ANHUI LEOCH BATTERY TECHNOLOGY CORP.

NO.1 NVZHEN ROAD ECOMOMIC DEVELOPMENT ZONE, SUIXI HUAIBEI CITY, ANHUI PROVINCE, 8P.R CHINA

MATERIAL SAFETY DATA SHEET 原材料安全性数据表 UPLUS

VALVE-REGULATED SLA BATTERIES 阀控式铅酸蓄电池 MAINTENANCE-FREE NON-SPILLABLE 兔维护铅酸蓄电池

According to the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

1.0 Identification of Substance and Company

Product Name: Sealed Maintenance Free Lead-Acid Batteries: US Series UPLUS Brand

Common Synonyms: SLA, VRLA, Sealed Recombinent

DOT Description: Wet Battery, Non-Spillable **Chemical Family:** Electrical Battery Standby

Manufacture: ANHUI LEOCH BATTERY TECHNOLOGY CORP.

Address: 5th Floor, xinbaohui bldg., nanyou blvd, nanshan, shenzhen, China.

Contact: Telephone: (+86)0755-86036060 FAX:0755-26067217 E-mail:battery@leoch.com

European Union Only Representative:

Add: 9B Wheatstone Court. Waterwells Business Park, Gloucester, GL2-2AQ, UK

Tel: +44(0) 1452 729428 E-mail: sales.Europe@leoch.com

Emergency Number(s):

For Chemical Emergency ONLY (spill, leak, fire, exposure or accident), call CHEMTREC at

+86-0755-86036060 or see section 16 for in country telephone numbers.

Date Issued: 06.09.2013

2.0 Hazards Identification

Material is an article. No health effects are expected related to normal use of this product as sold. Hazardous exposure can occur only when the product is heated, oxidized or otherwise processed or damaged to create lead dust, vapor or fume. Refer to the Material Safety Data Sheet for Lead Acid Battery when battery is filled with electrolyte/battery acid.

2.1 Classification of the substance or mixture:

2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]

Class 13: Non-flammable solids in non-flammable package

2.1.2 Classification according to 67/548/EEC or 1999/45/EC

2.2 Label elements

2.2.1 Labeling according to Regulation (EC) No 1272/2008

Product identifier:

Valve Regulated Lead Battery

Hazard pictograms:



Xi: Irritating

2.3.Other hazards

Adverse human health effects and symptoms:

Inhalation: (Acute): Under normal conditions of use, no health effects are expected.

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(Chronic): Repeated and prolonged exposure may cause irritation.

Skin: (Acute): Under normal conditions of use, no health effects are expected.

(Chronic): No data available

Eye: (Acute): Under normal conditions of use, no health effects are expected. Exposure to

dust may cause irritation. (Chronic): No data available.

Ingestion: (Acute): Under normal conditions of use, no health effects are expected. Lead

ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping.

(Chronic): No data available

Carcinogenic Effects: Material is an article. No health effects are expected related to normal use of this product as sold. Material does contain components that exhibit carcinogenic effects.

Symptoms of lead toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability. Lead absorption may cause nausea, weight loss, abdominal spasms, and pain in arms, legs and joints.

Effects of chronic lead exposure may include central nervous system (CNS) damage, kidney dysfunction, anemia, neuropathy particularly of the motor nerves with wrist drop, and potential reproductive effects.

2.0 Composition/Information on Ingredients

COMPONENT	Approx % by Wt.	CAS Number	Air Exposure Limits (μg/m3)			LD50 ORAL (Rat)
S			AC GIH TLV	OSHA	NIOSH	(mg/kg)
Inorganic Lead/Lead Compounds	85-90	7439-92-1	50	50	50	500
Calcium (Ca)	0.03-0.05	7440-70-2				
Tin (Sn)	< 0.3	7440-31-5	2000	2000	2000	
Aluminum (Al)	< 0.01	7429-90-5	10000	5000	5000	
Case Material: Acrylonitrile Butadiene Styrene (ABS)	~10	9003-56-9				

4.0 First Aid Measures

Inhalation

Sulfuric Acid: Remove to fresh air immediately. If breathing is difficult, give oxygen Lead Compounds: Remove from exposure, gargle, wash nose and lips, consult physician **Ingestion**

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Sulfuric Acid: Do not induce vomiting, consult a physician immediately.

Lead Compounds: Consult a physician immediately

Eyes

Sulfuric Acid: Flush immediately with water for 15 minutes, consult a physician. Lead Compounds: Flush immediately with water for 15 minutes, consult a physician

Skin

Sulfuric Acid: Flush with large amounts of water for at least 15 minutes, remove any contaminated clothing. If irritation develops seek medical attention.

Lead Compounds: Wash with soap and water.

Proposition 65

Warning: Battery posts, terminals and related accessories contain lead and lead compounds, chemical known to the State of California to cause cancer and reproductive harm. Batteries also contain other chemicals known to the State of California to cause cancer. Wash hands after handling.

5.0 Fire Fighting Measures

Extinguishing Media

Dry chemical, foam, CO2

Filefighting

Use positive pressure, self-contained breathing apparatus. Beware of acid splatter during water Application and wear acid-resistant clothing, gloves, face and eye protection. If batteries are on Charge, shut off power to the charging equipment, but, note that strings series connected Batteries. May still pose risk of electric shock even when charging equipment is shut down. In operation, batteries generate and release flammable hydrogen gas. If ignited by burning cigarette, naked flame eo spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition and do net allow metallic articles to simultaneously contact the negative and positive terminals of a battery.

5.1 Extinguishing media:

5.1.1 Suitable extinguishing media:

Small Fires: Dry chemical, CO2 or water spray

Large Fires: Dry chemical, CO2, alcohol – resistant foam or water spray.

5.1.2 Unsuitable extinguishing media:

Any not listed above

5.2 Special hazards arising from the substance or mixture

5.2.1 Hazardous combustion products:

Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive fumes.

5.3 Advice for fire-fighters:

Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible. Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.

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As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.

Keep out of low areas.

Keep unauthorized personnel away

Stay upwind.

5.4 Additional information:

Reacts violently with metals, nitrates, chlorates, carbides and other organic materials. Reacts with most metals to yield explosive flammable hydrogen

6.0 Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

No special precautions expected to be necessary if material is used under ordinary conditions and as recommended. Avoid contact of lead with skin.

6.1.1 For non-emergency personnel

Protective equipment:

Wear chemical gloves

6.1.2 For emergency responders

No emergency procedures are expected to be necessary if material is used under ordinary conditions as recommended. Use normal clean up procedures.

Personal protective equipment:

Wear chemical gloves, goggles, acid resistant clothing and boots, respirator if insufficient ventilation.

6.2 Environmental precautions:

Prevent entry into waterways, sewers, basements or confined areas. Runoff from fire control and dilution water may be toxic and corrosive and may cause adverse environmental impacts.

6.3 Methods and material for containment and cleaning up

6.3.1 For containment:

Lead dust should be vacuumed or wet swept into a D.O.T. approved container. Use controls that minimize fugitive emissions. Do not use compressed air.

6.3.2 For cleaning up:

Contact local and/or state officials for proper disposal requirements.

7.0 Handling and Storage

7.1 Precautions for safe handling

7.1.1 Protective measures:

Handle batteries cautiously. Do not tip to avoid spills (if filled with electrolyte). Avoid contact with internal components. Wear protective clothing when filling or handling batteries. Follow manufacturer's instructions for installation and service. Do not allow conductive material to touch the battery terminals. Short circuit may occur and cause battery failure and fire.

7.1.2 Advice on general occupational hygiene

Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Eyewash stations and safety showers should be provided with unlimited water

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supply. Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities

Avoid contact with strong bases, acids, combustible organic materials, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, reducing agents and water. Technical measures and storage conditions:

Store in a cool/low-temperature, well-ventilated place away from heat and ignition sources. Batteries should be stored under roof for protection against adverse weather conditions.

Place cardboard between layers of stacked batteries to avoid damage and short circuits.

Store batteries on an impervious surface.

Storage class:

Class 13: Non-flammable solids in non-flammable package

8.0 Exposure Control/Personal Protection

8.1 Control parameters

8.1.1 Occupational exposure limits:

Limit value type (country of origin)	Substance name	EC-No.	CAS-No	Limit value	Monitoring and observation processes
TWA(ACGIH USA) TWA (CA) TWA (FI) STEL(ME) TWA (ME) TWA (NIOSH USA)	Tin	231-141-8	7440-31-5	2 mg/m3 2 mg/m3 2 mg/m3 4 mg/m3 2 mg/m3 2 mg/m3	
TWA (ACGIH) TWA(CA ON) TWA(CA QU) STEL(CH) TWA(CH) TWA(FI) Biological Limit Value (FI) TWA(JP) TWA(ME) TWA(NIOSH) TWA(OSHA)	Lead	231-100-4	7439-92-1	0.05 mg/m3 0.05 mg/m3 0.05 mg/m3 0.15 (0.09) mg/m3 0.05(0.03)mg/m3 0.1 mg/m3 1.4 umol/L 0.1 mg/m3 0.15 mg/m3 0.05 mg/m3 50 ug/m3	Designated ubstance egulation Dust (fume) Dust (fume) Dust As Pb, dust and fume

8.2 Exposure controls

8.2.1 Appropriate engineering controls:

Store and charge in a well-ventilated area. General dilution ventilation is acceptable.

- 8.2.2 Personal protective equipment:
- 8.2.2.1 Pictograms:

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8.2.2.2 Eye/Face protection:

Wear protective eyewear (goggles, face shield or safety glasses with side shields).

8.2.2.3 Skin protection:

Wear appropriate gloves.

No skin protection is ordinarily required under normal conditions of use. In accordance with industrial hygiene practices, if contact with leaking battery is expected precautions should be taken to avoid skin contact. Under severe exposure or emergency conditions, wear acid-resistant clothing and boots.

8.2.2.4 Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment.

9.0 Physical and Chemical Properties

COMPONENTS	DENSITY	MELTING/BOILING	SOLUBILITY	ODOR	APPEARANCE
	g/cm3	(M/B) POINT	(H2O)		
Lead	11.34	327.46 °C, 621.43 °F (M)	None	None	Sliver-Gray Metal
Lead Sulfate	6.20	1170 °C, 2138 °F (B)	40 mg/l (15 °C, 59 °F)	None	White crystals or powder
Lead Dioxide	9.40	290 °C, 554 °F (M)	None	None	Dark brown Powder
Case Material: Acrylonitrile Butadiene Styrene (ABS)	ABS:1.05- 1.06	ABS: 130-160°C 266°F -320°F (M)	None	None	Solid

10.0 Stability and Reactivity

10.1 Reactivity:

Not reactive

10.2 Chemical stability:

Stable under normal temperatures and pressures

10.3 Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4 Conditions to avoid:

Prolonged overcharge, sources of ignition.

10.5 Incompatible materials:

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Avoid contact with strong bases, acids, combustible organic materials, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, reducing agents and water.

10.6 Hazardous decomposition products:

Lead compounds exposed to high temperatures will likely produce toxic metal fume, vapor or dust; contact with strong acid/base or presence of nascent hydrogen may generate highly toxic arsine gas.

11.0 Toxicological Information

LEAD: The toxic effects of lead are accumulative and slow to appear. It affects the kidneys, reproductive, and central nervous system.

The symptoms of lead overexposure are anemia, vomiting, headache, stomach pain (lead colic), dizziness, loss of appetite, and muscle and joint pain. Exposure to lead from a battery most often occurs during lead reclaim operations through the breathing or ingestion of lead dusts and fumes.

THIS DATA MUST BE PASSED TO ANY SCRAP OR SMELTER WHEN A BATTERY IS RESOLD.

SULFURIC ACID: Sulfuric acid is a strong corrosive. Contact with acid can cause severe burns on the skin and in the eyes. Ingestion of sulfuric acid will cause GI tract burns. Acid can be release if the battery case is damaged or if the vents are tampered with.

FIBERGLASS SEPARATOR: Fibrous glass is an irritant of the upper respiratory tract, skin and eyes. For exposure up to 10F/CC use MSA Comfort with type H filter. Above 10F/CC up to 50F/CC use Ultra-Twin with type H filter.

NTP or OSHA does not consider this product carcinogenic.

12.0 Ecological Information

Lead and its compounds can pose a threat if released to the environment.

13.0 Disposal Considerations

Waste Disposal Method:

Spent batteries: Send to secondary lead smelter for recycling.

Place neutralized slurry into sealed acid resistant containers and dispose of as hazardous waste, as applicable. Large water-diluted spills, after neutralization and testing. Should be managed in accordance with approve local, state and federal requirements. Consult state environmental agency and/or federal EPA.

14.0 Transport Information

Proper Shipping Name: Batteries, wet, non-spillable

Hazard Class: 8 UN No.: UN2800

Hazard Label: Corrosive

Separate batteries when shipping to prevent short-circuiting. They should be packed in

strong packing for support during transport.

Transport Fashion: By air, by sea, by railway, by highway.

GROUND - US DOT:

Our non-spillable lead acid batteries are under the U.S. Department of Transportation's (DOT)

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hazardous materials regulations but are excepted from these regulations since they meet all of the following requirements found at 49 CFR 173.159(d).

- When offered for transport, the batteries are protected against short circuits and securely packaged as required by 49 CFR 173.159(d) (1);
- The batteries and outer packaging are marked with the words "NONSPILLABLE" or "NONSPILLABLE BATTERY" as required by 49 CFR173.159(d) (2);
- The batteries comply with the vibration and pressure differential tests found in 49 CFR 173.159(d) (3).

AIRCRAFT – ICAO-IATA:

Our non-spillable lead acid batteries also are excepted from the international hazardous materials (also known as "dangerous goods") regulations since they comply with the following requirements:

- According to the requirements of Packing Instruction 806 in IATA (International Air Transport Association) and ICAO (International Civil Aviation Organization), there should not be any electrolyte leakage after the vibration and pressure differential tests.
- And, Special Provision A67 states "Non-spillable batteries are not subject to these Instructions (Packing Instruction 806) if at the temperature of 55° C (131° F), the electrolyte will not flow from a ruptured or cracked case and there is no free liquid flow and if, when packaged for transport the terminals are protected from short circuit and unintentional activation."

VESSEL – IMO-IMDG:

Our non-spillable batteries are excepted from the international hazardous materials (also known as "dangerous goods") regulations since they conform to the requirements of IMDG Code Special Provision 238 .1 and .2, that is the batteries have passed the vibration and pressure differential performance tests, and at a temperature of 55°C, the electrolyte will not flow from a ruptured or cracked case and there is no free liquid flow. And, when packaged for transport, the terminals are protected from short circuit.

Additional Information:

Each battery and the outer packaging must be plainly and durably marked "Nonspillable" or "Nonspillable Battery".

Transport requires proper packaging and paperwork, including the nature and quantity of goods, per applicable origin/destination/customs points as-shipped.

15.0 Regulatory Information

RCRA

Spent dry batteries are not regulated as hazardous waste by the EPA when recycled, however state and international regulations may vary.

CERCLA (superfund) and EPCRA

- (a) EPCRA Section 312 Tier 2 reporting is required for batteries if lead is present in quantities of 10,00lbs.or more.
- (b) Supplier Notification: This product contains toxic chemicals which may be reportable under EPCRA Section 313 Toxic Chemical Release Inventory (Form R) requirements. If you are a

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manufacturing facility under SIC codes 20 through 39 the following information is provided to enable you to complete the required reports:

Toxic Chemical	CAS Number	Approximate% by weight
Lead	7439-92-1	85~90

If you distribute this product to other manufacturers in SIC codes 20 through 39, this information must be provided with the first shipment in a calendar year. The Section 313 supplier notification requirement does not apply to batteries which are "consumer products". Not present in all battery types. Contact LEOCH BATTERY CORPORATION for further information.

TSCAIngredients in Leoch Battery's batteries are listed in the TSCA registry as follows:

Components	CAS Number	TSCA Status
Inorganic Lead	7439-92-1	Listed
Compound: Lead (Pb)		
Lead Oxide (PbO)	1317-36-8	Listed
Lead Sulfate (PbSO4)	7446-14-2	Listed
Calcium (Ca)	7440-70-2	Listed
Tin (Sn)	7440-31-5	Listed
Aluminum (Al)	7440-70-2	Listed

CANANIN REGULATIONS:

All chemical substances in this product are listed on the CEPA DSL/NDSL or are exempt from list requirements

16.0 Other Information

16.1 Relevant R-, H- and EUH-phrases (number and full text):

Hazard Abbreviations:

Xi: Irritant Xn: Harmful

N: Dangerous for the environment

T: Toxic

F: Highly Flammable

Risk Phrases:

R15: Contact with water liberates extremely flammable gases

R20/22: Harmful by inhalation and if swallowed

R23/25: Toxic by inhalation and if swallowed

R33: Danger of cumulative effects

R36: Irritating to eyes R38: Irritating to skin

R50: Very toxic to aquatic organisms

R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

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- R53: May cause long-term adverse effects in the aquatic environment
- R61: May cause harm to the unborn child
- R62: Possible risk of impaired fertility

Safety Phrases:

- S1/2: Keep locked up and out of the reach of children
- S2: Keep out of the reach of children
- S8: Keep container dry
- S20/21: When using do not eat, drink, or smoke
- S24/25: Avoid contact with skin and eyes
- S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
- S28: After contact with skin, wash immediately with plenty of water
- S30: Never add water to this product
- S43: In case of fire use CO2, dry chemical, or foam. Never use water
- S45: In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)
- S53: Avoid exposure obtain special instructions before use
- S60: This material and its container must be disposed of as hazardous waste
- S61: Avoid release to the environment. Refer to special instructions/safety data sheet

Hazard statements:

- H313: May be harmful in contact with skin
- H315: Causes skin irritation
- H335: May cause respiratory irritation
- EUH201A: Warning! Contains lead

Precautionary statements:

- P102: Keep out of reach of children.
- P233: Keep containers tightly closed.
- P210: Keep away from heat, sparks, and open flame while charging batteries.
- 16.2 Further information:

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Leoch, Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, Leoch, Inc. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.