LIONTRON LITHIUM BATTERIES

MSDS REPORT

SECTION 1 – Chemical PRODUCT AND COMPANY IDENTIFICATION

Product Name:	Lithium Iron Phosphate battery pack
Model:	AMPSTAR X 12.8V 300AH
EAN Code:	4260704040016
Item Code:	AMPST12300SB300X
Specification:	3840Wh, 300Ah, 12.8V
Weight:	27.2 kg
Dimensions:	377 x 281 x 195 mm (LxWxH)
Manufacturer:	Liontron GmbH & Co. KG
Address:	Bahnstraße 29, 47929 Grefrath, Germany
Contact Person:	Boris Burchert
Phone:	+49 2157 - 144 90 70
Fax:	+49 2157 - 144 90 71
E-Mail:	info@liontron.de
Emergency Tel:	+49 2157 - 144 90 70

SECTION 2 – HAZARDS IDENTIFICATION

Emergency overview:	N/A
Label elements:	
Hazard pictogram(s)	Not Applicable.
Signal word	Not Applicable.
Hazard statement(s)	Not Applicable.
Precautionary statement(s):	Not Applicable.
Prevention	Not Applicable.
Response	Not Applicable.
Disposal	Not Applicable.
Environmental hazards:	Not Applicable.

Important symptoms: Not Applicable.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Composition	Chemical Formula	Concentration (%)	CAS No.
Iron Lithium Phosphate (LiFePO4)	LiFePO4	24	15365-14-7
Graphite	C	10 - 30	7782-42-5
Lithium hexafluorophosphate	LiPF6	23	21324-40-3
Aluminum	Al	5 - 10	7429-90-5
Copper	Cu	7 - 13	7440-50-8
Nickel	Ni	1 - 5	7440-02-0

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

Eye contact Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin contact Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid

Inhalation Remove from exposure and move to fresh air immediately. Use oxygen if available.

Ingestion Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

SECTION 5 – FIRE FIGHTING MEASURES

Flash Point N/A

Auto-Ignition Temperature N/A

Extinguishing Media	Hydrocarbon surfactant, CO2.
Special Fire-Fighting Procedures	Self-contained breathing apparatus.
Unusual Fire and Explosion Hazards	Cell may vent when subjected to excessive heat-exposing battery contents.
Hazardous Combustion Products	Carbon monoxide, carbon dioxide, lithium oxide fumes.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, protective equipment, and emergency procedures	If the battery is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area and allow the vapors to dissipate, Avoid skin and eyes contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerated. If leakage of the battery happens, liquid could be absorbed by using sand, earth or other inert substance and contaminated area should be ventilated meantime.
Environmental Precautions	Do not allow product to reach sewage system or any water source. Inform respective authorities in case of seepage into water course or sewage system. Do not allow to enter sewers/ surface or ground water.
Methods and materials for Containment	Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately.
Methods and material for containment and cleaning up	If battery casing is dismantled, small amounts of electrolyte may leak. Collect all released material in a plastic lined container. Dispose off according to the local law and rules, Avoid leached substances to get into the earth, canalization or waters.

SECTION 7 – HANDLING AND STORAGE

Handling	The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

Storage	Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.
Other Precautions	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.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. Keep away from heat and open flame. Store in a cool, dry place.
Personal Protective Equipment	Respiratory Protection: Not necessary under normal conditions. Skin and body Protection: Not necessary under normal conditions, Wear suitable protective clothing and gloves if handling an open or leaking battery. Hand protection: Wear suitable gloves if handling an open or leaking battery. Eye Protection: Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery.
Other Protective Equipment	Have a safety shower and eye wash fountain readily available in the immediate work area.
Hygiene Measures	Do not eat, drink, or smoke in work area. Maintain good housekeeping.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Color	Black
Odour	Not Applicable
pH	Not Applicable
Flash Point	Not Applicable
Flammability	Not Applicable
Relative density	Not Applicable
Solubility (water)	Not Applicable
Solubility (other)	Not Applicable
Melting point/freezing point	Not Applicable

Boiling Point and Boiling range	Not Applicable
Upper/lower flammability or explosive limits	Not Applicable
Vapor Pressure	Not Applicable
Relative density	Not Applicable
Solubility in Water	Not Applicable
Auto-ignition temperature	Not Applicable
Decomposition temperature	Not Applicable
Evaporation rate	Not Applicable
Flammability (soil, gas)	Not Applicable
Viscosity	Not Applicable

SECTION 10 – STABILITY AND REACTIVITY

Stability	The product is stable under conditions described Section 7.
Possibility of Hazardous Reactions	Not Applicable.
Conditions to Avoid	Heat above 70°C or incinerate. Deform, Mutilate, Crush, Disassemble, Overcharge, Short circuit, Expose over a long period to humid conditions.
Incompatible materials	Acids, Oxidizing agents, Bases.
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide, lithium oxide fumes.

SECTION 11 – TOXICOLOGICAL INFORMATION

Irritation	Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.
Sensitization	Not Applicable.

Reproductive Toxicity	Not Applicable.
Toxicologically Synergistic Materials	Not Available.
Neurological Effects	Not Available.
Teratogenicity	Not Available.
Mutagenicity (Genetic Effects)	Not Available.

SECTION 12 – ECOLOGICAL INFORMATION

Ecological Toxicity	Not Applicable.
Mobility in soil	Not Applicable.
Persistence and Degradability	Not Applicable.
Bioaccumulation potential	Not Applicable.
Other Adverse Effects	Not Applicable.

SECTION 13 – DISPOSAL CONSIDERATIONS

Product disposal recommendation	Observe local, state and federal laws and regulations.
Packaging disposal recommendation	Disposal must be made according to official regulations.

SECTION 14 – TRANSPORT INFORMATION

Label for conveyance	Lithium Battery Label.
UN Number	UN 3480 or UN 3481.
Transport hazard class(es)	9
Packing group	967
Marine pollutant	No.
UN Proper shipping name	Lithium ion Batteries (Including lithium ion polymer batteries). Lithium ion Batteries packed with equipment (Including lithium ion polymer batteries). Lithium ion Batteries contained in equipments (Including lithium ion polymer batteries).

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ICAO / IATA	Can be shipped by air in accordance with international Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA) DGR 65th Packing Instructions Section IA of 965 or Section I of 966～967 appropriately.
IMDG CODE	International Maritime Dangerous Goods Code IMDG CODE (Amdt 41-22).
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail.
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road.

The dangerous goods regulations require that each battery design be subject to tests contained in Section 38.3 of the UN Manual of Tests and Criteria prior to being offered for transport.

SECTION 15 – REGULATORY INFORMATION

Law information

- Dangerous Goods Regulations
- Recommendation on the Transport of Dangerous Goods Model Regulations
- International Maritime Dangerous Goods
- Technical Instructions for the Safe Transport of Dangerous Goods
- Classification and code of dangerous Goods
- Consumer Product Safety Act (CPSA)
- Federal Environmental Pollution Control Act (FEPCA)
- Resource Conservation and Recovery Act (RCRA)
- European Agreement concerning the International Carriage of Dangerous
- Regulations concerning the International Carriage of Dangerous
  In accordance with all Federal, State and local laws

SECTION 16 – OTHER INFORMATION

The information above is believed to be accurate and represents the best information currently available to us. However, this document makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

END OF REPORT