Material Safety Data Sheet (U.S.)

Workplace Hazardous Material Information System (Canada)

Issue Date: 12/01/98; Revisions: Rev 2; 06/13/05

Product Name: Lead / Acid Storage Battery

Product Information: (270) 866-6056
Manufacturer: Superior Battery Mfg Co, Inc
P. O. Box 1010; 2515 Hwy 910
Russell Springs, KY 42642
Fax: (270) 866-6056

Transportation Emergency Phone:
CHEMTREC 1-800-424-9300
(24 hours, during transportation only)

email: sales@superiorbattery.com

Section 1: Material Identification

Common name: Lead / Acid Storage Battery
Chemical Family: Toxic and Corrosive Material Mixture
Synonyms: SLI Battery
CAS No.: Mixture
D. O. T. Hazard Class: Corrosive Material
Shipping: New batteries and batteries shipped for recycling have the same DOT, IATA and IMA descriptions:
Battery, wet, filled with acid, hazard class 8, UN 2794, PG III, Corrosive or
Battery, wet, non-spillable, hazard class 8, UN 2800, PG III, Corrosive or
Battery, dry, UN #: N.A.
IMO: Batteries, wet, fill with acid, electric storage, IMO Class 8, UN2794 or
Batteries, wet, non-spillable, electric storage, IMO Class 8, UN2800
Cracked or leaking batteries being recycled must be stored and shipped in a container that is sturdy, acid resistant, leak proof and kept closed. Transport requirements vary by state.
Proposition 65: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Batteries also contain other chemicals known to the State of California to cause cancer. Wash hands after handling.

Section 2: Hazardous Ingredients

HMIS Rating for Sulfuric Acid: Health: 3 Fire: 1 Reactivity: 2 Acid

Ingredient CAS Number	Max %	SARA applies			Air contaminant levels	
	w/w	302	311/312	313	ACGIH//TLV (mg/m^3)	OSHA PEL (mg/m^3)
Lead (CAS#: 7439-92-1) Lead Oxide (1309-60-0) Lead Sulfate (7446-14-2)	60 % (wet battery) 95 % (dry battery)	N	Y	Y	0.150	0.05
Sulfuric Acid (7664-93-9)	10-30% wet < 1 % dry	Y Reportable Quantity: 1000 lbs	Y	-	1.0 STEL 3 mg/ m^3 (15 min. max. / 8 hour shift)	1.0
Antimony (7440-36-0)	1-6	N	Y	Y	0.5	0.5
Arsenic (7440-38-2)	<0.1	N	Y	Y	0.2	0.01

* Only sulfuric acid aerosols are reportable. These include mists, vapors, gas, fog, and other airborne forms of any particle size.
All ingredients are listed with EPA TSCA Inventory of Chemical Substances.

Section 3: Physical Data

VOC content: 0%

	Lead	Electrolyte	Hydrogen	Plastic/ Battery case
Boiling Point	1755 °C	95 °C	-252 °C	
Vapor Pressure		~ 1mm Hg		
Vapor Density (Air = 1)		~3.4	~ 0.07	
Melting Point	327.4 °C		-259 °C	Polypropylene: >160 °C
Specific Gravity (H_2O = 1)		1.21 – 1.3		
Evaporation Rate	Not determined			
Solubility in Water		100 %		
Appearance and Odor:	Acid saturated lead oxide is dark reddish-brown to gray solid with acidic odor.	Oily colorless liquid, characteristic acid odor when hot or charging.	Colorless, odorless gas.	Solid
pH:		<1		

Section 4: Reactivity Data

- **Stable** √ ~~Unstable:~~
- **Conditions to Avoid:** Avoid overcharging battery. Do not allow smoking, open flame or sparks near batteries while charging. Avoid high temperature. Battery electrolyte will react with water and produce heat. Keep battery case away from strong oxidizers.
- **Incompatibility:** Lead/lead compounds: potassium, carbides, peroxides, phosphorus, sulfur. Battery electrolyte: strong reducing agents, combustible and organic materials, most metals, nitrates, chlorates. Battery case: strong oxidizing agents. Short circuits may result in fire.
- **Hazardous Decomposition/ Byproducts**: An explosive hydrogen and oxygen mixture within the battery may be generated during charging. See further section 6. Sanding and grinding of battery posts, post building and connector burning activities will release airborne lead.
- **Hazardous Polymerization**: Will not occur

Section 5: Health Hazard Data

Under normal conditions of battery use, battery materials will not present a health hazard.

- **Routes of entry**: Ingestion: possible via hand contaminated by contact with lead or acid components of the battery.
  Inhalation: acid mist generated during battery charge may cause respiratory irritation.
  Eye contact: possible if the battery electrolyte is splashed.
  Skin Contact: possible. Skin absorption is not a significant route of entry. Battery electrolyte is corrosive to skin.
- **Acute Health Effect:** Overexposure to lead compounds may cause upset stomach, loss of appetite, sleeplessness, and fatigue. Contact with battery electrolyte (acid) may irritate the skin. Battery electrolyte may cause corneal damage of the eyes or irritation of the mucous membranes and/or inflammation of the upper respiratory system.
- **Chronic Health Effects** Lead compounds may cause chronic anemia, kidney and nervous system damage. Lead may also cause reproductive system damage. Repeated contact with battery electrolyte may lead to irritation of the skin and may result in dermatitis. Battery electrolyte may scar the cornea, causing blindness, and cause chronic bronchitis. Prolonged contact to acid vapor may cause erosion of tooth enamel.
- **Carcinogenicity:** The **IARC** has classified strong inorganic acid mists containing sulfuric acid as a Category 1 carcinogen, a substance that is carcinogenic to humans. The **AGGIH** has classified "strong inorganic acid mist containing sulfuric acid" as an A2, suspected human carcinogen. These classifications do not apply to liquid forms of sulfuric acid or electrolyte contained within the battery. Under normal battery use, sulfuric acid mist is not generated.
  NTP and IARC have classified lead as an animal carcinogen (A3). While the lead is carcinogenic in experimental animals at relatively high doses, lead is unlikely cause cancer in humans except under uncommonly high levels of exposure.
- **Signs/Symptoms of Exposure:** Under normal battery use, the components do not present a health hazard. Under abnormal conditions or in case of fire, breakage or overcharge, battery can cause the following symptoms:
  SKIN: Irritation or skin burn. EYES: Burning. INGESTION: upset stomach, fatigue, irritation or burn in the mouth and the gastrointestinal system. INHALATION: Breathing the acid vapor may cause respiratory difficulties.
- **Emergency and First Aid:** SKIN: Remove from source. Wash thoroughly with soap and water. Treat as acid burn. If battery electrolyte is splashed in shoes, remove immediately and discard. Remove contaminated clothing and obtain medical attention.
  EYES: Flush thoroughly with cool water for 15 minutes, lifting lids. Get medical attention. Treat as an acid burn.
  INHALATION: Remove to ventilated area. Get medical attention.
  INGESTION: Lead/lead compounds: consult physician. Battery Electrolyte: Do not induce vomiting, keep quiet, get medical attention immediately.
- **Medical Condition Generally Aggravated by Exposure**: Lead and its compounds can cause chronic liver, kidney and neurological problems. Contact with battery electrolyte may cause dermatitis or eczema of the skin. Sulfuric acid mist may irritate the respiratory system.

Section 6: Fire and Explosion Hazard Data

Flash Point (method used): NA ♦ Flammable Limits: Lead acid batteries will not burn or will burn with difficulty. Hydrogen gas may be flammable and explosive when mixed with oxygen, air or chlorine. Hydrogen LEL: 4 %; UEL: 74.2 % ♦ Extinguishing Media: Halon, dry chemical, foam or CO_2. Cool exterior of batteries exposed to fire to prevent ruptures. ♦ Unusual Hazards: Hydrogen and oxygen gases are generated in the cells during normal battery operations. These gases enter the air through the vent caps. Keep ignition sources away from the battery. Sulfuric acid mist and vapors generated by battery overcharge, heat or fire are corrosive. Ensure proper ventilation of charging areas consistent with OSHA (CFR 1910 and 1926), National Fire Code, ACGIH and other relevant standards. ♦ Special Fire Fighting Procedures: Use positive pressure, self-contained breathing apparatus and protective clothing. Extinguish fire with material suitable for surrounding combustible materials.

Section 7: Spill, Leak, and Disposal Procedures

♦ Steps to be Taken in Case Material is Released or Spilled: Stop leak at source. Ventilate the area. Remove combustible material and all sources of ignition. Wear protective clothing, acid resistant boots and gloves, face shield and goggles. Segregate the spill and neutralize with baking soda, soda ash, lime or use an appropriate acid absorbent. Collect residue in an approved container. Do not release to streams, lakes, sewer, etc.

♦ Waste Disposal Method: Return spent batteries to distributor, manufacturer or lead recycler. Neutralize acid spill or use proper absorbent and place waste in proper container. Cracked or leaking batteries being recycled must be stored and shipped in a container that is sturdy, acid resistant, leak proof and kept closed. Dispose of batteries and components according to all local, state and federal regulations. Some states regulate leaking batteries as hazardous waste, classification D002 (corrosive) **and** D008 (lead) even when recycled. Check with state authorities.

Section 8: Special Protection Information

♦ Respiratory Protection: None required under normal handling conditions. During battery formation or recharge, acid mist may be generated. If irritation occurs use a suitable respirator for protection. ♦ Ventilation: Store lead acid batteries in cool, dry and properly ventilated area. Never recharge batteries in a closed, unventilated area. ♦ Protective Gloves: Acid resistant rubber or plastic gloves.

♦ Eye Protection: Wear chemical safety goggles or face-shield during non-routine tasks, including battery maintenance. ♦ Other Protective Clothing or Equipment: Eye wash and safety shower installed near to storage or charging area, safety shoes with rubber or neoprene boots and aprons. ♦ Work/Hygienic Practices: Make sure vent caps are tight. Do not smoke or use open flames in charging area. Wash your skin thoroughly after handling battery. Discard contaminated clothing according to state or EPA regulations.

Section 9: Special Precautions and Comments

Storage Requirements: Store lead acid batteries in cool, dry and properly ventilated area. Make sure vent caps are in place. Keep the batteries from extreme heat or freezing. Place a minimum of two layers of corrugated cardboard between battery layers for storage. Protect terminals to prevent short circuits. Keep out of reach of children.

Section 10: Battery Recycling

Battery recycling

It is illegal to discard batteries in the trash. State laws require batteries to be recycled by a permitted recycling facility. Batteries should be returned to the manufacturer or distributor for recycling, or directly to a permitted recycling facility.

Packaging of spent batteries for recycling:

1. Recycle batteries should be palletized.
2. Heavier batteries are on bottom layer on pallet.
3. Arrange layers to avoid pallet overhang.
4. Minimum of two (2) sheets of corrugated cardboard between layers or one (1) honeycomb layer sheet.
5. Keep battery layers reasonably flat for top loading.
6. Limit each pallet to three (3) layers of batteries.
7. Keep battery terminals aligned to prevent short circuits; no side terminal contact. No exposed terminals.
8. Stretch wrap or banding is mandatory. No steel strapping.

Superior Battery Mfg. Co., Inc. ♦ P. O. Box 1010 ♦ 2515 Hwy 910 ♦ Russell Springs, KY 42642 U.S.A.
Phone (270) 866-6066 ♦ Fax (270) 866-6066

EAST PENN manufacturing co., inc. Deka

– Material Safety Data Sheet –

Valve Regulated Lead Acid Battery

"Battery Non-Spillable 49 CFR 173.159 (d)"

SECTION I

Manufacturer's Name:
East Penn Manufacturing Co., Inc.
Deka Road, Lyon Station, PA 19536
Telephone Number for Information: (610) 682-6361
Battery
Emergency Telephone Number: CHEMTREC: 1-800-424-9300,
In Washington D.C. or outside continental U.S., call 1-202-483-7616

Date: March 15, 2002

Trade Name: Gell: Absorbed Electrolyte,
Sealed Valve Regulated Non Spillable

SECTION II
HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components Specific Chemical Identity (Common Name (s))	OSHA PEL	ACGIH TLV	Range Percent By Weight	Average
Lead, CAS #7439921	0.05 mg/m^3	0.05 mg/m^3	60-75%	67%
Sulfuric Acid, CAS #7664939	1.00 mg/m^3	1.00 mg/m^3	5-15%	10%
Antimony, CAS #7440360	0.50 mg/m^3	0.50 mg/m^3	0-0.1%	<0.1%
Arsenic, CAS #7440382	0.01 mg/m^3	0.01 mg/m^3	0.01 %	<0.1%
Polypropylene, CAS#9003070	N/A	N/A	2-10%	4%
Calcium, CAS#7440702	1.0 mg/m^3	1.0 mg/m^3	0-0.1%	<0.1%
Tin CAS #7440315	2.0 mg/m^3	2.0 mg/m^3	0-0.1%	<0.1%

SECTION III
PHYSICAL/CHEMICAL CHARACTERISTICS

Electrolyte (Sulfuric Acid):
Appearance and Odor: Clear, Odorless, colorless liquid
Boiling Point: 235 – 240° F
Evaporation Rate (Butyl Acetate=1): less than 1.0
Melting Point: N/A

Solubility in Water: 100%
Specific Gravity (H_2O=1): 1.270 – 1.330
Vapor Density (AIR=1): Greater than 1
Vapor Pressure (mm Hg): 10

SECTION IV
FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): Non-Flammable
Extinguishing Media: Class ABC extinguisher,
Flammable Limits: *Hydrogen Gas
LEL: 4% **UEL** 74%
NOTE: CO_2 may be used, but not directly on the cell. The thermal shock may cause cracking of the battery case and/or cases.
*** Hydrogen gas may be generated during battery charging.**

SECTION V
REACTIVITY DATA

Stability: Stable **Condition to Avoid:** Prolonged overcharging, sources of ignition

Incompatibility (Materials to Avoid): Sulfuric Acid: 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 of By-Products: Sulfuric Acid: Excessive overcharging or fire may create Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, and hydrogen.
Lead Compounds: Contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.

SECTION VI
HEALTH HAZARD DATA

Route(s) of Entry: Not Applicable under normal use.

Carcinogenicity:
Sulfuric Acid: 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: 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 Program (NTP), IARC, OSHA and NIOSH as a carcinogen only after prolonged exposure at high levels.

Signs and Symptoms of Exposure: Avoid contact, with absorbed electrolyte (sulfuric acid) may cause irritation of eyes, nose and throat. Contact with eyes and skin causes irritation and skin burns. Absorbed electrolyte is corrosive.

Medical Conditions Generally Aggravated by Exposure: Pregnant women and children must be protected from lead exposure.

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

Emergency and First Aid Procedures: (contact with electrolyte)

1) Flush contacted area with large amounts of water for at least 15 minutes. Remove contaminated clothing and obtain medical attention if necessary. Eye wash and/or emergency shower should be readily available.
2) If swallowed, give large volumes of water. **DO NOT** induce vomiting, obtain medical treatment.

SECTION VII
PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled: Electrolyte material is corrosive. Contains sulfuric acid. Neutralize any spilled material. Reference 1996 North American Emergency Response Guidebook, #154.

Waste Disposal Method: Lead-acid batteries are completely recyclable. For information on returning batteries to East Penn for recycling, contact your East Penn Representative. Dispose of any collected material in accordance with local, state or applicable federal regulations.

Precautions to be Taken in Handling and Storing: Store away from reactive material as defined in Section V, Reactivity Data. Place cardboard between layers of stacked batteries to avoid damage and short circuit. Do not allow metallic materials to simultaneously contact both terminals.

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

SECTION VIII
CONTROL MEASURES

Respiratory Protection (Specific Type): N/A

Ventilation: Must be provided when charging in an enclosed area.

Protective Gloves: Recommended

Eye Protection: Recommended

Other Protective Clothing or Equipment: N/A

Work Hygienic Practices: Good Personal hygiene and work practices are recommended.

SECTION IX
OTHER REGULATORY INFORMATION

NFPA Hazard Rating	Sulfuric Acid	Lead
Health (Blue)	3	3
Flammability (Red)	0	0
Reactivity (Yellow)	2	0

Note: Sulfuric acid is water-reactive if concentrated.

U.S. DOT: The Non-Spillable lead acid battery complies with the provisions listed in 49CFR173.159(d) 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.

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

CERCLA (Superfund) and EPCRA (Emergency Planning and Community Right to Know ACT)

a) Reportable Quantity (RQ) for spilled 100% sulfuric acid is 1000 lbs.
b) Sulfuric acid is a listed "Extremely Hazardous Substance" under EPCRA with a Threshold Planning Quantity (TPQ) of 1000 lbs.
c) Batteries are subject to EPCRA reporting requirements under sections 302/304, 311/312, and 313.
Reporting quantities are as follows:
Lead: section 311/312= 10,000 lbs.
Title III section 313 = 100 lbs.
Sulfuric Acid: section 311/312 = 500 lbs.
Title III secion 313 = 500 lbs.

California Prop 65: Battery posts, terminals and related accessories contain lead and lead compounds, and other chemicals known to the state of California to cause cancer and birth defects or other reproductive harm. **Wash hands after handling.**

For additional information concerning East Penn Manufacturing Co., Inc. products or questions concerning the content of this MSDS please contact your East Penn representative.

This information is accurate to the best of East Penn Mfg. Co.'s knowledge or obtained from sources believed by East Penn to be accurate. Before using any product, read all warnings and directions on the label.