[accurat]

Material Safety Data Sheet

1. Product and Company Identification

Brand:	ACCURAT
Series name:	ACCURAT Traction (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:	

T6 LFP 12V	T80 LFP DIN 12V
T12 LFP 12V	T100 LFP DIN 12V
T18 LFP 12V	T150 LFP DIN 12V
T24 LFP 12V	T80 LFP DIN BT 12V
T42 LFP 12V	T100 LFP DIN BT 12V
T60 LFP 12V	T150 LFP DIN BT 12V
T90 LFP 12V	T100 LFP BT 12V
T100 LFP 12V	T150 LFP BT 12V
T150 LFP 12V	T200 LFP BT 12V
T200 LFP 12V	T60 LFP BT 24V
T20 LFP 24V	T100 LFP BT 24V
T40 LFP 24V	T200 LFP BT 24V
T60 LFP 24V	T80 LFP L3 12V
T100 LFP 24V	T100 LFP L4 12V
T200 LFP 24V	T150 LFP L5 12V

2. Composition / Information on Ingredients

Component	Approx. percentage	CAS No.	EC No.
Ferrous Phosphate Lithium	28 to 32%	1536-14-7	-
Organic solvents	10 to 12%	-	-
Lithium Hexafluorophosphate	2.5 to 3%	21324-40-3	244-334-7
PVDF	1.0 to 1.5%	24937-79-9	200-867-7
Copper	8 to 10%	7440-50-8	231-159-6
Aluminum foil	3 to 5%	7429-90-5	231-072-3
Graphite foil	12 to 14%	7782-42-5	231-955-3
Casing	15 to 20%	-	-

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 oŠ aŠected 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. Do not administer anything by mouth to an unconcious person. Consult a physician.

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

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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.
Environmental precautions:	Keep the contents of the battery away from sewers, water drains and water sources. Collect dispose of any spilled contents in accordance with national, state and local regulations.

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.
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.

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Component	Risk Codes	Safety Description	Hazard	Exposure Controls / Personal Protection
Cobalt oxide	R22, R43, R50/53	S24, S37, S60, S61	Xn (Harmful) N (Dangerous for the environment)	0.1mg/m¥(TWA)
Manganese (VI) oxide	R20/22	S25	Xn (Harmful)	**Airborne Exposure Limits:** - OSHA Permisible Exposure Limit(PEL): 5mg/m¥ œiling for manganese compounds as Mn - ACGIH Threshold Limit Value (TLV): 0.2mg/m¥ (TWA) for manganese, elemental and inorganic compounds as Mn
Nickel oxide	R43, R49, R53	S45, S53, S61	T (Toxic)	**Airborne Exposure Limits:** For Nickel, metal and insoluble compounds as Ni: - OSHA Permissible Exposure Limit(PEL): 1mg/m¥ (TWA) For Nickel, elemental/metal: - ACGIH Threshold Limit Value (TLV): 1.5mg/m¥ (TWA), A5 - Not suspected as a human carcinogen. For Nickel, insoluble compounds as Ni: - ACGIH Threshold Limit Value (TLV): 0.2mg/m¥ (TWA), A1 - Confirmed human carcinogen.
Carbon	R36/37/38, R36/37, R20, R10	S22, S24/25	F (Highly Flammable) Xn (Harmful) Xi (Irritant)	**Airborne Exposure Limits:** - OSHA Permissible Exposure Limits (PEL): activated carbon (graphite, synthetic): Total particulate = 15 mg/m¥
Aluminum foil	R17, R15, R36/38, R10, R67, R65, R62, R51/53, R48/20, R38, R11	S7/8, S43, S26, S62, S61, S36/37, S33, S29, S16, S9	F (Highly Flammable) Xn (Harmful) Xi (Irritant)	**Airborne Exposure Limits:** - OSHA Permissible Exposure Limit (PEL): 15 mg/m¥(TWA) total dust and 5 mg/m¥ (TWA) respirable fraction for aluminum metal as Al - ACGIH Threshold Limit Value (TLV): 10 mg/m¥(TWA) Aluminum metal dusts
Copper foil	R11, R36, R37, R38	S5, S26, S16, S61, S36/37	F (Highly Flammable) N (Dangerous for the environment) Xn (Harmful) Xi (Irritant)	Copper dust and mists, as Cu: -OSHA Permissible Exposure Limit (PEL): 1 mg/m¥(TWA) ACGIH Threshold Limit Value (TLV): 1 mg/m3 (TWA) Copper fume: - OSHA Permissible Exposure Limit (PEL): 0.1 mg/m3 (TWA) - ACGIH Threshold Limit Value (TLV): 0.2 mg/m3 (TWA)
Polyvinylidene fluoride		S22, S24/25		

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9. Physical and Chemical Properties

Form:	Solid
Color:	Various
Odor:	Odourless
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

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 puncture, crush or incinerate.
Materials to avoid:	N/A
Decomposition products:	If the battery case is damaged or opened, hydrofluoric acid and 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

This product does not contain any kinds of the following substances and halogen-type flame retardants including Chlorine- and Bromide-type harmful flame retardants which are listed in Appendix of TCO documents and relevant international ECO requirements:

Polybromated Biphenyls (PBB)

Polybromated Biphenyl Ethers (PBBE)

Polybromated Biphenyl Oxides (PBBO)

Polybromated Diphenylethers (PBDE)

Polybromated Biphenyl (PCB)

Polybromated Diphenylethers (PCDE)

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Tetrabromphisphenol A (TBBP A)

Asbestos, Antimonytrioxide, Dioxine

None of the following substances will be exposed, leaked, or emitted during transportation, storage or any operation and any temperature condition:

Chlorinated Fluorohydro carbon (FCKW)

Acrylpmotrode, Styrol, Phenol, Benzol

More than 0.0001wt% Mercury for alkaline batteries; more than 0.0005wt% Mercury for other batteries; more than 0.5g/cell Lithium; more than 1.5g/battery Cadmium, Lead, and any other harmful heavy metal.

This product does not contain mercury, cadmium and lithium-metal.

If the cells are opened or damaged, discard immediately. Internal components are irritants and sensitizers.

12. Ecological Information

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.

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.

15. Regulatory Information

N/A

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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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