SECTION 1 - COMPANY IDENTIFICATION

Chemical Product Identification
Product Name: Lithium Ion Phosphate Rechargeable Battery
Common Name: Lithium Iron Phosphate (LiFePO4)
Distributed By: RELiON Battery, LLC
Address: 1433 Dave Lyle Blvd Rock Hill, SC 29730 USA
Phone Number: +1 803-547-7288
Email: powerpros@relionbattery.com
Emergency Number: +1 813-248-0585

Product Codes
| RB5 | RB75 | RB24V20 | RB48V200 | RB60-X |
| RB10 | RB80 | RB24V40 | RB48V300 | RB50-HP |
| RB10-PC | RB80-D | RB24V50 | 48V030-GC2 | RB100-HP |
| RB10PVC | RB100 | RB24V100 | RB20-LT | RB100-DHP |
| RB20 | RB100-D | RB24V200 | RB35-LT | RB300-HP |
| RB35 | RB170 | RB48V25 | RB100-LT |
| RB40 | RB200 | RB48V100 | RB20-X |
| RB50 | RB300 | RB48V150 | RB35-X |

SECTION 2 – HAZARDS IDENTIFICATION

Emergency Overview: This product contains a chemical substance. Safety information is given for exposure to the product as sold. Intended use of the product should not result in exposure to the chemical substance. This is a battery. In case of rupture, the below hazards exist.

CAS# 1333-86-4
Classification According to GHS
Self-heating substances and mixtures (1)
Carcinogenicity (2)
Specific target organ toxicity, repeated exposure (1) (lung)

Label Elements
Hazard Images:

<table>
<thead>
<tr>
<th>Signal Word: Danger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard Statements:</td>
</tr>
<tr>
<td>H251 Self-heating; may catch fire</td>
</tr>
<tr>
<td>H351 Suspected of causing cancer</td>
</tr>
<tr>
<td>H372 Causes damage to organs through prolonged or repeated exposure (lung)</td>
</tr>
</tbody>
</table>

Precautionary Statements:
Prevention:
P235 Keep cool.
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P280 Wear protective gloves, protective clothing, eye protection and face protection.
P260 Do not breathe dust.
P264 Wash skin and clothing thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
Response:
P308 + P313 If exposed seek medical attention.
P314 Seek medical attention if you feel unwell.
Storage:
P407 Maintain air gap between stacks or pallets.
P413 Store bulk masses greater than ...kg/...lbs at temperatures not exceeding ...°C
P420 Store separately.
P405 Store locked up.
Disposal:
P501 Contents require disposal at approved waste treatment plants.

CAS# 7440-50-8
Classification according to GHS
Sensitisation skin (1, 1A, 1B)
Specific target organ toxicity, single exposure (1) (digestive system)
Specific target organ toxicity, single exposure; Respiratory tract irritation (30)

**Label Elements**

**Hazard Images:**

#### Signal word: Danger

**Hazard Statements:**
- H317 May cause allergic skin reaction.
- H370 Causes damage to organs (digestive system).
- H335 May cause respiratory irritation.

**Prevention:**
- P260 Do not breathe dust, fume.
- P272 Contaminated work clothing should not be allowed out of the workplace.
- P280 Wear protective gloves, eye protection, face protection.
- P264 Wash skin and clothing thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.

**Response:**
- P302+P352 IF ON SKIN: Wash with plenty of water.
- P333 + P313 If skin irritation or rash occurs: Seek medical attention.
- P321 Specific treatment (See additional emergency instructions).
- P362 + P364 Take off contaminated clothing and wash it before reuse
- P308 + P311 IF exposed or concerned: Call a POISON CONTROL CENTER.
- P312 Call a POISON CENTER if you feel unwell.

**Storage:**
- P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
- P405 Store locked up.

**Disposal:**
- P501 Contents handling to approved waste treatment plants.

**CAS# 7429-90-5**

**Classification according to GHS**

Substances and mixtures which, in contact with water, emit flammable gases (2, 3)

Specific target organ toxicity, repeated exposure (1) (Lung)

Hazardous to the aquatic environment, long-term hazard (4)

**Label Elements**

**Hazard Images:**

#### Signal word: Danger

**Hazard Statements:**
- H261 In contact with water releases flammable gas.
- H372 Causes damage to organs through prolonged or repeated exposure (Lung).
- H413 May cause long lasting harmful effects to aquatic life.

**Prevention:**
- P223 Do not allow contact with water.
- P231 + P232 Handle and store contents under inert gas, protect with moisture.
- P280 Wear protective gloves and clothing thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P273 Avoid release to the environment.

**Response:**
- P302 + P335 + P334 IF ON SKIN: Brush off loose particles from skin and immerse in cool water.
- P370 _ P378 In case of fire: use the appropriate media to put out the fire.
- P314 Seek medical attention if you feel unwell.

**Storage:**
- P402 + P404 Store in a dry place. Store in a closed container.

**Disposal:**
- P501 Contents handling to approved waste treatment plants.

**Other Hazards**

**Physical and Chemical hazards:** See Section 10

**Human Health Hazards:** See Section 11

**Environmental Hazards:** See Section 12
SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization: Mixture

<table>
<thead>
<tr>
<th>Chemical Composition</th>
<th>CAS No.</th>
<th>EC#</th>
<th>Weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrous Phosphate Lithium</td>
<td>15365-14-7</td>
<td>476-700-9</td>
<td>30-40</td>
</tr>
<tr>
<td>Carbon Black</td>
<td>1333-86-4</td>
<td>215-609-9</td>
<td>10-20</td>
</tr>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>231-159-6</td>
<td>5-10</td>
</tr>
<tr>
<td>Aluminum</td>
<td>7429-90-5</td>
<td>231-072-3</td>
<td>2-10</td>
</tr>
<tr>
<td>Polypropylene</td>
<td>9003-07-0</td>
<td>618-352-4</td>
<td>2-5</td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>231-111-4</td>
<td>1-5</td>
</tr>
</tbody>
</table>

SECTION 4 – FIRST AID MEASURES

Description of First Aid Measures

General Information: No special measures required.

After Eye Contact
Flush eyes with plenty of water for several minutes while holding eyelids open. Get medical attention if irritation persists.

After Skin Contact
Remove contaminated clothing and shoes. Immediately wash with water and soap, rinse thoroughly. Wash clothing and shoes before reuse. If irritation occurs, get medical attention.

After Inhalation
Remove victim to non exposed area. Administer artificial respiration if breathing is difficult. Seek medical attention.

After Swallowing
Do not induce vomiting. Get medical attention.

Personal protective equipment for first-aid responders: No data available

Most important symptoms/effects, acute and delayed: No data available

Indication of immediate medical attention and special treatment needs: No data available

SECTION 5 – FIRE FIGHTING MEASURES

Suitable extinguishing media:
Use extinguishing agent suitable for local conditions and the surrounding environment, such as ABC extinguisher of the following type: a foam extinguisher, CO2, ABC dry chemical, powdered graphite, copper powder or soda (sodium carbonate) that is common to extinguish other combustible fire types.

Unsuitable extinguishing media: No data available.

Specific Hazards Arising from the Chemical:
When exposed to a fire situation. Lithium ion batteries contain flammable electrolytes that may vent, ignite and spark when subjected to high temperature (>150°C (302°F), when damaged or abused (e.g.) mechanical damage or electrical overcharging); may burn rapidly with flare-burning effect; may ignite other batteries in close proximity.

Specific protective actions for fire-fighters:

SECTION 6 – ACCIDENTAL RELEASE MEASURES


Protective Equipment: No data available.

Emergency Procedures: Remove ignition sources, evacuate area. Sweep up using a method that does not generate dust. Collect as much of the spilled material as possible, place the spilled material into a suitable container for disposal. Keep spilled material out of sewers, ditches and bodies of water.

Environmental Precautions: Do not allow material to be released into the environment without proper governmental permits.

Methods and Materials for Containment and Cleaning Up:
All waste must refer to the United Nations, the national and local regulations for disposal.

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.
SECTION 7 – HANDLING AND STORAGE

Precautions for Safe Handling:
Consumption of food and beverage should be avoided in work areas. Wash hands with soap and water before eating or drinking. Ground containers when transferring liquid to prevent static accumulation and discharge. Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

Conditions for safe storage, including any incompatibilities:
Requirements to be met by storerooms and receptacles
Store in a cool, dry, well-ventilated place.
Information about storage in one common storage facility
Keep away from heat, avoiding long exposure to sunlight.
Further information about storage conditions
Keep container tightly sealed
Specific and use: No data available

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA</th>
</tr>
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<tr>
<td>15365-14-7</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>7429-90-5</td>
<td>TLV-TWA 1mg/m³</td>
<td>REL-TWA 2mg/m³ REL-TWA 5mg/m³ REL-TWA 10mg/m³</td>
<td>PEL-TWA 5mg/m³ PEL-TWA 15mg/m³</td>
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<tr>
<td>7440-02-0</td>
<td>TLV-TWA 1.5mg/m³</td>
<td>REL-TWA 0.015mg/m³</td>
<td>PEL-TWA 1mg/m³</td>
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<tr>
<td>1333-86-4</td>
<td>TLV-TWA 3mg/m³</td>
<td>REL-TWA 3.5mg/m³</td>
<td>PEL-TWA 3.5mg/m³</td>
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<tr>
<td>7440-50-8</td>
<td>TLV-TWA 0.2mg/m³ TLV-TWA 1mg/m³</td>
<td>REL-TWA 1mg/m³ REL-TWA 0.1mg/m³</td>
<td>PEL-TWA 0.1mg/m³ PEL-TWA 1mg/m³</td>
</tr>
<tr>
<td>9003-07-0</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Appropriate engineering controls: The usual precautionary measures for handling chemicals should be followed. Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work.

Personal Protective Equipment
Respiratory protection: Wear suitable protective mask in order to reduce the respiratory system. In case of leakage, wear chemical protective clothing, including self-contained breathing apparatus.
Hand protection: Wear appropriate protective gloves to reduce skin contact.
Eyes protection: Wear safety goggles or eye protection combined with respiratory protection.
Skin and body protection: Working environment required, wear suitable protective clothing to minimize contact with skin. The type of protective equipment must be according to the concentration and content of certain hazardous substances in the workplace.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties
Color: Black
Physical State: Prismatic
Odour: Not available
Odour Threshold: Not available
pH: Not available
Melting point/freezing point: Not available
Initial boiling point and boiling range: Not available
Flash Point: Not available
Evaporation Rate: Not available
Flammability (solid, gas): Not available
Explosion Limits (vol% in air): Not available
Vapour Pressure, kPa at 20°C: Not available
Vapor Density: Not available
Density/Relative Density (water=1): Not available
Solubility(ies): Not available
Partition Coefficient: n-octanal/water: Not available
Auto-ignition Temperature: Not available
Decomposition Temperature: Not available
Viscosity: Not available
Other Information: Not available
SECTION 10 – STABILITY AND REACTIVITY

Reactivity: No data available
Chemical Stability: Stable
Possibility of Hazardous Reactions: No data available
Conditions to Avoid: Flames, sparks and other sources of ignition, incompatible materials
Incompatibilities Materials: Oxidizing agents, acid, base
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, lithium oxide fumes

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity:

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>LC50/LD50</th>
</tr>
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<tbody>
<tr>
<td>15365-14-7</td>
<td>No data available</td>
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<tr>
<td>7429-90-5</td>
<td>No data available</td>
</tr>
<tr>
<td>7440-02-0</td>
<td>LD50 Rat (oral): &gt;9000mg/kg</td>
</tr>
<tr>
<td>1333-86-4</td>
<td>No data available</td>
</tr>
<tr>
<td>7440-50-8</td>
<td>No data available</td>
</tr>
<tr>
<td>9003-07-0</td>
<td>No data available</td>
</tr>
</tbody>
</table>

Skin Corrosion/Irritation: No data available
Serious Eye Damage/Irritation: No data available
Respiratory or Skin Sensitization: No data available
Germ Cell Mutagenicity: No data available
Carcinogenicity: No data available
Reproductive Toxicity: No data available
Specific Target Organ Toxicity-Single Exposure: No data available
Specific Target Organ Toxicity-Repeated Exposure: No data available
Aspiration Hazard: No data available
Information on the Likely Routes of Exposure: No data available
Eye: No data available
Skin: No data available
Ingestion: No data available
Inhalation: No data available

SECTION 12 – ECOLOGICAL INFORMATION

Ecological Toxicity: No data available
Persistence and Degradability: No data available
Bioaccumulative Potential: No data available
Mobility in Soil: No data available
Other Adverse Effects: No data available

SECTION 13 – DISPOSAL CONSIDERATIONS

Disposal Methods
Recommendation: Consult state, local or national regulations to ensure proper disposal.
Uncleaned Packaging
Recommendation: Disposal must be made according to official regulations.

SECTION 14 – TRANSPORT INFORMATION

Acute Toxicity:

<table>
<thead>
<tr>
<th>UN Number</th>
<th>IATA</th>
<th>IMDG</th>
<th>Model Regulation</th>
</tr>
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<tbody>
<tr>
<td>UN3480</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

UN Proper shipping name
IATA | IMDG | Model Regulation
Lithium ion batteries | Lithium ion batteries |
Lithium ion batteries

Transport Hazard Class (es)
IATA | IMDG | Model Regulation
9 | 9 | 9

Packing group
IATA | IMDG | Model Regulation
N/A | N/A | N/A

Packing Sign
IATA | IMDG | Model Regulation
Not applicable

Environmental Hazards Marine Pollutant: No
Special precautions for user: Not applicable

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Transport Information:
RELiON LiFePO4 Batteries have passed the test UN38.3.

Watt-hour exceeds the standard, so it belongs to dangerous goods. The goods are packaged according to the packaging Instruction 965 Section IA of IATA DGR 58th Edition for transportation, Cargo aircraft only.

Watt-hour exceeds the standard, so it belongs to dangerous goods. The goods are packaged according to the special provision 230, 348 of IMDG (37-14).

Watt-hour exceeds the standard, so it belongs to dangerous goods. The goods are packaged according to the "Recommendations On The Transport of Dangerous Goods-Model Regulations" (19th).

Separate batteries to prevent short-circuiting and they should be packed in a strong package during transport. Lithium cell or battery should incorporate a safety venting device or be designed to prevent a violent rupture under normal transport conditions. Keep away from high temperature and open flames. Lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity.

Transport Fashion: By air, by sea, by railway, by road.

SECTION 15 – REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>TSCA</th>
<th>IECSC</th>
<th>DSL/NDSL</th>
<th>EINECS/ELINCS/NLP</th>
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<td>Listed DSL</td>
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</tbody>
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SECTION 16 – OTHER INFORMATION

Issue Time: 2017-02-21
Issue Department: Technical Department
Modification Record: Notice to Reader
To the best of our knowledge, the information contained herein is accurate. However, neither the above names supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although, certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Other Information:
CAS: (Chemical Abstracts Service)
EC: (European Commission)
ACGIH: (American Conference of Governmental Industrial Hygienists)
NIOSH: (US National Institute for Occupational Safety and Health)
OSHA: (US Occupational Safety and Health)
TLV: (Threshold Limit Value)
TWA: (Time Weighted Average)
STEL: (Short Term Exposure Limit)
PEL: (Permissible Exposure Average)
REL: (Recommended Exposure Limit)
PC-STEL: (Permissible concentration-time weighted average)
PC-TWA: (Permissible concentration-short time exposure limit)
LC50: (Lethal concentration, 50 percent kill)
LD50: Lethal dose, 50 percent kill
IARC: (International Agency for Research on Cancer)
EC50: (Median effective concentration)
BCF: (Bio concentration Factor)
BOD: Biochemical Oxygen Demand)
NOEC: (No observed effect concentration)
NTP: (US National Toxicology Program)
RTECS: (Registry of Toxic Effects of Chemical Substances)
IATA: (International Air Transport Association)
IMDG: (International Maritime Dangerous Goods)
TDG: (Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations)
TOC: (Total Organic Carbon)
TSCA: (Toxic Substances Control Act of USA)
DSL: (The Domestic Substances List of Canada)
NDSL: (The Non-Domestic Substances List of Canada)