

LIONTRON LITHIUM BATTERIES

## MSDS REPORT

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### SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

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<b>Product Name:</b>	Lithium Iron Phosphate LiFePO <sub>4</sub> Traction Battery System
<b>Model:</b>	LIONTRON LX Smart BMS 12.8V 200Ah
<b>EAN Code:</b>	4260586370225
<b>Item Code:</b>	LI-SMART-LX-12-200
<b>Specification:</b>	2560Wh, 200Ah, 12.8V
<b>Weight:</b>	27.2 kg
<b>Dimensions:</b>	395mm x 235mm x 250mm (LxWxT)
<b>Manufacturer:</b>	Liontron GmbH
<b>Address:</b>	Herrenpfad 38, 41334 Nettetal, Germany
<b>Contact Person:</b>	Armin Tophoven
<b>Phone:</b>	+49 2153 - 127 84 90
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<b>E-Mail:</b>	info@liontron.de
<b>Emergency Tel:</b>	+49 2153 - 127 84 90

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### SECTION 2 – HAZARDS IDENTIFICATION

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<b>Classification of Danger:</b>	See section 14.
<b>Primary Route(s) of Exposure:</b>	Eye, skin contact, ingestion
<b>Health Hazard:</b>	The batteries are not hazardous when used according to the instructions of manufacturer under normal conditions. In case of abuse, there's Hazard of rupture, fire, heat, leakage of internal components, which could cause casualty loss. Abuses including but not limited to the following cases: charged for long time, short circuited, put into fire, whacked with hard object, punctured with acute object, crushed, and broken.

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### SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Concentration (%)	CAS Number
Iron Lithium Phosphate (LiFePO <sub>4</sub> )	30 - 60	15365-14-7
Graphite	10 - 30	7782-42-5
Phosphate(1-), hexafluoro-, lithium	10 - 30	21324-40-3
Aluminum Foils	5 - 10	7429-90-5
Copper Foils	7 - 13	7440-50-8
Nickel	1 - 5	7440-02-0
Other	1 – 3	N/A

Labeling according to EC directives. No symbol and Hazard phrase are required.

Note: CAS number is Chemical Abstract Service Registry Number. N/A=Not apply

### SECTION 4 – FIRST AID MEASURES

<b>Eye contact</b>	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
<b>Skin contact</b>	Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid
<b>Inhalation</b>	Remove from exposure and move to fresh air immediately. Use oxygen if available.
<b>Ingestion</b>	Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

### SECTION 5 – FIRE FIGHTING MEASURES

<b>Characteristics of Hazard</b>	Dusts at sufficient concentrations can form explosive mixtures with air. Combustion generates toxic fumes.
<b>Hazardous Combustion Products</b>	Carbon dioxide.
<b>Fire-extinguishing Methods and Extinguishing Media</b>	For small fires, use water spray, dry chemical, carbon dioxide or chemical foam.
<b>Attention in Fire-extinguishing</b>	Wear self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

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### SECTION 6 – ACCIDENTAL RELEASE MEASURES

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<b>Personal Precautions, protective equipment, and emergency procedures</b>	In case of rupture. Attention! Corrosive material. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Refer to protective measures listed in Sections 7 and 8.
<b>Environmental Precautions</b>	Prevent product from contaminating soil and from entering sewers or waterways.
<b>Methods and materials for Containment</b>	Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately.
<b>Methods and materials for cleaning up</b>	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.

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### SECTION 7 – HANDLING AND STORAGE

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<b>Handling</b>	The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.
<b>Storage</b>	Store in a cool, dry, well-ventilated area away from incompatible substances. Store locked up. Keep out of the reach of children.
<b>Other Precautions</b>	In case of rupture. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection equipment.

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### SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

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<b>Engineering Controls</b>	Use adequate ventilation to keep airborne concentrations low. If used under conditions that generate particulates, the ACGIH TLV-TWA of 3mg/m <sup>3</sup> respirable fraction (10mg/m <sup>3</sup> total) should be observed.
<b>Personal Protective Equipment</b>	<b>Eye and Face Protection:</b> None required for consumer use. If there is a Hazard of contact: Tight sealing safety goggles. Face protection shield. <b>Skin and Body Protection:</b> None required for consumer use. If there is a Hazard of contact: Wear protective gloves and protective clothing. <b>Respiratory Protection:</b> No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

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**SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES**

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**Physical State****Appearance:** Prismatic**Color:** Black**Odour:** If leaking, smells of medical ether.**Change in condition**

<b>pH</b>	Not applicable as supplied.
<b>Flash Point</b>	Not applicable unless individual components exposed.
<b>Flammability</b>	Not applicable unless individual components exposed.
<b>Relative density</b>	Not applicable unless individual components exposed.
<b>Solubility (water)</b>	Not applicable unless individual components exposed.
<b>Solubility (other)</b>	Not applicable unless individual components exposed.

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**SECTION 10 – STABILITY AND REACTIVITY**

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<b>Chemical Stability</b>	Stable under recommended storage conditions.
<b>Possibility of Hazardous Reactions</b>	None under normal processing.
<b>Conditions to Avoid</b>	Exposure to air or moisture over prolonged periods.
<b>Incompatible materials</b>	Acids, Oxidizing agents, Bases.
<b>Hazardous Decomposition Products</b>	Carbon oxides.

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**SECTION 11 – TOXICOLOGICAL INFORMATION**

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<b>Irritation</b>	In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.
<b>Sensitization</b>	Not Available.
<b>Reproductive Toxicity</b>	Not Available.
<b>Toxicologically Synergistic Materials</b>	Not Available.

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### SECTION 12 – ECOLOGICAL INFORMATION

<b>General note</b>	Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
<b>Anticipated behavior of a chemical product in environment/possible environmental impact/ ecotoxicity</b>	Not Available.

### SECTION 13 – DISPOSAL CONSIDERATIONS

<b>Waste Treatment</b>	Recycle or dispose of in accordance with government, state & local regulations.
<b>Attention for Waste Treatment</b>	Deserted batteries shouldn't be treated as ordinary trash. Shouldn't be thrown into fire or placed in high temperature. Shouldn't be dissected, pierced, crushed or treated similarly. Best disposal method is recycling.

### SECTION 14 – TRANSPORT INFORMATION

<b>UN number</b>	3480
<b>Proper shipping name</b>	Lithium ion batteries (limited to a maximum of 30% SoC)
<b>Class or division</b>	9
<b>Label(s) / Placard Required</b>	Miscellaneous Lithium batt



**Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises**

<b>ICAO / IATA</b>	Can be shipped by air in accordance with International Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA), DGR Packing Instructions (PI) 965 Section IA appropriate of IATA DGR 60th (2019 Edition) for transportation.
<b>IMDG CODE</b>	Shipping may be done in accordance with the IMDG Code 2018 Edition (Amdt 39-18).
<b>DOT</b>	Other requirements for the US Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185.
<b>ADR/ ADN</b>	Transport Requirements for United Nations Economic Commission for Europe (UNECE) ADR/ADN, Applicable as from 1 January 2019

**In addition, to be permitted in transport each lithium cell and battery types must have passed the applicable tests set out in Subsection 38.3 of the UN Manual of Tests and Criteria.**

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### SECTION 15 – REGULATORY INFORMATION

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- Dangerous Goods Regulations
- Recommendations on the Transport of Dangerous Goods-Model Regulations (20th revised edition)
- Recommendations on the Transport of Dangerous Goods-Manual of Tests and Criteria
- International Air Transport Association (IATA)
- International Maritime Dangerous Goods (IMDG Code 2018 Edition Amdt 39-18)
- Technical Instructions for the Safe Transport of Dangerous Goods
- Classification and code of dangerous goods (GB 6944-2012)
- 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)
- Toxic Substance Control Act (TSCA)
- Code of Federal Regulations
- In accordance with all Federal, State and local laws

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### SECTION 16 – ADDITIONAL INFORMATION

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Avoid any mechanical or electrical abuse of the Lithium Iron Phosphate battery. Use and Install the battery accordance with the instruction manual.

**Disclaimer:** To the best of our knowledge, the information contained herein is accurate. However, neither the abovenamed 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

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**END OF REPORT**

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