

## MATERIAL SAFETY DATA SHEET

LITEBLOX batteries MSDS DATE: 13/01/2020



### SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** LB14XX / LB20XX / LB28XX / Prototypes

**SYNONYMS:** Lithium Iron Phosphate Battery, High Power/Energy Lithium Ion Battery Cells, Phosphate Based

**PRODUCT CODES:** #FXXX-LBXXXX

**MANUFACTURER:** LITEWERKS GmbH

**ADDRESS:** Robert-Bosch-Str 18 / 78467 Konstanz / Germany

**EMERGENCY PHONE:** +49 (0) 7533 / 9929001

**CHEMICAL NAME:** Lithium Iron Phosphate

**CHEMICAL FAMILY:** Lithium Ion

**CHEMICAL FORMULA:** LiFePO<sub>4</sub>

**PRODUCT USE:** Automotive starter battery

**PREPARED BY:**

**SECTION 1 NOTES:**

### SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Under normal use, this battery is not expected to expose user to hazardous ingredients.

**USA:** This battery 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 Material Safety Data Sheet contains valuable information critical to the safe handling and proper use of the product. This MSDS 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.

**SECTION 2 NOTES:**

### SECTION 3: HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW:**

Not dangerous with normal use. The battery should not be disassembled or incinerated.  
Exposure to the ingredients contained within or their combustion products could be harmful.

**APPEARANCE, COLOR, and ODOR:**

Solid object, no odor

**ROUTES OF ENTRY:**

Risk of exposure will only occur if the battery cell is mechanically, thermally, or electrically abused and the enclosure is compromised. If this occurs, exposure to electrolyte solutions contained within the battery cell may occur by inhalation, eye contact, skin contact and ingestion.

**POTENTIAL HEALTH EFFECTS**

**EYES:** Contact between the battery and eye will not cause any harm. Eye contact with the contents of a ruptured battery can cause severe irritation to the eye.

**SKIN:** Contact between the battery and skin will not cause any harm. Skin contact with positive and negative terminals of high voltages may cause burns to the skin. Skin contact with a ruptured battery can cause skin irritation.

**INGESTION:** Swallowing of material from a sealed battery is not an expected route of exposure. Swallowing mists from a ruptured battery may cause respiratory irritation, chemical burns of the mouth and gastrointestinal tract irritation.

**INHALATION:** Inhalation of material from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation.

**MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:** Not Available

**SECTION 3 NOTES:**

**SECTION 4: FIRST AID MEASURES**

**EYES:** Wash affected eye with lukewarm water for at least 30 minutes. Rinse with saline solution if possible. Seek medical attention.

**SKIN:** Wash affected area with lukewarm water for 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.

**CAUTION:** In all cases if irritation persists, seek medical assistance at once.

**SECTION 4 NOTES:**

**SECTION 5: FIRE-FIGHTING MEASURES**

**EXTINGUISHING MEDIA:** Water, carbon dioxide, dry chemical powder and foam are most effective means to extinguish a battery fire

**FIRE FIGHTING PROCEDURE:** Put on fully protective gear, including self-contained breathing apparatus, goggles, fireproofing jacket and gloves.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Exposing battery cell to excessive heat, fire or over voltage condition may cause a leak, fire, hazardous vapors and hazardous decomposition products.  
Damaged or opened cells or batteries can result in rapid heating and the release of flammable vapors.

**SECTION 5 NOTES:**

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### ACCIDENTAL RELEASE MEASURES:

The material contained within the batteries cells 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.

**SECTION 6 NOTES:**

## 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. Store in a cool and well ventilated area and avoid direct sunlight. Elevated temperatures can result in reduced battery life.

**SECTION 7 NOTES:**

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**RESPIRATORY PROTECTION:** Not necessary under normal use. In case of battery or cell rupture, use a self contained full face respiratory mask.

**EYE PROTECTION:** Not necessary under normal use. Wear safety goggles if handling a ruptured or leaking battery cell.

**HAND PROTECTION:** Not necessary under normal use. Wear Viton rubber gloves if handling a ruptured or leaking battery cell.

**SKIN PROTECTION:** Not necessary under normal use. Wear rubber apron and Viton rubber gloves if handling a ruptured or leaking battery cell.

**SECTION 8 NOTES:**

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

**SECTION 9 NOTES:**

## SECTION 10: STABILITY AND REACTIVITY

**Stability:** Stable

**Conditions to Avoid:** Avoid exposing battery to high temperatures. Do not incinerate, deform, mutilate, crush, pierce, short circuit or disassemble.

**Materials to Avoid:** Not Applicable

**Hazardous Decomposition Products:** Combustible vapors may be released if exposed to fire.

**Possibility of Hazardous Reactions:** Not available.

**SECTION 10 NOTES:**

## SECTION 11: TOXICOLOGICAL INFORMATION

**Irritation:** Risk of irritation only occurs if battery cells are mechanically, thermally or electrically abused and the enclosure is compromised.

**Neurological Effects:** Not applicable.

**Sensitization:** Not applicable.

**Teratogenicity:** Not applicable.

**Reproductive Toxicity:** Not applicable.

**Mutagenicity (Genetic Effects):** Not applicable.

**Toxicologically Synergistic Materials:** Not available

**SECTION 11 NOTES:**

## SECTION 12: ECOLOGICAL INFORMATION

**Bioaccumulative potential:** Not available.

**Persistence and degradability:** Not available.

**Mobility:** Not available.

**SECTION 12 NOTES:**

## SECTION 13: DISPOSAL CONSIDERATIONS

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

**USA:** Dispose of 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 13 NOTES:**

## SECTION 14: TRANSPORT INFORMATION

**U.S. DEPARTMENT OF TRANSPORTATION / water transportation / air transportation**

**PROPER SHIPPING NAME:** Lithium Ion batteries

**HAZARD CLASS:** UN3480

**ID NUMBER:** Not applicable

**PACKING GROUP:** PI965 Section IA

**LABEL STATEMENT:** See note

**SECTION 14 NOTES:**



Use Class 9 Miscellaneous Dangerous Goods and UN Identification labels for transportation of lithium ion batteries which are assigned Class 9. 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 know 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.

### EC Classification for the Substance/ Preparation

**Symbol:** This product is not classified as dangerous according to Directive 1999/45/EC and it's amendments.

**Risk Phrases:** None

**Safety Phrases:** S2: Keep out of the reach of children.

### SECTION 15 NOTES:

#### 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

#### Configuration:

Each LITEBLOX LB14XX battery contains 12 lithium cells of 76 grams each.

Each LITEBLOX LB20XX battery contains 20 lithium cells of 76 grams each.

Each LITEBLOX LB28XX battery contains 28 lithium cells of 76 grams each.

## SECTION 16: OTHER INFORMATION

**Preparation Date:** 01/03/2019

**Revision Date:** 13/01/2020

**Revision Summary:** -

**Prepared by:**

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