

Prod.Name: Absorbent Glass Mat Battery
Manufacturer: General Motors Corporation - Chemical Risk Management
HMCS ID: 1185254
SUC: 09 - Corrosives - Concentrated Acid - pH < 4

MATERIAL SAFETY DATA SHEET

Revision: 12.Apr.2006
Effective: 12.Apr.2006
Print Date: 05.May.2006
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1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT INFORMATION

Product Name: Absorbent Glass Mat Battery

Product Synonyms:

AGM Battery

External Keys:

AGM Battery Distributable Material (Part #)

MANUFACTURER INFORMATION

Manufacturer: General Motors Corporation - Chemical Risk Management

Address:

2000 Centerpoint Parkway	USA	Michigan	48341-3 146	Pontiac	Mail code: 483-520- 192	Mailing
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Communication Lines:

Phone	248-753-5592	General information
Phone	800-814-3390	24 Hour Emergency

Comment:

Prepared By: Mariann Anticoli.

Comment:

See HMCS ID 1185253 for more information.

2 INGREDIENT INFORMATION

FORMULATION

Ingredients:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Prefix</u>	<u>Value</u>	<u>Unit</u>	<u>Exposure Limits</u>
LEAD	7439-92-1	Range	60 - 75	% Wt	Yes
SULFURIC ACID	7664-93-9	Range	5 - 15	% Wt	Yes
ANTIMONY	7440-36-0	Range	0 - 0.1	% Wt	Yes
ARSENIC	7440-38-2	=	0.01	% Wt	Yes
PROPENE POLYMERS	9003-07-0	Range	2 - 10	% Wt	No
CALCIUM	7440-70-2	Range	0 - 0.1	% Wt	No
TIN	7440-31-5	Range	0 - 0.1	% Wt	Yes

3 HAZARDS IDENTIFICATION

Hazards Overview:

Emergency Overview: Danger! Explosive gases. Poison! Causes severe burns. Wet, nonspillable Storage Battery is a manufactured article composed of lead (7439-92-1) and acid encased in polypropylene, sealed and vented with a flame arrestor to reduce flashback potential. The case color varies. These batteries contain dilute sulfuric acid (7664-93-9), a corrosive substance, and may expel explosive gases.

Specific Hazards:

Routes of Entry: Not applicable under normal use.

Specific Hazards (Routes Of Exposure):

<u>Exposure Routes</u>	<u>Exposure Duration</u>	<u>Observation</u>
Eye Contact	General	Contact with absorbed electrolyte (sulfuric acid (7664-93-9)) may cause irritation of eyes. Absorbed electrolyte is corrosive. Contact with eyes causes irritation and burns.
Skin Contact	General	Contact with skin causes irritation and burns. Absorbed electrolyte is corrosive. Electrolyte is corrosive and contact may cause skin irritation, chemical burns and ulcerations.
Inhalation	General	Contact with absorbed electrolyte (sulfuric acid (7664-93-9)) may cause irritation of nose and throat.

Medical Conditions Aggravated By Exposure:

Pregnant women and children must be protected from lead exposure.

Additional Health Hazard Data:

Target Organs: (Electrolyte: Sulfuric Acid (7664-93-9)) respiratory system, eyes, skin and teeth.

Health Hazards (Acute and Chronic): Do not open battery. Avoid contact with internal components. Internal components include lead (7439-92-1) and absorbed electrolyte. Electrolyte is corrosive and contact may cause skin irritation, chemical burns and ulcerations.

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4 FIRST AID MEASURES

First Aid By::

Inhalation If sulfuric acid mists or vapors are inhaled, may cause severe respiratory difficulty (contact with electrolyte/sulfuric acid (7664-93-9)).

Skin Contact Flush contacted area with large amounts of water for at least 15 minutes. Remove contaminated clothing and obtain medical attention if necessary (contact with electrolyte/sulfuric acid (7664-93-9)).

Eye Contact Flush contacted area with large amounts of water for at least 15 minutes. (contact with electrolyte/sulfuric acid (7664-93-9)).

Ingestion If swallowed, give large amounts of water. DO NOT induce vomiting. Obtain medical treatment. (contact with electrolyte/sulfuric acid (7664-93-9)).

5 FIRE FIGHTING MEASURES

Flash Point:

Non-Flammable.

Explosive Limits:

Upper Explosive Limit (UEL)	=	74	'%'	Hydrogen gas. Hydrogen gas may be generated during battery charging.
Lower Explosive Limit (LEL)	=	4	'%'	Hydrogen gas. Hydrogen gas may be generated during battery charging.

Extinguishing Media:

Class ABC extinguisher. NOTE: CO2 may be used, but not directly on the cell. The thermal shock may cause cracking of the battery case and/or cases.

6 ACCIDENTAL RELEASE MEASURES

PRECAUTIONS IN CASE OF ACCIDENTAL RELEASE

Personal Precautions:

If battery case is broken, avoid direct contact with internal components. Keep away from ignition sources during charging.

SPILL OR LEAK PROCEDURES

Recovery:

Electrolyte material is corrosive. Contains sulfuric acid (7664-93-9). Neutralize any spilled material. Avoid contact with direct materials. Reference Emergency Response Guidebook 2004, #154.

7 HANDLING AND STORAGE

HANDLING

Safe Handling Procedures:

Do not allow metallic materials to simultaneously contact both terminals.

STORAGE

Storage Conditions:

Store away from reactive material as defined in Section 10, Stability and Reactivity. Place cardboard between layers of stacked batteries to avoid damage and short circuit.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures:

Ventilation must be provided when charging in an enclosed area.

EXPOSURE LIMITS

Limit Values:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Type</u>	<u>Value</u>	<u>Specificati</u> <u>on</u>	<u>Source</u>
LEAD	7439-92-1	PEL-T WA	50ug/m3	-	OSHA - Permissible Exposure Limits (PELs)
LEAD	7439-92-1	PEL- Action Level	30ug/m3	-	OSHA - Permissible Exposure Limits (PELs)
LEAD	7439-92-1	GM OEG- TWA	50ug/m3	-	GM Occupational

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<u>Chemical Name</u>	<u>CAS Number</u>	<u>Type</u>	<u>Value</u>	<u>Specificati on</u>	<u>Source</u>
LEAD	7439-92-1	TLV-TWA	50ug/m3	-	Exposure Guidelines (OEG) Threshold Limit Values (TLVs) - ACGIH MICHIGAN
LEAD	7439-92-1	State-TWA	50ug/m3	-	MICHIGAN
SULFURIC ACID	7664-93-9	PEL-TWA	1mg/m3	-	OSHA - Permissible Exposure Limits (PELs)
SULFURIC ACID	7664-93-9	GM OEG-TWA	1mg/m3	-	GM Occupational Exposure Guidelines (OEG)
SULFURIC ACID	7664-93-9	TLV-TWA	1mg/m3	-	Threshold Limit Values (TLVs) - ACGIH
SULFURIC ACID	7664-93-9	TLV-STEL	3mg/m3	-	Threshold Limit Values (TLVs) - ACGIH
SULFURIC ACID	7664-93-9	State-TWA	1mg/m3	-	MICHIGAN
SULFURIC ACID	7664-93-9	State-TWA	1mg/m3	-	NEW YORK
SULFURIC ACID	7664-93-9	State-TWA	1mg/m3	-	TENNESSEE
SULFURIC ACID	7664-93-9	GM OEG-STEL	3mg/m3	-	GM Occupational Exposure Guidelines (OEG)
ANTIMONY	7440-36-0	PEL-TWA	500ug/m3	-	OSHA - Permissible Exposure Limits (PELs)
ANTIMONY	7440-36-0	GM OEG-TWA	500ug/m3	-	GM Occupational Exposure Guidelines (OEG)
ANTIMONY	7440-36-0	TLV-TWA	500ug/m3	-	Threshold Limit Values (TLVs) - ACGIH
ANTIMONY	7440-36-0	State-TWA	500ug/m3	-	MICHIGAN
ANTIMONY	7440-36-0	State-TWA	500ug/m3	-	NEW YORK
ANTIMONY	7440-36-0	State-TWA	500ug/m3	-	TENNESSEE
ARSENIC	7440-38-2	PEL-TWA	10ug/m3	-	OSHA - Permissible Exposure Limits (PELs)
ARSENIC	7440-38-2	GM	10ug/m3	-	GM

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<u>Chemical Name</u>	<u>CAS Number</u>	<u>Type</u>	<u>Value</u>	<u>Specificati on</u>	<u>Source</u>
		OEG-TWA			Occupational Exposure Guidelines (OEG)
ARSENIC	7440-38-2	TLV-TWA	10ug/m3	-	Threshold Limit Values (TLVs) - ACGIH MICHIGAN
ARSENIC	7440-38-2	State-TWA	10ug/m3	-	
TIN	7440-31-5	PEL-TWA	2mg/m3	-	OSHA - Permissible Exposure Limits (PELs)
TIN	7440-31-5	GM OEG-TWA	2mg/m3	-	GM Occupational Exposure Guidelines (OEG)
TIN	7440-31-5	TLV-TWA	2mg/m3	-	Threshold Limit Values (TLVs) - ACGIH MICHIGAN
TIN	7440-31-5	State-TWA	2mg/m3	-	
TIN	7440-31-5	State-TWA	2mg/m3	-	NEW YORK
TIN	7440-31-5	State-TWA	2mg/m3	-	TENNESSEE

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment (PPE):

Respiratory Protection: Use NIOSH approved respiratory protection when concentrations exceed exposure guidelines.
 Eye Protection: Recommended.
 Hand Protection: Recommended. Contact local health and safety representative for appropriate glove type for your specific application(s).
 Skin Protection: N/A.

Hygiene Measures:

Good Personal hygiene and work practices are recommended. Wash hands after handling.

9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Physical State: Liquid.
Color: Clear, colorless.
Odor: Odorless.

PHYSICAL PROPERTIES

Changes of State:

Melting/Freezing Point: N/A (Melting point.)
 Boiling Point: Range 235 - 240 F

Vapor Pressure:

= 10 mmhg

Vapor Density:

> 1 (AIR=1).

Evaporation Rate:

< 1.0 (Butyl Acetate=1).

Specific Gravity:

Range 1.270 -

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1.330

Solubility:
Water = 100 %'

10 STABILITY AND REACTIVITY

STABILITY INFORMATION

Stability Under Normal Conditions: Stable

Conditions to Avoid:

Prolonged overcharging, sources of ignition.

Incompatible Materials:

Sulfuric Acid (7664-93-9): contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, strong oxidizers and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas.

HAZARDOUS DECOMPOSITION

Reactions:

Type of Reaction

Decomposition

Reaction Products

Sulfuric acid (7664-93-9): excessive overcharging or fire may create sulfur trioxide, carbon monoxide, sulfuric acid mists, sulfur dioxide and hydrogen. Lead (7439-92-1) Compounds: Contact with strong acid or base or presence of newly generated hydrogen may result in highly toxic arsine gas.

Reaction with Water

Sulfuric acid (7664-93-9) is water-reactive if concentrated.

11 TOXICOLOGICAL INFORMATION

OCCUPATIONAL EXPERIENCES

Additional Observations:

Toxicology Data: Wet, nonspillable, storage batteries are sealed articles. Exposure to sulfuric acid (7664-93-9), lead (7439-92-1), acid and lead contaminated acid is not anticipated during normal storage, handling and intended use or maintenance of the battery. Battery recycling personnel should carefully follow established employer protocols when processing batteries and battery components.

CLASSIFICATION OF INGREDIENTS

Carcinogenicity:

Sulfuric Acid (7664-93-9): The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mist containing sulfuric acid" as a Category 1 carcinogen, a substance that is carcinogenic to humans. This classification does not apply to liquid forms of sulfuric acid 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.

Lead Compounds (7439-92-1): Lead is listed as a 2B carcinogen, likely in animals at extreme doses. There is insufficient evidence to determine the carcinogenicity in humans.

Arsenic (7440-38-2): Listed by National Toxicology Program (NTP), IARC, OSHA and NIOSH as a carcinogen only after prolonged exposure to high levels.

California Prop 65: Batteries, battery posts, terminals and related accessories contain lead (7439-92-1) and lead compounds and other chemicals known to the State of California to cause cancer. Wash hands after handling.

Reproductive Effects:

California Prop 65: Batteries, battery posts, terminals and related accessories contain lead (7439-92-1) and lead compounds and other chemicals known to the State of California to cause birth defects or other reproductive harm. Wash hands after handling.

12 ECOLOGICAL INFORMATION

ENVIRONMENTAL IMPACT

Comment:

There are no data available on the battery itself. Due caution should be exercised to prevent release of the electrolyte material to the aquatic or terrestrial environment. Runoff from fire control may cause a pollution hazard. Environmental Fate: Lead (7439-92-1) is a naturally occurring element that does not break down readily in soil or water but its compounds are changed by air, water, and sunlight. If released to air, the residence time is approximately 10 days, depending on weather conditions. Lead is strongly adsorbed onto soil particles and sediment, resulting in little mobility with a residence time of many years. The tendency of inorganic lead to be tightly bound to soil results in little availability to terrestrial plants, to which adverse effects are normally only observed at very high concentrations (100 to 1000 mg/kg). Lead is ubiquitous in most surface and ground water systems, and tends to form highly insoluble salts, and complexes with various anions, which precipitate out of the water column. Bioavailability of lead is lowered by ion exchange with hydrous oxides, clays, or by chelation with humic or fulvic acids, and in general when organic material, sediment, and small clay particles are present. In the dissolved phase, lead is bioaccumulated by plants and animals, in both aquatic and terrestrial environments.

Sulfuric acid (7664-93-9) in the air will react with other chemicals present (e.g., ammonia, magnesium, calcium) to form salts that neutralize the acid. The acid particles or droplets dissolve in the atmosphere and may result in dilute acid solutions. In the aquatic environment, the availability and toxicity of sulfuric acid is dependent on the buffering capacity and resulting pH of the water.

ECOTOXICITY

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Comment:

In aquatic systems with low buffering capacity, lead (7439-92-1) is particularly detrimental to plants, birds, and aquatic organisms. LC50 (28 day) rainbow trout 0.22 mg/kg (lead salt); EC50 (48 hour) daphnid 3.6 ppm (lead salt). Lead may inhibit nitrification and denitrification in activated sludge. Small quantities of sulfuric acid (7664-93-9) will be neutralized by the natural alkalinity in aquatic systems. Larger quantities may lower the pH for extended periods of time, and the resulting increased acidity (e.g., pH 5 or below) may adversely affect invertebrate and fish populations. Sulfuric acid had moderate acute toxicity on aquatic life (LC50s for invertebrates and fish from 10 to 300 mg/L). It is corrosive to plants, birds, or animals exposed. It has moderate chronic toxicity to aquatic life.

13 DISPOSAL CONSIDERATIONS

Waste Disposal Information:

Lead-acid batteries are completely recyclable. Dispose of any collected material in accordance with local, State or applicable Federal regulations.

14 TRANSPORT INFORMATION

Comment:

The Non-Spillable lead acid battery complies with the provisions listed in 49CFR173.159(d) and therefore must not be marked with an identification number, such as UN2800, or a hazard label, such as corrosive. Also, having passed IATA, ICAAO special provision A67, these batteries are not subject to the air dangerous goods regulations.

15 REGULATORY INFORMATION

LABELLING

Hazard Codes:

NFPA Health 3
NFPA Flammability 0
NFPA Reactivity 2

Comment:

NFPA Codes: Sulfuric acid. NFPA Codes: Lead - Health = 3, Flammability = 0, Reactivity = 0. Sulfuric acid is water-reactive if concentrated.

NATIONAL REGULATIONS

SARA 311/312: No

SARA 313: Yes

Immediate Health: No

Delayed Health: No

Fire: No

Sudden Pressure Release: No

Reactive: No

RCRA:

Hazardous Waste Number
D002

Hazardous Waste

Spent lead-acid batteries are not regulated as hazardous waste when recycled. Spilled sulfuric acid (7664-93-9) is a characteristic hazardous waste, EPA hazardous waste number D002 (corrosivity).

Other Regulation:

TSCA Status:

All ingredients are either on or exempt from the TSCA Inventory.

CERCLA (Superfund):

Reportable Quantity (RQ) for spilled 100% sulfuric acid (7664-93-9) is 1000 lbs.

EPCRA (Emergency Planning and Community Right to Know ACT):

Sulfuric acid (7664-93-9) is a listed "Extremely Hazardous Substance" under EPCRA with a Threshold Planning Quantity (TPQ) of 1000 lbs.

EPCRA reporting requirements section 313:

Reporting quantities are as follows: Lead (7439-92-1): Title III section 313 = 100 lbs. Sulfuric Acid (7664-93-9): Title III section 313 = 500 lbs.

EPCRA reporting requirements sections 302/304:

Batteries are subject to EPCRA reporting requirements under sections 302/304.

EPCRA reporting requirements sections 311/312:

Reporting quantities are as follows: Lead (7439-92-1): section 311/312 = 10,000 lbs. Sulfuric Acid (7664-93-9): section 311/312 = 500 lbs.

STATE/LOCAL REGULATIONS

Comment:

California Prop 65: Batteries, battery posts, terminals and related accessories contain lead (7439-92-1) and lead compounds and other

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chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

16 OTHER INFORMATION

Comments:

Additional Exposure Limits: GM Occupational Exposure Guidelines (OEG) and State-TWA's were provided by General Motors.