

**MATERIAL SAFETY DATA SHEET                      ZEUS**

Product Name: Sealed Maintenance Free Lead-Acid Batteries

Date: 04/03/2003    Issued by: Engineering    Telephone: 877-469-4255

**Power-Cell Battery Products LLC    191 Covington Drive    Bloomingdale, IL 60108****HAZARDOUS COMPONENTS**

COMPONENTS	WEIGHT %	TLV	LD50	LC50	LC50
			ORAL	INHALATION	CONTACT
Lead (Pb, PbO <sub>2</sub> , PbSO <sub>4</sub> )	About 71%	N/A	(500) mg/kg	N/A	N/A
Sulfuric Acid	About 18%	1mg/m <sup>3</sup>	(2,140) mg/kg	N/A	N/A
Fiberglass Separator	About 2%	N/A	N/A	N/A	N/A
ABS Plastic	About 9%	N/A	N/A	N/A	N/A

**PHYSICAL DATA**

COMPONENTS	DENSITY	MELTING POINTS	SOLUBILITY (112S04)	ODOR	APPEARANCE
Lead	11.34	327.4°C (Boiling)	None	None	Silver-Gray Metal
Lead Sulfate	6.2	1070°C (Boiling)	40mg/l (15°C)	None	White Powder
Lead Dioxide	9.4	290°C (Boiling)	None	None	Brown Powder
Sulfuric Acid	About 1.32	About 114°C (Boiling)	100%	Acidic	Clear Colorless Liquid
Fiberglass Separator	N/A	N/A	Slight	Toxic	White Fibrous Glass
ABS Plastic	N/A	N/A	None	None	Solid

**FLAMMABILITY DATA**

COMPONENTS	FLASHPOINT	EXPLOSIVE LIMIT	COMMENTS
Lead	None	None	
Sulfuric Acid	None	None	
Hydrogen	/	4% - 72.4%	Sealed batteries can emit hydrogen if over charged (float voltage > 2.40 VPC)
Fiberglass Separator	N/A	N/A	Toxic vapors may be released. In case of fire, wear self-contained breathing apparatus.
ABS Plastic	None	N/A	Temperature over 300°C (572°F) may release combustible gases. In case of fire, wear protective self-contained breathing apparatus.

**FIRST AID DATA****SULFURIC ACID PRECAUTIONS**

<b>Skin Contact</b>	Flush with water, see physician if contact area is large or if blisters form.
<b>Eye Contact</b>	Call physician immediately and flush with water until physician arrives.
<b>Ingestion</b>	Call physician. If patient is conscious, flush mouth with water. Have patient drink milk or sodium bicarbonate solution.

**REACTIVITY DATA**

<b>COMPONENT</b>	Sulfuric Acid
<b>STABILITY</b>	Stable at all temperatures
<b>POLYMERIZATION</b>	Will not polymerize
<b>INCOMPATIBILITY</b>	Reactive metals, strong bases most organic compounds
<b>DECOMPOSITION PRODUCTS</b>	Sulfuric dioxide, trioxide, hydrogen sulfide, hydrogen
<b>CONDITIONS TO AVOID</b>	Prohibit smoking, sparks, etc. from battery charging area. Avoid mixing acid with other chemicals.

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**SPILL OR LEAK PROCEDURES**

<b>Steps to take in case of leak or spill</b>	If sulfuric acid is spilled from a battery – neutralize acid with bicarbonate (baking soda), sodium carbon (soda ash), or calcium oxide (lime). Flush area with water and discard in the sewage system. Do not allow unneutralized acid into sewage system.
<b>Waste disposal method</b>	Neutralized acid may be flushed down the sewer. Spent batteries must be treated as hazardous waste and disposed of according to local, state, and federal guidelines. A copy of this MSDS must be applied to any scrap dealer or secondary lead smelter with system.

**PROTECTION**

<b>EXPOSURE SITE</b>	<b>PROTECTION</b>	<b>COMMENTS</b>
SKIN	Rubber Gloves	Protective equipment must be worn if the battery is cracked or otherwise damaged. A respirator should be worn during reclaim operations if the TLV is exceeded.
RESPIRATORY	Respirator (for lead)	SAME AS ABOVE
EYES	Safety goggles, face shield	SAME AS ABOVE

**ELECTRICAL SAFETY**

Due to the batteries low resistance and high power density, high levels of short circuit current can be developed across the battery terminals. Do not rest tools or cables on the battery. Use insulated tools only; follow all installation instructions and diagrams when installing or maintaining battery systems.

**HEALTH HAZARD DATA**

<b>LEAD:</b> The toxic effects of lead are accumulative and slow to appear. It affects the kidneys, reproductive, and central nervous systems. The symptoms of lead overexposure are anemia, vomiting, headache, stomach pain (lead colic), loss of appetite, and muscle and joint pain. Exposure to lead from a battery most often occurs during lead reclaiming operations through the breathing or ingestion of lead dust or fumes.
<b>SULFURIC ACID:</b> 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 G.I. Tract burns. Acid can be released if the battery case is damaged or if vents are tampered with.
<b>FIBER GLASS SEPARATOR:</b> Fiber glass is an irritant of the upper respiratory, skin and eyes. For exposure up to 10F/CC use MSA Comfoll with type H filter. Above 10F/CC up to 50F/CC use Ultra-Twin with type H filter. This product is not considered carcinogenic.
<b>ALL DATA MUST BE PASSED TO ANY SCRAP DEALER OR SMELTER WHEN BATTERY IS RESOLD.</b>

**TRANSPORTATION**

Zeus batteries are unregulated by DOT for transportation by truck, rail, ocean and air because they meet the requirements of 49 CFR 173.159(d). The only transportation requirements are:

- 1) The battery must be securely packaged in such a way to prevent the possibility of short-circuiting.
- 2) The battery and the outer packaging must be labeled "**NONSPILLABLE**" or "**NONSPILLABLE BATTERY**". All of our lead acid batteries are unregulated for air transportation because they meet the requirements of Special Provision-"A67"as promulgated by the International Civil Aviation Association (IATA) and the International Civil Aviation Association (ICAO). They also meet the Vibration and Pressure Differential Tests of the International Maritime Dangerous Goods (IMDG) regulations.