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MSDS

MATERIAL SAFETY DATA SHEET

CSB BATTERY CO., LTD.

MATERIAL SAFETY DATA SHEET – L84

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTITY: "Battery, Electric Storage, Wet, Nonspillable, Not Regulated".
NONSPILLABLE Absorbed Electrolyte Battery – Electrical Storage Valve Regulated Lead-Acid (VRLA) Battery – Absorbed Glass Mat (AGM)

Updated: Dec. 7, 2006

Manufacturer Name : CSB BATTERY CO., LTD. Address : 5F.-1, No.36, Nanjing W. Rd., Datong District, Taipei City 103, Taiwan (R.O.C.), CSB BATTERY SHENZHEN CSB BATTERY (U.S.A)	Telephone numbers: Tel : +886-2-2555-5600 Fax : +886-2-2555-3300 Tel : +86-755-8831-6488/6396/16356 Tel : +1-817-244-7777/1-(800)3-CSB-USA (272872)
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SECTION 2: COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS OSHA COMPONENT	CAS#	OSHA PEL	ACGIH TLV	% BY WEIGHT
* Sulfuric Acid / Battery Electrolyte 1.300 sg 40 wt %	7664-93-9	1mg/m3	1mg/m3 STEL	22
*Lead/Grid	7439-92-1	50 ug/m3	150 ug/m3	50
*Lead Oxide/Dioxide	1309-60-0	50 ug/m3	150 ug/m3	21
*Lead Sulfate/ Anglesite	7446-14-2	50 ug/m3	150 ug/m3	<1

Section 313 (40 CFR 372) Listed Toxic Chemicals are Preceded by an*

SECTION 3: HAZARDOUS IDENTIFICATION

Appearance and Odor : Acid is a clear to cloudy liquid. Lead is metallic gray in color. Formed lead dioxide is a dark	Health Hazards (Acute & Chronic) Acute : Sulfuric acid exposure may cause irritation of the skin, corneal damage of the
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Service Locations

<p>brown in color with a slight acidic odor.</p> <p>Routes of entry:</p> <p>Sulfuric Acid: Inhalation, skin, ingestion.</p> <p>Lead: Inhalation and Ingestion.</p> <p>Ingestion of lead occurs by hand to mouth contamination. After handling lead or its compounds, hands must be washed prior to eating or drinking.</p> <p>Metallic lead cannot be absorbed through the skin.</p>	<p>eyes, irritation of the mucous membranes and upper respiratory system, including the lungs.</p> <p>Acute lead exposure may cause GI upset, of appetite, diarrhea, constipation, fatigue, joint pain, and difficulty sleeping.</p> <p>Chronic : Exposure to lead may cause anemia, kidney damage and damage to the central nervous and reproductive systems.</p> <p>Lead exposure may also affect developing fetuses in pregnant women. Chronic exposure to sulfuric acid may cause scarring of skin and mucous membranes, bronchitis, contact dermatitis, and erosion of tooth enamel.</p>
<p>HMIS label rating for sulfuric acid: 3 0 2 X X = acid</p> <p>Hazardous Material Information System</p> <p>NFPA label rating for sulfuric acid: 2 0 1 X X = acid</p> <p>National Fire Protection Agency</p>	<p>Rating Codes: 0= Insignificant, 1= Slight, 2= Moderate, 3= High, 4= Extreme</p>

HMIS and NFPA Hazard labels are used to identify the battery(s) dilute 1.300sg sulfuric acid. The first number represents the Health hazard, second number represents Fire hazard, and the third number represents the Reactivity hazard. The fourth space identifies the hazardous material, which is acid and/or typical recommended personal protective equipment, i.e., safety glasses, rubber or neoprene gloves etc.

California Proposition 65 Warning – Battery posts, lead and lead compounds, chemicals known to the reproductive harm. Batteries also contain other chemicals cause cancer. Wash hands after handling.

SECTION 4 : FIRST AID PROCEDURES – Sulfuric Acid

Skin/Eyes	Ingestion/Inhalation
<ul style="list-style-type: none"> - Flush the affected area with water for 15 minutes - Remove contaminated clothing - If irritation continues, seek medical attention 	<ul style="list-style-type: none"> - Do not induce vomiting - Drink 8 oz. of water or milk - If difficulty in breathing occurs, remove to fresh air, give CPR if necessary - Seek medical attention immediately

SECTION 5 : FIREFIGHTING MEASURES

FIRE AND EXPLOSIVE PROPERTIES:

Hydrogen Flash point: -259°C Hydrogen Autoignition point: 580°C

Hydrogen Flammable Limits in Air (% by Volume): LEL: 4.1 UEL: 74.2

Lower Explosion Limit (LEL), Upper Explosion Limit (UEL)

Unusual Fire and Explosion Hazards: Hydrogen and Oxygen gases are produced in cells during normal battery operation. Ventilate Area.

Extinguishing Media: Dry Chemical, Foam or CO₂

Special Firefighter Procedures: Use Positive Pressure, self-contained breathing apparatus.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF BATTERY IS BROKEN:

Neutralize exposed battery parts with soda ash or sodium bicarbonate until fizzing stops, pH should be at neutral 6-8. Provide adequate ventilation. Heat, carbon dioxide and hydrogen gas may be given off during neutralization. Collect residue in a suitable

container. Place the broken battery in a heavy-duty plastic bag or other non-metallic container. Properly recycle all battery residue and parts.

SECTION 7 : HANDLING AND STORAGE

Store in a cool; dry area away from combustibles. Do not store in sealed, unventilated areas. Avoid overheating and overcharging. Do not use organic solvents or other than manufactures recommended cleaners on the batteries.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: General room ventilation is sufficient during normal use and handling. Do not install these batteries in a sealed, unventilated area.

PERSONAL PROTECTIVE EQUIPMENT (DURING INSTALLATION OR IN THE EVENT OF BATTERY BREAKAGE)

Eye Protection = Chemical goggles, safety glasses with sideshields and or a full-face shield.

Protective gloves = Rubber or neoprene

Respiratory Protection = NIOSH approved acid mist/organic vapor respirator, if OSHA PEL is exceeded.

Other Protective Equipment = Acid resistant apron or clothes.

WORK PRACTICES: Use standard lead-acid battery practices. Do not wear metallic jewelry when working with batteries. Use non-conductive tools only. Discharge static electricity prior to working on a battery. Maintain eyewash, fire extinguisher and emergency communication device in the work area.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

ACID : Boiling Point: 110°C to 112°C Vapor Vapor Density: (Air=1) 3.4 Melting point: N/A

Pressure: 13.8 mm Hg @ 25°C Solubility in water: N/A

Specific Gravity 1.300 +/- 0.030

Appearance/Odor: clear to cloudy with slightly acidic odor

SECTION 10 : STABILITY AND REACTIVITY

STABILITY: This battery and contents are stable.

Conditions to avoid: Overheating, overcharging which results in acid mist/Hydrogen generation.

Incompatibility (materials to avoid): Strong alkaline materials, conductive metals, organic solvents, sparks or open flame.

Hazardous Byproducts: Hydrogen gas may be generated in an overcharged condition, in fire or at very high temperatures. In fire, may emit CO, CO₂ and Sulfur Oxides.

Hazardous polymerization will not occur

SECTION 11 : TOXICOLOGICAL INFORMATION – SULFURIC ACID

The CSB VRLA batteries are a sealed, recombinant design that require no water replacement throughout their service life, thus no contact is made with the battery's internal components or chemical hazards. Under normal use and handling, these batteries do not emit regulated or hazardous substances.

	Administration Route	Dose	Test Animal
LD 50	Oral	2140 mg/kg	Rat
LDLo	Unreported	135 mg/kg	Man

LC50	Inhalation	510 mg/m3	Rat
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Carcinogenicity : The International Agency on Cancer (IARCC) has classified “strong inorganic acid mists containing sulfuric acid” as a category 1 carcinogen (inhalation), a substance that is carcinogenic to humans. This classification does not apply to the liquid forms of sulfuric acid contained within the battery. Misuse of the product, such as overcharging, may result in the generation of sulfuric acid mist at high levels.

SECTION 12: DISPOSAL CONSIDERATIONS

Waste Disposal Method : Send to lead smelter for reclamation following applicable Federal, State and Local regulations. Product can be recycled along with automotive (SLI) lead-acid batteries.

SECTION 13: TRANSPORTATION AND INTERNATIONAL REGULATIONS

All CSB batteries, when transported by air, surface or by vessel are identified as “Battery, Electric Storage, Wet, Nonspillable, Not Regulated”.

The battery(s) must be identified as above on the Bill of Lading and properly packaged with their terminals protected from short circuit. NA or UN numbers do not apply.

CSB battery(s) warning label identifies each battery as NONSPILLABLE.

CSB battery(s) preprinted cartons identifies each battery as NONSPILLABLE.

CSB battery(s) shipped without CSB cartons (bulk packed) need to be identified as NONSPILLABLE or NONSPILLABLE BATTERY on the outer packaging.

Air: CSB batteries meet the conditions in IATA/ICAO Special Provision A67.

Surface: CSB batteries meet the conditions for DOT Haz Mat Regulations CFR-Tittle 49 parts 171-189.

Vessel: CSB Batteries meet the conditions of IMDG exception 238.

SECTION 14: REGULATORY INFORMATION

See 29 CFR 1910.268(b)(2)

SECTION 15: OTHER INFORMATION

The information herein is given in good faith, but no warranty, expressed or implied, is made.

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CSB Battery Co., Ltd. 5F -1, No.36, Nanjing W. Rd., Datong District, Taipei City 10352, Taiwan (R.O.C.) ..
Tel : + 886-2-2555-5600 • Fax : +886-2-2555-3300