

MATERIAL SAFETY DATA SHEET- (Lead Acid Battery)



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Product Identity:		Lead Acid Battery			
Product trade name:		Chloride Exide battery			
Chemical Family/Classification:		Electric Storage Battery			
Manufacturer's Name/Address:		Associated Battery Manufacturers (EA.) Ltd P.O. BOX 48917-00100, Kampala Road Nairobi-Kenya Telephone: +254-020-6531218-25 Email:- batman@abm.co.ke Fax wireless: +254-020-2473316			
Emergency Response Contact::		Technical Manager/ Quality and Customer Service Manager			
Section II: Hazardous Ingredients/Identity information					
					Air Exposure Limits (µg/m ³)
Components	Common name	Chemical Symbol	¹CAS Number	Approx. % by Wt	²OSHA
Inorganic lead compound:					
³ Lead	Negative electrode & grid	Pb	7439-92-1	37 - 42	50
Lead dioxide	Positive electrode	PbO ₂	1309-60-0	38 - 44	50
Lead sulphate	Positive & negative electrode	PbSO ₄	7446-14-2		50
Antimony		Sb	7440-36-0	1.2	500
Tin		Sn	7440-31-5	0.14	2000
Arsenic		As	7440-38-2	0.1	10
Calcium		Ca	7440-70-2	0.07	1100
Aluminium		Al	7429-90-5	0.009	
Electrolyte (Sulphuric acid)			7664-93-9		1000
Type of Container: Polypropylene			93003-07-0		N/A
Hazard Classification	Corrosive group 8				
Inorganic lead and electrolyte are the primary components of every battery manufactured by ABM. Other ingredients may be present depending on the battery type. For additional information contact your ABM representative.					
Section III: Physical Data					
Material is sold at normal temperatures					
Electrolyte (Dilute Sulphuric Acid)					
Boiling point:		95-116 °C			
Solubility in water:		100 %			
Specific Gravity (H₂O=1):		1.245±0.005			

¹ CAS Number; Chemical Abstract Service number

² Occupational safety & health Administration (OSHA)

³ <http://www.who.int/ipcs/publications/newsletters/en/04.pdf>

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Appearance and odour:	Electrolyte is a clear liquid with an acidic odour
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Section IV: Fire and Explosion Hazard Data	
Flash point:	Non-flammable, however hydrogen gas may be evolved
Flammable limits:	Lower 4.10 % (Hydrogen gas), Upper 74.20 %
Extinguishing media:	Class ABC, CO ₂ , Foam, Dry chemical
Auto ignition temperature (polypropylene only)	675 ⁰ F(357.22 ⁰ C)
Special Fire Fighting Procedures:	If battery is on charge, shut off power. Use positive pressure, self contained breathing apparatus. Water applied to the electrolyte generates heat and causes it to spatter. Wear acid resistant clothing
Unusual Fire and Explosion Hazards:	Highly flammable hydrogen gas is generated during charging and operation of batteries. To avoid risk of fire or explosion, keep sparks or other sources of ignition away from the batteries. Follow manufacturer's instructions on installation and service.
Section V: Reactivity Data	
Stability:	Stable under normal conditions
Conditions to avoid:	Prolonged overcharge, sparks and other sources of ignition, fire or explosion hazard due to possible hydrogen gas generation
Incompatibility (materials to avoid):	<u>Sulphuric acid:</u> contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulphur trioxide gas, strong oxidizers and water (for conc. Acid). Contact with metals may produce toxic sulphur dioxide fumes and may release flammable hydrogen gas. <u>Lead compounds:</u> avoid contact with strong acids, bases, and halides, halogenates potassium nitrate, permanganate, peroxide, nascent hydrogen and reducing agents.
Hazardous Decomposition Products	<u>Sulphuric acid:</u> decompose to sulphur trioxide, carbon monoxide, sulphuric acid mist, sulphur dioxide and hydrogen. <u>Lead compounds:</u> High temperatures likely to produce toxic metal fumes, vapour or dust; contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.
Section VI: Health Hazard	
Routes of Entry:	<u>Sulfuric Acid:</u> Harmful by all routes of entry. <u>Lead Compounds:</u> Hazardous exposure can occur only when product is heated, oxidized or otherwise processed or damaged to create dust, vapor or fume
Inhalation:	<u>Sulfuric Acid:</u> Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation <u>Lead Compounds:</u> Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.
Ingestion:	<u>Sulfuric Acid:</u> May cause severe irritation of mouth, throat, esophagus and stomach. <u>Lead Compounds:</u> Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhoea and severe cramping. This may lead rapidly to

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	systemic toxicity and must be treated by a physician.
Skin Contact:	<u>Sulfuric Acid:</u> Severe irritation, burns and ulceration <u>Lead Compounds:</u> Not absorbed through the skin
Eye Contact:	<u>Sulfuric Acid:</u> Severe irritation , burns, cornea damage, and blindness <u>Lead Components:</u> May cause eye irritation
Effects of Overexposure - Acute:	<u>Sulfuric Acid:</u> Severe skin irritation, damage to cornea, upper respiratory irritation. <u>Lead Compounds:</u> Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability
Effects of Overexposure - Chronic:	<u>Sulfuric Acid:</u> Possible erosion of tooth enamel, inflammation of nose, throat and bronchial tubes. <u>Lead Compounds:</u> Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in males and females.
Carcinogenicity:	<u>Sulfuric Acid:</u> The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mist containing sulfuric acid" as a Category I carcinogen, a substance that is carcinogenic to humans. This classification does not apply to liquid forms of sulfuric acid or sulfuric acid solutions contained within a battery. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of the product, such as overcharging, may result in the generation of sulfuric acid mist. <u>Lead Compounds:</u> Lead is listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present Arsenic: Listed by National Toxicology Programme (NTP), International Agency for Research on Cancer (IARC), OSHA as a carcinogen only after prolonged exposure at high levels.
Medical Conditions Generally Aggravated by Exposure:	Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of sulfuric acid with skin may aggravate diseases such as eczema and contact dermatitis. Lead and its compounds can aggravate some forms of kidney, liver and neurologic diseases
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation:	<u>Sulfuric Acid:</u> Remove to fresh air immediately. If breathing is difficult, give oxygen <u>Lead:</u> Remove from exposure, gargle, wash nose and lips; consult physician
Ingestion:	<u>Sulfuric Acid:</u> Give large quantities of water; do not induce vomiting; consult physician <u>Lead:</u> Consult physician immediately.
Skin contact:	<u>Sulfuric Acid:</u> Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes. <u>Lead:</u> Wash immediately with soap and water.
Eye contact:	<u>Sulfuric Acid and Lead:</u> Flush immediately with large amounts of

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	water for a least 15 minutes; consult physician
Section VII: Precautions for Safe Handling and Use	
<u>Spill or Leak Procedures:</u>	<u>Warning:</u> Battery posts, terminals and related accessories contain lead and lead compounds. Wash hands after handling. Stop flow of material; contain/absorb small spills with dry sand, earth, and vermiculite. Do not use combustible materials. If possible, carefully neutralize spilled electrolyte with soda ash, sodium bicarbonate, lime, etc. Wear acid-resistant clothing, boots, gloves, and face shield. Do not allow discharge of untreated acid to sewer.
<u>Waste Disposal Methods:</u>	<u>Spent batteries:</u> Send to secondary lead smelter for recycling. Large water-diluted spills, after neutralization and testing, must be contained, do not allow to enter the main drainage.
<u>Handling and Storage:</u>	Store batteries in cool, dry, well- ventilated areas with impervious surfaces and adequate containment in the event of spills. Batteries should also be stored under roof for protection against adverse weather conditions. Separate from incompatible materials. Store and handle only in areas with adequate water supply and spill control. Avoid damage to containers. Keep away from fire, sparks and heat. Precautionary Labeling: POISON - CAUSES SEVERE BURNS DANGER - CONTAINS SULFURIC ACID
Section VIII: Control Measures	
<u>Engineering Controls:</u>	Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid-resistant
<u>Work Practices:</u>	Handle batteries cautiously to avoid spills. Make certain vent caps are on securely. Avoid contact with internal components. Wear protective clothing when filling or handling batteries
<u>Respiratory Protection:</u>	None required under normal conditions
<u>Protective Gloves:</u>	Rubber or plastic acid-resistant gloves with elbow-length gauntlet
<u>Eye Protection:</u>	Chemical goggles or face shield
<u>Other Protection:</u>	Acid-resistant apron. Under severe exposure emergency conditions, wear acid-resistant clothing and boots.
<u>Emergency Flushing:</u>	In areas where sulfuric acid is handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided with unlimited water supply
Section IX: Transport Information	
Dry manufactured and scrap batteries are transported in a covered truck/vehicle to avoid exposure of toxic lead compounds. The vehicle may be indicated as transporting hazardous materials/product(s). Vehicles transporting both manufactured and scrap batteries obtain a transport license from NEMA. (National Environment Management Authority Act-Kenya)	
International Air transport Association Classification: Not classified for transport by Air.	