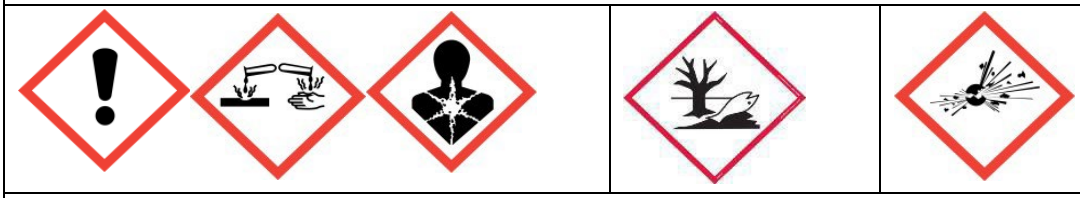
SECTION 1: PRODUCT IDENTIFICATION

Product Name:	Lithium Iron Phosphate Rechargeable Battery: PSL Series, PSL-BT, PSL-CP, PSL-SC, PSL-HV
Common Synonyms:	Lithium battery, LiFePO4 battery, Lithium Iron Phosphate battery, Rechargeable lithium battery
DOT Description:	Battery, lithium, electric storage battery
Chemical Family:	Electrical Battery Standby
Manufacturer's Name:	The Power-Sonic Corporation
Address:	365 Cabela Drive, Ste 300, Verdi, NV 89439, United States of America
E-mail:	compliance@Power-Sonic.com
Emergency Tel No.:	(US) Phone: +1 (775) 824-6500
Date Issued:	January 01, 2025

SECTION 2: HAZARDS IDENTIFICATION

HEALTH		ENVIRONMENTAL	PHYSICAL
Acute Toxicity (Oral/Dermal/Inhalation)	Category 4	Not classified as environmentally hazardous under normal conditions	Fire hazard during abuse conditions
Skin Corrosion/Irritation	Category 2		Thermal runaway potential
Eye Damage	Category 2		
Specific Target Organ Toxicity	Category 2		

GHS LABEL:



Hazard Statements: WARNING!

Precautionary Statements

The batteries are not hazardous when used according to the manufacturer's instructions under normal conditions

In case of abuse, there's hazard of rupture, fire, heat, leakage of internal components, which could cause casualty loss

Abuses include but are not limited to: long time charging, short circuit, exposure to fire, impact with hard objects, puncture with sharp objects, crushing, and breaking

Contact with internal components may cause irritation or burns

Keep away from heat/sparks/open flames/hot surfaces. No smoking

Wear protective gloves/protective clothing, eye protection/face protection when handling damaged batteries

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Other Hazards

Mechanical	Lithium batteries can be heavy. Correct manual handling techniques and/or mechanical lifting aids must be used.
Electrical	Lithium batteries can contain large amounts of electrical energy which can give very high discharge currents and severe electrical shock if the terminals are short circuited.
Chemical	The lithium battery presents no chemical hazards during normal operation provided the recommendations for handling, storage, transport and usage are observed
	If the battery is damaged and internal components are exposed, hazards may exist which require careful attention
	Damaged batteries may release toxic gases including HF (hydrogen fluoride) and phosphorus fluorides

SECTION 3: HAZARDOUS INGREDIENTS/ IDENTITY INFORMATION

COMPONENTS	Approx. % by Wt.	CAS Number	ACGIH TLV	OSHA	NIOSH
Lithium Iron Phosphate (LiFePO4)	35%-50%	15365-14-7	--	--	--
Graphite	15%-20%	7782-42-5	2000	15000	--
Ethyl Methyl Carbonate	10%-15%	623-53-0	--	--	--
Copper Foils	6%-10%	7440-50-8	1000	1000	1000
Aluminum Foil	7%-14%	7429-90-5	1000	15000	10000
Ethylene Carbonate	5%-8%	96-49-1	--	--	--
Lithium Hexafluorophosphate	2%-11%	21324-40-3	--	--	--
Case Material: Polypropylene/ABS	~10%	Various	--	--	--

SECTION 4: FIRST AID MEASURES FOR ACUTE EXPOSURE

This information is of relevance only if the lithium battery has suffered damage, is broken and persons have direct contact with the internal components.		
Active Materials and Electrolyte	Inhalation	Remove the person from exposure to fresh air. If breathing is difficult, supply oxygen. Seek advice from a medical doctor immediately.
	Ingestion	Wash out mouth with water and give plenty of water to drink. Do not induce vomiting. Seek advice from a medical doctor immediately.
	Skin Contact	Remove contaminated clothing and rinse skin with plenty of water or shower for at least 15 minutes. Seek medical advice if pain or irritation persists.
	Eye Contact	Immediately irrigate with eyewash solution or clean water for at least 15 minutes, holding the eyelids apart. Take the person to hospital without further delay.
	Self-protection for the first aider	Eye protection (safety glasses or face shield), and heavy-duty chemical resistant gloves are required. In case of inhalation, a face mask or respirator may be required.
Case Material	Inhalation	Material can burn in a fire with toxic smoke and decomposition products. Upon inhalation of decomposition products, keep patient calm, remove to fresh air, and seek advice from a medical doctor. **Note to physician:** Treat according to symptoms (decontamination, vital functions), no known specific antidote.

SECTION 5: FIRE-FIGHTING AND EXPLOSION HAZARD MEASURES

Lithium Batteries	Flash Point: N/A	
	General Information: Explosion Hazard 	Damaged lithium batteries may release flammable gases and can undergo thermal runaway leading to fire and explosion.
		Batteries in use will be part of an electrical circuit and must be isolated from the power source before attempting to put out a fire. Switch the power OFF before disconnecting the batteries from the power source.
	Suitable Extinguisher Types	Large quantities of cold water; CO2; Foam; Dry Powder; Sand; Earth. **Note:** Do not use warm or hot water. Do not use Halon type extinguishing materials.
	Unsuitable Extinguisher Types	Water extinguishers must never be used to put out an electrical fire without first disconnecting power.
	Hazardous Combustion & Decomposition Products	Carbon monoxide, Carbon dioxide, Hydrogen fluoride (HF), Phosphorus fluorides, toxic fumes from decomposition of battery case materials.
	Advice for Fire-fighters	Full face visor or safety goggles; Respiratory equipment or self-contained breathing apparatus (SCBA); Full chemical resistant protective clothing must be worn in fire-fighting conditions.

SECTION 6: ACCIDENTAL RELEASE MEASURES

This information is of relevance only if the lithium battery has suffered damage and is broken.		
Lithium Battery		Lithium batteries are designed to be safe to handle and not to leak electrolyte under normal conditions. In case of accidental damage, heavy-duty chemical resistant gloves are required to pick up the battery to protect against unseen electrolyte leakage.
Active Materials and Electrolyte	Personal Precautions	Eye protection (safety glasses or face shield), and heavy-duty chemical resistant gloves are required. If hazardous vapors are present, a face mask or respirator is required. Ensure adequate ventilation. Evacuate personnel to safe areas.
	Clean-up Methods	Do not allow material to enter a watercourse. Prevent product from contaminating soil and from entering sewers or waterways. Exposed materials must be placed in a sealed container for proper disposal.
	Environmental Precautions	Do not allow material to enter a watercourse. Prevent product from contaminating soil and from entering sewers or waterways. Exposed materials must be placed in a sealed container for proper disposal.

SECTION 7: HANDLING AND STORAGE

Handling	Unless involved in recycling operations, do not breach the casing or empty the contents of the battery. Handle carefully and avoid dropping, crushing, or puncturing. There may be risk of electric shock from strings of connected batteries.
	Keep batteries in original packaging when not in use. If battery case is broken, avoid contact with internal components.
	Place cardboard between layers of stacked batteries to avoid damage and short circuits.
	Keep away from combustible materials, extreme temperatures, and strong oxidizers.
Storage	Store batteries in cool, dry, well-ventilated areas away from direct sunlight and heat sources. Batteries should be stored under roof for protection against adverse weather conditions.
	Store at temperatures between -20°C to +60°C (-4°F to +140°F).
	Separate from incompatible materials. Keep away from metallic objects that could bridge the terminals and create a dangerous short-circuit.
Charging	Follow manufacturer's charging instructions. Use only approved chargers. Charging space should be well-ventilated. Prohibit smoking and avoid creation of flames and sparks nearby.
	There is a possible risk of electric shock from charging equipment. Shut-off power to chargers when not in use and before detachment of any circuit connections.

SECTION 8: EXPOSURE CONTROL / PERSONAL PROTECTION

Lithium Battery	
Control Parameters	There are no special control parameters for the handling, storage, installation of undamaged lithium batteries.
Exposure Control	There are no special exposure controls for the handling, storage, installation or use of undamaged lithium batteries.
Personal Protection	When there is no evidence of damage or visible traces of liquid (electrolyte) or solid deposits on the batteries, they may be handled safely without extra personal protective equipment.
	Ensure electrical insulation equipment is used when installing batteries (e.g., insulated mats and covers; insulated tools).
	Remove ALL metallic objects from the person when working with lithium batteries: e.g., jewelry (rings, watches, bracelets, necklaces), pens, tools, etc.
	Where there are signs of damage or liquid (electrolyte) or solid deposits, chemical resistant gloves and protective clothing must be worn when handling the batteries and affected packaging.
	If it is suspected that electrolyte leakage is present, then safety glasses must be worn, and if large amounts are present, chemical goggles or face shield should be used.
UL CAUTIONARY STATEMENT	"Warning: Risk of fire, explosion, or burns. Do not disassemble; heat above 60°C; or incinerate."

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Lithium Battery		
The main components are listed in SECTION 3 above.		
The undamaged product is a manufactured article in a plastic case, which will burn if subjected to high temperatures or sources of ignition.		
The information below refers to the physical and chemical properties of the main lithium battery components and substances. This information is published for reference only.		
Battery Components		
Appearance	Form	Solid prismatic or cylindrical
	Color	Various (typically black, blue, or gray case)
	Odor	Odorless (if leaking, may smell of organic solvents)
Physical Properties	Solidification Point	Variable depending on component
	Boiling Point	N/A as supplied
	Solubility in Water	Insoluble as supplied
	Density	Variable by component
	Vapor Pressure	Undetectable as supplied
Case Material	Form	Solid
	Softening Point	>100°C
	Flash Point	>300°C
	Solubility in Water	Insoluble

SECTION 10: STABILITY AND REACTIVITY

Lithium Battery	
Stability	Within the operational temperature range -20 to +60°C the undamaged product is stable.
Possibility of Hazardous Reactions	None under normal processing and storage conditions.
Conditions to Avoid	Exposure to temperatures above 60°C
	Physical damage (crushing, puncturing, dropping)
	Short circuiting
	Exposure to fire or extreme heat
	Contact with water or moisture in damaged state
Incompatible Materials	Strong acids, strong bases, strong oxidizing agents.
Hazardous Decomposition Products	If heated above decomposition temperature or in fire: Carbon oxides, Hydrogen fluoride (HF), Phosphorus fluorides.

SECTION 11: TOXICOLOGICAL INFORMATION

This information is of relevance only if the lithium battery has suffered damage and is broken.		
Lithium Battery		This information does not apply to the undamaged lithium battery. It is of relevance if the battery is broken and the components are released to the environment.
Lithium Compounds	Acute Toxicity 	May be harmful if internal components are ingested or inhaled.
	Chronic Toxicity 	Prolonged exposure to internal components may cause respiratory irritation.
Electrolyte Components	Irritation 	In the event of exposure to internal contents, vapor fumes may be very irritating to the eyes, skin, and respiratory system.
	Inhalation 	May cause respiratory irritation. Hydrogen fluoride exposure can cause severe respiratory damage.
	Ingestion 	May cause gastrointestinal irritation if internal components are ingested.
	Skin Contact 	May cause skin irritation or chemical burns upon contact with internal electrolyte.
	Eye Contact 	May cause severe eye irritation or damage upon contact with internal components.

SECTION 12: ECOLOGICAL INFORMATION

This information is of relevance only if the lithium battery has suffered damage and is broken.	
Lithium Battery	This information does not apply to the undamaged lithium battery. It is of relevance if the battery is broken and the components are released to the environment.
Ecotoxicity	Lithium compounds may be harmful to aquatic environments if released in large quantities.
Persistence and Degradation	Components may persist in the environment and require proper treatment.
Environmental Precautions	Battery components must not be allowed to enter waterways, sewage systems, or soil without proper treatment.

SECTION 13: DISPOSAL CONSIDERATIONS

Lithium Battery	
Worldwide	Lithium batteries contain materials that may be damaging to the environment if not properly disposed of.
	Spent (used) batteries must be disposed of in an environmentally friendly manner in accordance with local national laws and regulations.
	Lithium batteries must not be dismantled, burned, or incinerated as a means of disposal.
	At the end of life, lithium batteries may still be electrically 'live' and contain a large amount of electrical energy. The same care and attention to safe handling should be taken as when handling new batteries. Particular care must be taken to avoid short-circuiting the battery terminals.
Best Practice	Recycling through authorized battery recycling programs is strongly recommended.
Active Materials	All lithium battery components should be recycled through proper channels. Disposal must be carried out in accordance with local hazardous waste regulations.
Electrolyte	Electrolyte components require specialized disposal methods. Contact local authorities for proper disposal procedures.
Case Material	Recycling is encouraged. Disposal by controlled incineration or approved landfill in accordance with local regulations may be acceptable.

SECTION 14: TRANSPORT INFORMATION

Proper Shipping Name	Lithium ion batteries (UN3480) or Lithium ion batteries packed with equipment (UN3481) or Lithium ion batteries contained in equipment (UN3481)
UN Number	UN3480, UN3481 (depending on packaging configuration)
Hazard Class	Class 9 (Miscellaneous dangerous goods)
Packing Group	II
U.S. DOT	Lithium batteries are regulated under U.S. Department of Transportation's hazardous materials regulations and must be packaged, marked, and documented in accordance with 49 CFR 173.185 and applicable special provisions.
IATA Dangerous Goods Regulations	Must be shipped in accordance with IATA Dangerous Goods Regulations, Packing Instructions 965, 966, or 967 as applicable.
IMDG	Must be shipped in accordance with IMDG Code requirements for lithium batteries.
Additional Requirements	Each lithium battery design must have passed the tests required by UN Manual of Tests and Criteria, Part III, subsection 38.3. Test reports must be available. Batteries must be protected against short circuits and securely packaged to prevent movement during transport.

SECTION 15: REGULATORY INFORMATION

Lithium Battery	Required Markings	
Worldwide		The International Recycling Symbol, required by law in many countries worldwide to facilitate the identification of rechargeable batteries for recycling.
U.S.	Proposition 65	This product may contain chemicals known to the State of California to cause cancer and reproductive harm.

Regulatory Compliance	
U.S. Federal Regulations	• TSCA: All components are listed or exempt • OSHA: Compliant with 29 CFR 1910.1200 • DOT: Regulated under 49 CFR 173.185
International Regulations	• UN Manual of Tests and Criteria: Section 38.3 compliance required • IATA DGR: Applicable for air transport • IMDG Code: Applicable for sea transport • ADR/RID: Applicable for European road/rail transport

SECTION 16: OTHER INFORMATION

HMIS® Ratings	Health: 1
	Flammability: 2
	Physical hazard: 1
NFPA Ratings	Health: 1
	Flammability: 2
	Instability: 1
Disclaimer	The information in this sheet was written based on the best knowledge and experience currently available. The Power-Sonic Corporation makes no warranty, expressed or implied, regarding the accuracy or completeness of this information. This information is provided for use by technically qualified personnel at their own discretion and risk. Users should conduct their own testing to determine the suitability for their particular application.
Issue Date	January 01, 2025

This Material Safety Data Sheet has been prepared in accordance with applicable regulations and industry standards for lithium iron phosphate batteries. For specific product information, consult individual product documentation and labels.