Material Safety Data Sheet (MSDS)

Date: June 10, 2003

PRODUCT IDENTIFICATION

Trade Name	MK Battery
Brand	MK Powered, Small Sealed Line
Telephone Number	714-937-1033
Fax Number	714-937-0818
Email	info@mkbattery.com

Manufacturer:

MK Battery

Tel: 714-937-1033

Fax: 714-937-0818

E-mail address: info@mkbattery.com

Web site: www.mkbattery.com

HAZARDOUS COMPONENTS

Component	% Weight	TLV (mg/M3)	Ld50 Oral (mg/Kg)	LC50 Inhalation	LD50 Contact
Lead (Pb, PbO_2, $PbSO_4$)	~70	N/A	500	N/A	N/A
Sulfuric Acid (H_2SO_4)	~20	1	2,140	N/A	N/A

PHYSICAL DATA

Component	Density (mg/cc)	Melting (Boiling) Point °C	Solubility (mg/L)	Odor	Appearance
Lead (Pb)	11.34	327.4	Insoluble	None	Silver-gray
Lead Sulfate (pbSO4)	6.2	1,070	40	None	White Powder
Lead Oxide	9.4	290	Insoluble	None	Brown
Sulfuric Acid H2SO4	~1.3	(114)	100	Acrid	Colorless

FLAMMABILITY

Component	Flash Point	Explosive Limits (%)	Comments
Lead (Pb)	None	None	SLA battery can generate Hydrogen (H_2) gas only if it were overcharged.
Sulfuric Acid (H_2SO_4)	None	None	
Hydrogen (H_2)	N/A	4-74.2	

REACTIVITY DATA

Component	Sulfuric Acid (H_2SO_4)
Stability	Stable under normal temperature
Polymerization	Will not polymerize
Incompatibility	Reacts with most metals, all alkali, and most organic compounds
Decomposition Products	Sulfur Dioxide (SO_2), Trioxide (SO_3), Hydrogen Sulfide (H_2S), and Hydrogen (H_2)
Conditions To Avoid	Avoid mixing acid with other chemicals, Avoid Pouring water on to the acid.

PROTECTION REQUIREMENT

Exposure	Protection	Comments
Skin	Rubber gloves, synthetic apron	Protective equipment must be worn when handling cracked or damaged batteries
Respiratory	Acid fume respirator	
Eyes	Safety goggles, face shield	

ELECTRICAL SAFETY

Since VRLA batteries have low internal resistance and fairly high power density, VERY HIGH SHORT CIRCUIT CURRENT can be generated across the battery terminals. DO NOT rest tools or cables on the battery. Battery should be HANDLED WITH INSULATED TOOLS ONLY. Follow installation instruction and diagram when installing or maintaining battery or battery system.

Short-circuiting the battery may cause bodily harm. Prolong shorting may cause battery to explode.

HEALTH HAZARD

Lead (Pb) poisoning is cumulative in nature and slow to appear. It affects the kidneys, reproductive, and the central nervous system. Symptom of lead poisoning are: anemia, constant headache, nauseates frequently, acute stomach pain (lead colic), dizziness, loss of appetite, muscle and joint pain, and wakening of muscle strength.

Exposure to LEAD (Pb) from a battery most often occurs during Lead (Pb) reclamation operations through breathing or ingestion of Lead (Pb) dust and fumes.

Sulfuric Acid (H_2SO_4) is a strong, corrosive and colorless liquid. It has a distinct acrid odor. Direct contact with the acid can cause severe burns to the skin and blindness if prolong contact with the eye. Ingestion of the acid will cause painful gastric intestinal tract burns. Acid from the battery can be released if the battery case is damaged or if the vents or tempered with.

RE: FIRST AID INSTRUCTION

EMERGENCY HANDLING

In case of leaks or spill of acid from a battery, neutralize the acid with:

Sodium bicarbonate ($NaHCO_3$ - baking soda), or sodium carbonate (Na_2CO_3 - soda ash) or calcium oxide (CaO - lime). Flush the area with plenty of water.

DO NOT allow un-neutralized acid drain into the sewage system.

Disposal of spent batteries must be treated as hazardous waste and disposed of according to local, state, provincial, and federal regulations.

A copy of this material safety data sheet must be supplied to any dealer or lead smelter.

FIRST AID

Sulfuric Acid (H_2SO_4)

Skin Contact

Immediately flush contact area with plenty of cold, clean water and consult a physician right away.

Eye Contact

Immediately flush eye for at least 5 minutes with plenty of cold clean water. Call or visit a physician right away.

Ingestion

Immediately flush mouth with plenty of cold clean water. Drink milk or sodium bicarbonate solution.

DO NOT induce vomiting.

DO NOT give anything to any unconscious person.

Transportation

MK Batteries are non-spillable, electric storage, conform to and meet the requirements of the International Civil Aviation Organization, (ICAO) Technical Instructions for the safe Transport of Dangerous Goods by Air, Special Provision A67 and Packing Instruction 806.