

-Material Safety Data Sheet-

Lead Acid Battery Wet, Filled with Acid

SECTION1 CHEMICAL AND COMPANY IDENTIFICATION

Manufacturer's Name : ATLASBX CO.,LTD.
 # 40-42 Daehwa-Dong, Daeduk-ku, Daejeon, Korea
 Telephone Number for Information : 82-42-620-4332

Date : April 3, 2011
Trade Name : MF Battery
Classification : Battery wet, filled with acid, electric storage

SECTION2 COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components Specific Chemical Identity (Common Name(s))	OSHA PEL	ACGIH TLV	Range Percent By Weight	Average	*SVHC? (REACH)
Lead, CAS #7439921	0.05 mg/m ³	0.05 mg/m ³	48~56	52	No
Sulfuric Acid, CAS #7664939	1.00 mg/m ³	1.00 mg/m ³	33~44	39	No
Antimony, CAS #7440360	0.50 mg/m ³	0.50 mg/m ³	0-4	<1	No
Arsenic, CAS #7440382	0.01 mg/m ³	0.01 mg/m ³	<.01	-	No
Polypropylene, CAS #9003070	-	-	5-8	6	No
Calcium, CAS #7440702	1.0mg/m ³	1.0 mg/m ³	<1	<1	No

* SVHC : Substances of Very High Concern (REACH Regulation in EU)

SECTION3 HAZARD IDENTIFICATION

Signs and Symptoms of Exposure

1. Acute Hazards : Do not open battery. Avoid contact with internal components. Internal components include lead and liquid electrolyte. Electrolyte is corrosive and contact may cause skin irritation and chemical burns. Electrolyte causes severe irritation and burns of eyes, nose and throat. Ingestion can cause severe burns and vomiting.

2. Subchronic and chronic Health Effects

Electrolyte : Repeated contact with sulfuric acid battery electrolyte fluid may cause drying of the skin which may result in irritation, dermatitis, and skin burns. Repeated exposure to sulfuric acid mist may cause erosion of teeth, chronic eye irritation and/or chronic inflammation of the nose, throat and lungs.

Lead : Prolonged exposure may cause central nervous system damage, gastrointestinal disturbances, anemia, wrist-drop and kidney dysfunction. pregnant women should be protected from excessive exposure to prevent lead from crossing the placental barrier and causing infant neurological disorder.

California Proposition 65 Warning : Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm, and during charging, strong inorganic acid mists containing sulfuric acid are evolved, a chemical known to the State of California to cause cancer. Wash hands after handling.

Medical Conditions generally Aggravated by Exposure : If battery is broken or material is spilled, then persons with the following medical conditions must take precautions : pulmonary edema, bronchitis, emphysema, dental erosion and tracheobronchitis.

Routes of Entry

Inhalation : YES Eye Contact : YES Ingestion : YES Skin Contact : YES

Chemical(s) Listed as Carcinogen or potential Carcinogen

Proposition 65 : YES National Toxicology Program : YES I.A.R.C Monographs : YES
 OSHA : NO EPA CAG : YES NIOSH : YES

SECTION4 FIRST AID MEASURES

Emergency and First Aid Procedures : Contact with internal components if battery is opened, broken or spilled.

1. **Inhalation** : Remove to fresh air and provide medical oxygen/CPR if needed. Obtain medical attention.
2. **Eyes** : Immediately flush with water for at least 15minutes, hold eyelids open. obtain medical attention.
3. **Skin** : Flush contacted area with large amounts of water for at least 15 minutes. Remove contaminated clothing and obtain medical attention if necessary.
4. **Ingestion** : Do not induce vomiting. If conscious drink large amounts of water/milk. Obtain medical attention. Never give anything by mouth to an unconscious person.

SECTION5 FIREFIGHTING MEASURES

Flash Point : Not applicable	Flammable Limits	Hydrogen	Lower	Upper
	in Air % by volume	(H ₂)	4.1%	74.2%
	(When charging)			

Extinguisher Media : Class ABC, CO₂ Halon Auto-Ignition Temperature : Polypropylene 675°F

Special Fire Fighting Procedures : Lead-acid batteries do not burn or burn with difficulty. Do not use water on fires where molten metal is present. Extinguish fire with agent suitable for surrounding combustible materials. Cool exterior of battery if exposed to fire to prevent rupture. The acid mist and vapors generated by heat or fire are corrosive. Use NIOSH approved self-contained breathing apparatus (SCBA) and full protective equipment operated in positive-pressure mode.

Unusual Fire and Explosion Hazards : Hydrogen gas and sulfuric acid vapors are generated upon overcharge and polypropylene case failure. Ventilate charging areas as per ACGIH Industrial Ventilation : A Manual of Recommended Practice and National Fire Code, 1980 Vol.1, P.12, B-9, 10. Hydrogen gas may be flammable or explosive when mixed with air, oxygen, chlorine. Avoid open flames/sparks/other sources of ignition near battery. To avoid risk of fire or explosion, keep sparks or other sources of ignition away from batteries and do not allow metallic materials to simultaneously contact negative and positive terminals of cells and batteries. **SULFURIC ACID REACTS VIOLENTLY WITH WATER/ORGANICS.**

SECTION6 ACCIDENTAL RELEASE MEASURES

Procedures for Cleanup : Stop release, if possible. Avoid contact with any spilled material. Contain spill, isolate hazard area, and deny entry. Limit site access to emergency responders. Neutralize with sodium bicarbonate, soda ash, lime or other neutralizing agent. Place battery in suitable container for disposal. Dispose of contaminated material in accordance with applicable local, state and federal regulations. Sodium bicarbonate, soda ash, sand, lime or other neutralizing agent should be kept on-site for spill remediation.

Personal Precautions : Acid resistant aprons, boots and protective clothing. ANSI approved safety glasses with side shields/face shield recommended. Ventilate enclosed areas.

Environmental Precautions : Lead and its compounds and sulfuric acid can pose a severe threat to the environment. Contamination of water, soil, and air should be prevented.

SECTION7 HANDLING AND STORAGE

Precautions to be Taken in Handling and Storage : Keep away from flames during and immediately after charging. Combustion or overcharging may create or liberate toxic and hazardous gases and liquids including hydrogen, sulfuric acid mist, sulfur dioxide, sulfur trioxide, stibine, arsine and sulfuric acid. Store batteries in cool, dry, well ventilated area. Do not short circuit battery terminals, or remove vent caps during storage or recharging. Protect battery from physical damage.

Other Precautions : GOOD PERSONAL HYGIENE AND WORK PRACTICES ARE MANDATORY. Refrain from eating, drinking or smoking in work areas. Thoroughly wash hands, face, neck, and arms before eating, drinking or smoking. Launder soiled clothing before reuse. Emptied batteries contain hazardous sulfuric acid residue.

SECTION8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

Respiratory Protection(Specify Type) : Acid/gas NIOSH approved respirator is required when the PEL is exceeded or employee experiences respiratory irritation. When exposure levels are unknown or when firefighting, wear a self-contained breathing apparatus with a full face piece operated in a positive pressure mode.

Ventilation : Must be provided when charging in an enclosed area. Change air every 15min.

Local Exhaust : When PEL is exceeded.

Mechanical(General) : Normal mechanical ventilation recommended for stationary applications.

Protective Gloves : Wear rubber or plastic acid resistant gloves with elbow length gauntlet when filling batteries.

Eye Protection : ANSI approved safety glasses with side shields/face shield recommended safety goggles.

Other Protective Clothing or Equipment : Ventilation as described in the Industrial Ventilation Manual produced by the American Conference of Governmental Industrial Hygienists, shall be provided in areas where exposures are above the PEL or TLV specified by OSHA or other local, state and federal regulations. Acid-resistant rubber or plastic apron, boots and protective clothing. safety shower and eyewash.

SECTION9 PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point : Electrolyte Approx. 235°F

Vapor Pressure : Electrolyte 1mm Hg @ 145.8°F

Specific Gravity : Electrolyte 1.250-1.320 pH<2

Melting Point : Polypropylene <320°F

Percent Volatile by Volume : Not Applicable

Vapor Density : Hydrogen(Air=1) - 0.069

Electrolyte(Air=1) - 3.4 At STP

Evaporation Rate : Note Applicable

Solubility in Water : Electrolyte - 100% Soluble

Reactivity in Water : Electrolyte - water reactive(1)

Appearance and Odor

Battery : Polypropylene or hard rubber case, solid.

Lead : Gray, metallic, solid

Electrolyte : Liquid, colorless, oily fluid; nuisance odor when got or charging battery.

SECTION10 STABILITY AND REACTIVITY

Stability : Stable

Conditions to Avoid : High temperatures - cases decompose at < 320 °F

Avoid overcharging and smoking, or sparks near battery surface and rapid overcharge.

Incompatibility(Materials to Avoid) : Spark, Open flames, Keep battery case away from strong oxidizers.

Hazardous Decomposition Products : An explosive hydrogen/oxygen mixture within the battery may occur during charging. Combustion can produce carbon dioxide(CO₂) and carbon monoxide(CO). Molten metals produce fumes and/or vapor that may be toxic or respiratory irritants.

Hazardous Polymerization : Will Not Occur (Do not overcharge)

SECTION11 TOXICOLOGICAL INFORMATION

GENERAL : The primary routes of exposure to lead are ingestion or inhalation of dust and fumes.

ACCUTE :

INGESTION/INHALATION : Exposure to lead and its compounds may cause headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia, and pain in the legs, arms and joints. Kidney damage, as well as anemia, can occur from acute exposure.

CHRONIC :

INHALATION/INGESTION : Prolonged exposure to lead and its compounds may produce many of the symptoms of short-term exposure and may also cause central nervous system damage, gastrointestinal disturbances, anemia, and wrist drop. Symptoms of central nervous system

**SECTION12
ECOLOGICAL INFORMATION**

In most surface water and groundwater, lead forms compounds with anions such as hydroxides, carbonates, sulfates, and phosphates and precipitates out of the water column. Lead may occur as sorbed ions or surface coatings on sediment mineral particles or may be carried in colloidal particles in surface water. Most lead is strongly retained in soil, resulting in little mobility. Lead may be immobilized by ion exchange with hydrous oxides or clays or by chelation with humic or fulvic acids in the soil. Lead(when in the dissolved phase) is bioaccumulated by plants and animals, both aquatic and terrestrial.

**SECTION13
DISPOSAL CONSIDERATIONS**

Waste Disposal Methods : Lead-acid batteries are completely recyclable. Return whole scrap batteries to distributor, manufacturer or lead smelter for recycling. For information on returning batteries to ATLASBX Battery Company for recycling call 82-42-620-4332. For neutralized spills, place residue in acid-resistant containers with sorbent material, sand or earth and dispose of in accordance with local, state and federal regulations for acid and lead compounds. Contact local and/or state environmental officials regarding disposal information.

**SECTION14
TRANSPORT INFORMATION**

U.S. DOT PROPER SHIPPING NAME : Batteries, wet filled with acid
U.S. DOT HAZARD CLASS : 8
U.S. DOT ID NUMBER : UN2794
U.S. DOT PACKING GROUP : III
U.S. DOT LABEL : Corrosive

IMO PROPER SHIPPING NAME : Batteries, wet, filled with acid
IMO REGULATION PAGE NUMBER : 8120
IMO U.N.CLASS : 8
IMO U.N.NUMBER : UN2794
IMO PACKING GROUP : III
IMO LABEL : Corrosive
IMO VESSEL STOWAGE : A

IATA PROPER SHIPPING NAME : Batteries, wet filled with acid
IATA U.N.CLASS : 8
IATA U.N.NUMBER : UN 2794
IATA PACKING GROUP : III
IATA LABEL : Corrosive

**SECTION15
REGULATORY INFORMATION**

U.S Hazardous Under Hazard Communication Standard :	Lead : Yes	
	Sulfuric Acid : Yes	
	Antimony : Yes	
	Arsenic : Yes	
Ingredients Listed on TSCA Inventory :	Yes	
CERCLA Section 304 Hazardous Substances :	Lead : Yes	RQ : NA*
	Sulfuric Acid : Yes	RQ : 1000 pounds
	Antimony : Yes	RQ : 5000 pounds
	Arsenic : Yes	RQ : 1 pound
*Reporting not required when diameter of the pieces of solid metal released is equal to or exceeds 100 micrometers.		
EPCRA Section 302 Extremely Hazardous Substance :	Sulfuric acid : Yes	
EPCRA Section 313 Toxic Release Inventory :	Lead : CAS No 7439-92-1	
	Sulfuric Acid : CAS No 7664-93-9	
	Antimony : CAS NO 7440-36-0	
	Arsenic : CAS NO 7440-38-2	

**SECTION16
OTHER INFORMATION**

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