



Preparation Date: January 15, 2013

Material Safety Data Sheets (MSDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as a manufactured item other than a fluid article; (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of hazardous chemical, and does not pose a physical hazard or health risk to employees. Boston-Power batteries are defined as "articles" and are exempt from requirements of the Hazard Communication Standard; hence a MSDS is not a requirement. This datasheet is provided as a service to our customers and vendors.

### Section 1: Product Information

**Product Identification:** Lithium-Ion Rechargeable Cell

**Cell Trade name:** Sonata® 4400 and Swing® 4400

**Chemical System:** Lithium ion

**Manufacturer:**

US Operations	China Operation
Boston-Power, Inc. 2200 West Park Drive, Suite 320 Westborough, MA 01581-3961 USA Phone: +1.508.366.0885 <a href="http://www.boston-power.com">www.boston-power.com</a>	Boston-Power Battery (Shenzhen) Co., Ltd Suite D, 23/F, Jinrun Bldg., Tairan 9 <sup>th</sup> Rd. CheGongMiao, Futian District Shenzhen 518040, China Phone: +86.755.8272.0229

### Section 2: Composition/Information on Ingredients

The chemical ingredients are contained in a sealed case designed to withstand temperatures and pressures encountered during normal use. The cell should not be opened, disassembled, crushed, burned, or exposed to high temperatures because exposure to the following materials could be harmful under some circumstances. The following information is provided for the user's information only.



Chemical Ingredients	Weight %	CAS Number
Transition Metal Oxide Similar chemical properties to Lithium cobalt dioxide	20-50	Similar chemical properties to 12190-79-3
Polyvinylidene Fluoride (PVDF)	<5	24937-79-9
Graphite	10-30	7782-42-5
Organic Electrolyte Solvent – Proprietary Similar chemical properties to Ethylene carbonate	10-20	Similar chemical properties to 96-49-1
Electrolyte Salt – Lithium hexafluorophosphate	1-3	21324-40-3
Aluminum, Nickel, Copper and inert materials	Remainder	N/A

### Section 3: Health Hazard Data Emergency Overview

May explode in a fire, which could release gases or solvents irritating to the skin and eyes. Use extinguishing media suitable for materials burning in fire.

#### Primary Routes of Entry – in the event that internal cell contents are released:

Skin Contact	Yes
Skin Absorption	Yes
Eye Contact	Yes
Inhalation	Yes
Ingestion	Yes

#### Symptoms of exposure

The contents of the battery are contained within a sealed can and under routine handling and use and will have no effect.

#### Reported as carcinogen

Not applicable

### Section 4: First Aid Measures

IF EXPOSURE TO INTERNAL MATERIALS WITHIN CELL DUE TO DAMAGED OUTER CASING, THE FOLLOWING ACTIONS ARE RECOMMENDED:

#### Inhalation

Leave area immediately and seek medical attention.

#### Eye contact

Check for and remove any contact lenses. Rinse eyes with water or normal saline for 15 minutes and seek medical attention.

#### Skin contact

Remove contaminated clothes and shoes. Wash area thoroughly with soap and water and seek medical attention.

**Ingestion**

Wash mouth with water. Drink milk/water and induce vomiting; seek medical attention.

**Section 5: Fire Fighting Measures****General Hazard**

Cell is not flammable. Combustion products include, but are not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.

**Extinguishing Media**

Use extinguishing media suitable for the materials that are burning.

**Special Firefighting Instructions**

If possible, remove cell from fire fighting area. If heated above 150°C, cell may explode.

**Firefighting Equipment**

Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

**Section 6 - Accidental Release Measures**

On land, place material into suitable containers and call local fire/police department.

In water, if possible, remove from water and call local fire/police department.

**Section 7 - Handling and Storage****Handling**

No special protective clothing required for handling an individual cell.

**Storage**

Store in a cool, dry place.

**Special Firefighting**

Instructions If possible, remove cell from fire fighting area. If heated above 150°C, cell may explode.

**Firefighting Equipment**

Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.



## Section 8 - Exposure Controls / Personal Protection

### Engineering Controls

Keep away from heat and open flame. Store in a cool dry place.

### Personal Protection

Respirator not required during normal operations. SCBA required in the event of a fire.

### Eye/face protection

Not required beyond safety practices of employer.

### Gloves

Not required for handling of cells.

### Foot protection

Steel toed shoes recommended for large container handling.

## Section 9 - Physical and Chemical Properties

State	Solid
Odor	N/A
pH	N/A
Vapor pressure	N/A
Vapor density	N/A
Boiling point	N/A
Solubility in water	Insoluble
Specific gravity	N/A
Density	N/A

## Section 10: Stability and Reactivity

### Reactivity

None

### Incompatibilities

None during normal operation. Avoid exposure to heat, open flame and corrosives.

### Hazardous Decomposition Products

None during normal operating conditions. If cells are opened, hydrogen fluoride and carbon monoxide may be released.

### Conditions To Avoid

Avoid exposure to heat and open flame. Do not puncture, crush or incinerate.



**Section 11: Toxicological Information**

This product does not elicit toxicological properties during routine handling and use.

<b>Sensitization</b>	<b>Teratogenicity</b>	<b>Reproductive Toxicity</b>	<b>Acute Toxicity</b>
<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

If cells are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

**Section 12: Ecological Information**

Some materials within the cell are bioaccumulative. Under normal conditions, these materials are contained and pose no risk to persons or to the surrounding environment.

**Section 13: Disposal Considerations**

California regulated debris RCRA Waste Code: Non-regulated  
Dispose of according to all federal, state and local regulations.



## Section 14: Transport Information

Regulated under U.S. DOT HMR, 49 CFR parts 171-180 Boston-Power's Sonata<sup>®</sup> 4400 and Swing<sup>®</sup> 4400 lithium-ion cells are categorized as small secondary cells which comply with the testing requirements defined by section 38.3 of the UN Manual of Tests and Criteria.

***Compliance to this testing allows transportation of Boston-Power's Sonata<sup>®</sup> 4400 and Swing<sup>®</sup> 4400 lithium-ion cells as excepted non-dangerous good (except where noted)***

according to the authority and with reference to the packaging defined in the following transportation regulations:

- UN Recommendations on the Transportation of Dangerous Goods Model Regulations
  - Product has been found to conform to section 38.3 of the UN Manual of Tests and Criteria by Motorola Product Test Services MPTS #1665
- U.S. Department of Transportation Hazardous Materials Regulations (HMR)
- International Civil Aviation Organization (ICAO) Technical Instructions
- International Air Transport Association (IATA) Dangerous Goods Regulations
  - Cell Wh rating = 16Wh (requirement < 20Wh) and therefore falls under UN 3480 Packing Instruction 965:
    - If quantity is 8 cells or less the cells can be declared and shipped as excepted non-dangerous good under Section II.
    - If quantity is greater than 8 cells the cells must be declared as Class 9 dangerous good under Section IB.
  - This product incorporates a safety venting device that will preclude a violent rupture under conditions normally incident to transportation.
  - Cells are packaged in strong outer packaging conforms to 5.0.2.4, 5.0.2.6.1, 5.0.2.12.1
  - Inner packaging completely encloses the cell to prevent short circuits including protection against contact with conductive materials with the same packaging.
  - The cell packaging conforms to 1.2m drop test validated by the Shanghai Research Institute of Chemical Industry Testing Centre, report #1109080026.
  - Each package is labeled with lithium ion battery handling labels and 24 hour emergency contact information and declared in shipping documentation as: Lithium ion batteries
  - The MAXIMUM gross weight per package is 10Kg
- International Maritime Dangerous Goods (IMDG) Code
  - Cell Wh rating = 16Wh (requirement < 20Wh) and therefore falls under Special Provision 188 and can be shipped as excepted non-dangerous good



- Europe, road transportation
  - Cell Wh rating = 16Wh (requirement < 20Wh) and therefore falls under ADR Special Provision 188 and can be shipped as excepted non-dangerous good
  
- China SN/T 0370.1-2009 and MH/T 1020-2009
  - Product has been found to conform to the Safe Transportation of Chemical Goods by the Shanghai Research Institute of Chemical Industry Testing Centre, report #2109080122

### Section 15: Regulatory Information

OSHA hazard communication standard (29 CFR 1910.1200)

Hazardous  Non-hazardous

### Section 16: Other Information

This product is designed for use by persons trained in the handling and use of lithium-ion cells and is not intended for individual sale. Under normal use this product poses no exposure risk. In the event that internal contents of lithium-ion cell are released due damage or severe heating, then precautions should be taken to avoid any exposure and properly trained safety personnel should be contacted for clean up and disposal.

Boston-Power, Inc. believes the information in this publication is correct, however, the information is subject to change without notice.

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