.

Eye Contact: Contact with the contents of an opened cell can cause burns. If eye contact with contents of an open cell occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.

Skin Contact: Contact with the contents of an opened cell can cause burns. If skin contact with contents of an open cell occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes, and leather goods before reuse or discard.

Ingestion: Contact with the contents of an opened cell can cause burns. If ingestion of contents of an open cell occurs, NEVER give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.

Section 5: Fire Fighting Measures

Flammable Properties: Lithium ion batteries contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (> 150 °C (302 °F)), when damaged or abused (e.g., mechanical damage or electrical overcharge). Burning cells can ignite other batteries in close proximity.

Suitable extinguishing Media: Small Fires - Dry chemical, CO_2, water spray or regular foam.
Large Fires - Water spray, fog, or regular foam. Move containers from fire area if you can do it without risk.

Unsuitable extinguishing Media: Not Applicable

Explosion Data:

Sensitivity to Mechanical Impact: Extreme mechanical abuse will result in rupture of the individual battery cells.

Sensitivity to Static Discharge: Electrostatic discharges imposed directly on the spilled electrolyte may start combustion.

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Section 5: Fire Fighting Measures, continued

Specific Hazards arising from the Chemical: The interaction of water or water vapor and exposed lithium hexafluorophosphate (Li PF6) may result in the generation of hydrogen and hydrogen fluoride (HF) gas. Contact with battery electrolyte may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive, and/or toxic gases. Fumes may cause dizziness or suffocation.

Protective Equipment and precautions for firefighters: Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection. Fight fire from a safe distance.

NFPA:		
	Health:	0
	Flammability:	1
	Instability:	0

Section 6: Accidental Release Measures

Personal Precautions: As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed areas before entering. Wear adequate personal protective equipment as indicated in Section 8.

Environmental Precautions: Prevent material from contaminating soil and from entering sewers or waterways.

Methods for Containment: Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately.

Methods for Clean-up: Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.

Section 7: Handling and Storage

Handling/Transportation: Do not open, dissemble, crush, or burn cell. Do not expose cell to temperatures outside the range of -40°C to 80°C.

Storage: Store cell in a dry location. To minimize any adverse affects on battery performance it is recommended that the cells be kept at room temperature (25°C +/- 5°C). Elevated temperatures can result in shortened cell life. Keep out of reach of children.

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Section 8: Exposure Controls/Personal Protection

Exposure Limit Values: Airborne exposures to hazardous substances are not expected when product is used for its intended purpose.

Engineering Controls: Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fume and vapor.

Personal Protection:

Respiratory Protection: Not necessary under normal conditions.

Skin Protection: Not necessary under normal conditions. Wear neoprene or natural rubber gloves if handling an open or leaking cell.

Eye Protection: Not necessary under normal conditions. Wear safety glasses if handling an open or leaking cell.

Other Protective Equipment: Not necessary under normal conditions. Have a safety shower and eye-wash fountain readily available in the immediate work area.

Hygiene Measures: Do not eat, drink, or smoke in work areas. Maintain good housekeeping.

Section 9: Physical and Chemical Properties

Physical State:	Solid	**Vapor Pressure (mm Hg @ 20°C):**	Not applicable
Appearance:	Cell	**Vapor Density:**	Not applicable
pH:	Not applicable	**Solubility in Water:**	Insoluble
Relative Density:	Not available	**Water / Oil distribution coefficient:**	Not applicable
Boiling Point:	Not applicable	**Odor Type:**	Odorless
Melting Point:	Not applicable	**Odor Threshold:**	Not applicable
Viscosity:	Not applicable	**Evaporation Rate:**	Not applicable
Oxidizing Properties:	Not applicable	**Auto Ignition Temperature (°C):**	Not applicable
Flash Point and Method (°C):	Not applicable	**Flammability Limits (%):**	Not applicable

Section 10: Stability and Reactivity

Stability: Stable

Conditions to Avoid: Avoid exposing the cell to fire or temperatures above 80°C. Do not disassemble, crush, short, or install with incorrect polarity. Avoid mechanical or electrical abuse.

Incompatible Materials: Do not immerse in seawater or other high conductivity liquids.

Hazardous Decomposition Products: This material may release toxic fumes if burned or exposed to fire. Breaching of the cell enclosure may lead to generation of hazardous fumes which may include extremely hazardous HF (hydrofluoric acid).

Possibility of Hazardous Reactions: Not available

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Section 11: Toxicological Information

Acute Toxicity Data — Acute oral, dermal and inhalation toxicity data are not available for this article.

Other Toxicity Data

Irritation:	Risk of irritation occurs only if the cell is mechanically, thermally, or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.
Corrosivity:	Not applicable
Sensitization:	Not available
Neurological Effects:	Not applicable
Genetic Effects:	Not applicable
Reproductive Effects:	Not applicable
Developmental Effects:	Not applicable
Target Organ Effects:	Not applicable
Carcinogenicity:	Normal safe handling of this product will not result in exposure to substances that are considered human carcinogens by IARC (International Agency for Research on Cancer), ACGIH (American Conference of Governmental Industrial Hygienists, OSHA, or NTP (National Toxicology Program).

Section 12: Ecological Information

Ecotoxicity:	Not available
Mobility:	Not available
Persistence and degradability:	Not readily biodegradable
Bioaccumulative potential:	Not available
Other adverse effects:	Solid cells released into the natural environment will slowly degrade and may release harmful or toxic substances. Cells are not intended to be released into water or on land but should be disposed or recycled according to local regulations.

Section 13: Disposal Considerations

Waste Disposal Method: Cell recycling is encouraged. Do NOT dump into any sewers, on the ground or into any body of water. Store material for disposal as indicated in Section 7 Handling and Storage.

USA:	Dispose of in accordance with local, state, and federal laws and regulations.
Canada:	Dispose of in accordance with local, provincial, and federal laws and regulations.
EC:	Waste must be disposed of in accordance with relevant EC Directives and national, regional, and local environmental control regulations. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.

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Section 14: Transport Information

True Blue Power lithium-ion cells and batteries are designed to comply with all applicable shipping regulations as prescribed by industry and legal standards which includes compliance with the UN Recommendations on the Transport of Dangerous Goods, IATA Dangerous Goods Regulations, applicable U.S. DOT regulations for the safe transport of lithium-ion batteries, and the International Maritime Dangerous Goods Code. Each of the listed cells in Section 1 has passed the UN Manual of Tests and Criteria Part III Subsection 38.3, which is required by all of the directives listed above.

In the US, Title 49 of the Code of Federal Regulations (CFR), Hazardous Materials Regulations (HMR), Section 172.101 classifies shipments of lithium ion cells and batteries as Class 9, UN3480. Packaging, markings, and documentation requirements are defined in 49 CFR, Section 173.185 of the U.S. HMR. Excepted cells and batteries are allowed to be transported within the US without Class 9 packaging, but must conform to other requirements as stipulated in the 49 CFR, Section 173.185(c).

The International Civil Aviation Organization (ICAO) and the International Maritime Dangerous Goods (IMDG) Code generally classify international shipments of lithium ion cells and batteries as Class 9, UN3480. Packaging, markings, and documentation requirements are defined in the International Air Transport Association (IATA) Dangerous Goods Regulations (DGR) Packing Instructions 965 and Packing Instruction P903 of the IMDG Code. Excepted cells and batteries are allowed to be transported internationally without Class 9 packaging, but must conform to other requirements as stipulated in Packing Instructions 965 of the IATA DGR and Special Provision 188 under the IMDG Code. All cells and batteries must be transported at no more than 30% state of charge after April 1, 2016 and are forbidden on passenger aircraft, they must be transported as cargo only.

Section 15: Regulatory Information

USA

TSCA Status:	All ingredients in the product are listed on the TSCA inventory.
SARA Title III:	None
Sec. 302/304:	None
Sec: 311/312:	None
Sec. 313:	None
CERCLA RQ:	
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 this SDS contains all the information required by the *Controlled Products Regulations*.
WHMIS Classification:	Not Controlled
Substance Notification Regulations:	Lithium hexafluorophosphate is listed on the NDSL. All other ingredients in the product are listed, as required, on Canada's Domestic Substances List (DSL).
NPRI Substances:	This product does not contain any NPRI chemicals.
EC Classification for the Substance/Preparation:	This product is not classified as hazardous according to Regulation *(EC) No.1272/2008.* Keep out of the reach of children.

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EINECS Status:

Cell component	Chemical Name	CAS No.	EINECS	Concentration range in electrolyte (w/w %)	Mass range in cell (g/g %)
Electrolyte salt	Lithium hexafluorophosphate	21324-40-3	244-334-7	10 - 20	1 - 5
Electrolyte solvents	Includes one or more of the following: Ethylene Carbonate, Propylene Carbonate, Diethyl Carbonate, Dimethyl Carbonate Ethyl Methyl Carbonate	 96-49-1 108-32-7 105-58-8 616-38-6 623-53-0	 202-510-0 203-572-1 203-311-1 210-478-4 Not Listed	80 - 90	10-20

Section 16: Other Information

Manufacturer Disclaimer: The information and recommendations set forth are made in good faith and believed to be accurate at the date of preparation.