Material Safety Data Sheet

1. Product and Company Identification

Brand:	ACCURAT
Series name:	ACCURAT Impulse (LFP batteries)
Manufacturer:	batterium GmbH Robert-Bosch-Straße 1, 71691 Freiberg am Neckar, Germany T: +49 7141 - 1410870 | F: +49 7141 / 560 90 49 | info@batterium.de batterium.de

Models:

Impulse I20 L3 LFP
Impulse I40 L3 LFP
Impulse I20 L2 LFP
Impulse I40 L2 LFP
Impulse I60 L5 LFP
Impulse I80 L5 LFP
Impulse I100 L5 LFP

2. Composition / Information on Ingredients

Component	Approx. percentage	CAS No.	EC No.
Lithium Iron Phosphate ($LiFePO_4$)	20 to 40%	1536-14-7	604-917-2
Graphite	10 to 20%	7782-42-5	231-955-3
Iron	10 to 20%	7439-89-6	231-096-4
Aluminum Foils	5 to 10%	7440-50-8	231-159-6
Copper Foils	1 to 10%	7429-90-5	231-072-3
Nickel	1 to 5%	7440-02-0	231-111-4
Other	1 to 5%	-	-

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3. Hazards Summary

Routes of entry: There is no hazard when the measures for handling and storage are followed.

If the battery is damaged, dangerous substances and a flammable gas mixture may be released.

OSHA Hazard Communication: This material is not considered hazardous by the OSHA Hazard

Communication Standard: 29 CFR 1910.1200.

Carcinogenicity (NTP): Not listed

Carcinogenicity (IARC): Not listed

Carcinogenicity (OSHA): Not listed

4. First Aid Measures

The following first-aid measures are required only if a battery has been damaged or opened and a person is exposed to the internal components. Undamaged, closed batteries do not present a health hazard.

Skin contact: Immediately remove contaminated clothing and shoes. Wash off affected area with plenty of water. Consult a physician.

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes. Consult a physician.

Ingestion: Rinse mouth and drink plenty of water. Induce vomiting. Do not administer anything by mouth or induce vomiting to an unconcious person. Consult a physician.

Inhalation: Move the affected person to fresh air. If they are not breathing, administer articifial respiration. Seek medical attention.

5. Fire Fighting Measures

Suitable extinguishing media: Cold water and dry powder.

Special hazards arising from the chemical: If the electrolyte comes into contact with water, hydrofluoric acid may be formed. In the case of a fire, the following gases may be formed: Hydrogen fluoride, carbon monoxide and carbon dioxide.

Protective fire-fighting equipment: Wear a self-contained breathing apparatus and a protective suit.

Additional information: If possible, remove batteries from the area of the fire. If heated above 125°C, batteries may explode. The battery casing is not flammable, but internal components will burn if the battery is incinerated.

6. Accidental Release Measures

Personal precautions: Use personal protective clothing. Avoid contact with skin, eyes and clothing. Avoid inhalation of fumes and gas. Evacuate personnel to safe areas upwind of the spill.

Environmental precautions: Keep the contents of the battery away from sewers, water drains and water sources. Stop the leak if it is safe to do so and contain the spilled liquid with dry sand or earth. Dispose of any spilled contents in accordance with national, state and local regulations.

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7. Handling and Storage

Handling:	Never lift a battery by its terminals. Prevent any risk of short cicuited terminals. Avoid mechanical damage to the battery. Do not disassemble the battery. The battery may explode or cause burns if disassembled, crushed or exposed to fire or high temperatures.
Storage:	Store at room temperature (approx. 20°C) in a dry, well ventilated place.
Precautions:	Keep away from open flames, sparks and sources of heat.

8. Exposure Controls/Personal Protection

During normal use and charging, no internal components are released.

Occupational exposure controls:	No specific precautions necessary.
Protective and hygiene measures:	Do not eat, drink or smoke near the battery when it is in use. Wash hands after handling the battery.
Respiratory protection:	No specific precautions necessary.
Hand protection:	No specific precautions necessary.

Remove jewelry, rings, watches and any other metallic objets while working on batteries. All tools should be adequately insulated to avoid any possibility of short circuits. Do not lay tools on top of the battery. Be sure of discharge static electricity from tools and individual persons by touching a grounded surface in the vicinity of the batteries.

Batteries are heavy. Serious injury can result from improper lifting or installation. Do not lift, carry, install or remove cells by lifting or pulling the terminal posts. Do not wear nylon clothes or overalls as they can create static electricity. Always keep emergency communications device in the work area.

9. Physical and Chemical Properties

Form:	Solid
Color:	Various
Odor:	Odourless. May smell of medical ether if punctured.
pHValue:	N/A
Flash Point:	N/A
Lower explosion limits:	N/A
Vapour pressure:	N/A
Density:	N/A
Water solubility:	N/A
Ignition temperature:	N/A

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10. Stability and Reactivity

Chemical stability:	Stable under normal temperatures and pressures.
Conditions to avoid:	Keep away from open flames, hot surfaces and sources of ignition. Do not expose to moisture for prolonged periods. Do not puncture, crush or incinerate.
Materials to avoid:	Acids, oxidizing agents, bases.
Decomposition products:	If the battery case is damaged or opened carbon monoxide may be released.
Hazardous reactions:	Will not occur.
Additional information:	No decomposition if stored and applied as directed.

11. Toxicological Information

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

Sensitization:	none
Teratogenicity:	none
Reproductive toxicity:	none
Acute toxicity:	none

12. Ecological Information

Do not allow undilluted contents of the battery or large quantities of it to enter ground water, water courses or sewage systems. Some materials within the battery are bioaccumulative. Under normal conditions, these materials are contained and pose no risk to persons or the environment.

13. Disposal Considerations

Consult national, state and local regulations to ensure proper disposal.

Dispose of packaging in accordance with all national, state and local regulations.

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14. Transport Information

Batteries should be transported in accordance with UN3480 packing instruction 965-967 of IATA DGR 61th edition for transportation, or the special provision 188 of IMDG(37-14) or the "Recommendations on the transport of dangerous goods-model regulations" (18th edition).

The batteries should be securely packed and protected against short-circuits. Make sure the packaging is undamaged and tightly closed before transport. Avoid falling, dropping, and breakage during transport.

Prevent collapse of cargo piles. Don't put the batteries together with oxidizers or food chemicals. During transport, the vehicle should prevent exposure to rain and high temperatures.

Transport hazard class:	9
Means of transportation:	By air, by sea, by railway, by road.
Proper shipping name:	Lithium Ion Batteries (limited to a maximum of 30% SoC)
Required labels:	Miscellaneous, Lithium Battery
ICAO / IATA:	Can be shipped by air in accordance with International Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA), DGR Packaging Instructions (PI) 965 Section IA appropriate of IATA DGR 62nd (2021 Edition) for transportation.
IMDG Code:	Shipping may be done in accordance with the IMDG Code 2018 Edition (Amdt 39-18)
DOT:	Other requirements for the US Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185.
ADR / ADN:	Transport Requirements for United Nations Economic Commission for Europe (UNECE) ADR/ ADN, Applicable as from 1 January 2019.

15. Regulatory Information

N/A

16. Other Information

The information given above is provided in good faith based on present knowledge and does not constitute an assurance of safety under all conditions. It's the users responsibility to observe all laws and regulations applicable. We make no warranty of merchantibility or any other warranty, expressed 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. In no way shall we be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or expemplary damages, howsoever arising, even if we have been advised of the possibilty of such damages. If there are any queries, the supplier should be consulted. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

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