GS BATTERY (U.S.A.) INC.

1000 Mansell Exchange W., Suite 350
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Tel.(800) 472-2679 (678) 762-4818 Fax: (678) 739-2132

MATERIAL SAFETY DATA SHEET

DATE	2002 April	**ISSUED BY**	Toshio Ohara, CEO & President	**Phone#**	1-800-424-9300
PRODUCT NAME		VALVE REGULATED LEAD-ACID BATTERIES			

HAZARDOUS COMPONENT

COMPONENT	%WEIGHT	T L V	LD 50 ORAL	LD 50 INHALATION	LD 50 CONTACT
Lead(Pb, PbO2, PbSO4)	about 70%		(500) mg/kg		
Sulfuric Acid	about 20%	1mg/m3	(2,140) mg/kg		

PHYSICAL DATA

COMPONENT	DENSITY	MELTING POINT (Boiling)	SOLUBILITY IN WATER	ORDER	APPEARANCE
Lead	11.34	327.4 degrees C	None	None	Silver-Gray Metal
Lead Sulfate	6.2	1070 degrees C	40 mg/l (15 C)	None	White Powder
Lead Dioxide	9.4	290 degrees C	None	None	Brown Powder
Sulfuric Acid	about 1.3	about 114 degrees C	100%	Acidic	Clear Colorless Liquid

FLAMMABILITY DATA

COMPONENT	FLASHPOINT	EXPLOSIVE LIMIT	COMMENTS
Lead	None	None	
Sulfuric Acid	None	None	
Hydrogen		4% - 74.2%	Sealed batteries can emit hydrogen only if over charged. (float voltage > 2.40 VPC)

REACTIVITY DATA

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

HEALTH HAZARD DATA

LEAD

The toxic effects of lead are cumulative and slow to appear. It affects the kidneys, reproductive organs and central nervous system. The symptoms of lead overexposure are anemia, vomiting, headaches, stomach pains (lead colic), dizziness, loss of appetite, muscle and joint pain. Exposure to lead from a battery most often occurs during lead reclamation operations through the breathing or ingestion of lead dust and/or fumes.

*****This sheet must be passed to any scrap dealer or smelter when the battery is resold.**

SULFURIC ACID

Sulfuric acid is highly corrosive. Contact can cause severe burns in the skin and eyes. Ingestion of sulfuric acid will cause GI track burns. Exposure to sulfuric acid may occur if the battery case has been damaged or the vents have been tampered with.

*****See other side for first aid information.**

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SPILL OR LEAK PROCEDURES

STEPS TO TAKE IN CASE OF LEAK OR SPILL
If sulfuric acid is spilled from a battery, neutralize the acid with sodium bicarbonate (baking soda), sodium bicarbonate (soda ash), or calcium oxide (lime). Flush the area with water and it is acceptable to discard the neutralized acid in the sewage system. *****Do not allow unneutralized acid in to the sewage system.**
WASTE DISPOSAL METHOD
Neutralized acid may be discarded in the sewage system. Spent batteries must be treated as hazardous waste and disposed of in accordance with Local, State, and Federal regulations. *****A copy of this Material Safety Data Sheet must be supplied to any scrap dealer or secondary lead smelter.**

SAFETY DATA

ELECTRICAL		
Due to the battery's low internal resistance and high power density, high levels of short circuit current can develop 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 a battery system.		
CONDITION TO AVOID		
Prohibit smoking, sparks, flames, etc., from battery charging area. Avoid mixing acid with other chemicals.		
PROTECTION		
EXPOSURE SITE	PROTECTION	COMMENTS
Skin	Rubber gloves, Apron	Protective equipment must be worn if the battery is cracked or otherwise damaged. A respirator should be worn during lead reclamation operations if the TLV is exceeded.
Respiratory	Respirator (for lead)	
Eyes	Safety goggles, Face shield	

FIRST AID

SULFURIC ACID	
SKIN CONTACT	Flush with water. See a physician if the contact area is large or if blister occur.
EYE CONTACT	Call a physician immediately. Flush with water until medical help arrives.
INGESTION	Call a physician immediately. If patient is conscious, flush mouth with water, have the patient drink milk or sodium bicarbonate solution. *****Do not give anything to an unconscious person.**

REGULATORY INFORMATION

		SCHEDULE:	II	**LIST:**	II	**CLASS:** 8	**PACKING GROUP:** III
DESCRIPTION:		BATTERIES, WET, NON-SPILLABLE					

DOT REGULATION:	Class 60
DESCRIPTION:	BATTERIES, NON-HAZARDOUS, NON-SPILLABLE

COMMENTS
As a result of test performed in accordance with D.O.T. Title 49 CFR Part 173.159 (d). As a result of tests performed, verification was made that "GS Portalac" or "GS Superlac" batteries meet the requirements of the above subchapters of D.O.T. regulations for vibration and pressure differential. Accordingly, "GS Portalac" and "GS Superlac" batteries qualify to be listed and categorized as electric storage batteries wet, non-spillable and therefore as of September 30, 1995 excepted from the D.O.T. requirements set forth in 49 CFR Part 173.159. The regulation change effective September, 1995 was to clarify and distinguish to shippers and transporters, all batteries that have been tested and determined to be in compliance with D.O.T. Hazardous Material Regulations, the International Civil Aeronautics organization (ICAO), and the International Air Transport Association (IATA) Packing Instruction 806 and Special Provision A67, and therefore excepted from all other requirements of the regulations and classified as a non-spillable battery.