

Product Name: Product Information: Manufacturer:	Sealed Lead Acid Battery (VRLA) (973) 523-8630 Power Battery Company, Inc. 25 Mclean Blvd. Paterson, NJ 07514-1507 Fax: (973) 523-3023	NFPA Hazard Rating: Flammability (Red) = 0 Health (Blue) = 3 Reactivity (Yellow) = 2	Transportation Emergency Phone: 1-800-424-9300 (Services 24 hours)
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Section 1: Material Identification	
Battery Types:	PRC, TC, TL, MC, MCG, FT, CSL, MRG, PSG, WCG, SL, SLF, TG, PM, CV
Common name:	Sealed Lead Acid Battery, Valve Regulated Lead Acid Battery (VRLA), Absorbed Glass Matt (AGm), Gel Battery (MCG, MRG, PSG, WCG Only)
Chemical Family:	Toxic and Corrosive Material Mixture
Synonyms:	Electric Storage Battery
CAS No.:	Mixture
CFR49	Power Battery VRLA batteries have been tested to CFR49, 173.159, (d.), (3.) (i) and (ii)
D. O. T. Hazard Class:	Battery wet, non-spillable, hazard class 8, UN2800, PGIII Corrosive or Batteries, wet, non-spillable, electric storage, IMO Class 8, UN2800
Shipping: D.O.T., IATA and IMA:	Battery wet, non-spillable, hazard class 8, UN2800, PGIII Corrosive or Batteries, wet, non-spillable, electric storage, IMO Class 8, UN2800
IMO:	NOTE: Power Battery VRLA batteries are Exempt CFR49, Subchapter C if 1) Terminals are protected against Short Circuit 2) Each Battery and its outer packaging must be plainly marked "Non-Spillable Battery"
Proposition 65:	Battery posts, terminals and related accessories contain lead, arsenic 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 (Blue): 3** **Fire (Red): 1** **Reactivity (Yellow): 2**

Ingredient	CAS Number	% Weight	LD ₅₀			SARA applies				Air contaminant levels	
			Oral	Inhalation	Contact	302	304	311/312	313	ACGIH/TLV (mg/m ³)	OSHA PEL (mg/m ³)
Lead Lead Dioxide Lead Sulfate	7439-92-1 1309-60-0 7446-14-2	65-75 %	<500mg/kg	<20mg/m ³	N/A	N	N	Y	Y	0.150	0.050
Sulfuric Acid	7664-93-9	17- 30 %	2.14 g/kg	18 mg/m ³	Eye rabbit 250 mcg (severe)	Y Reportable Qty: 1000 lbs		Y	*	1.0 STEL 3 mg/m ³ (15 min. max./8 hour shift)	1.0

* 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	Antimony	Arsenic	Electrolyte (30 %)	Hydrogen	Plastic/ Battery case
Boiling Point	1515 °C	1440 °C	Sublimes 615 °C	133 °C	-252 °C	N/A
Vapor Pressure	N/A	N/A	N/A	< 1mm Hg	N/A	N/A
Vapor Density (Air = 1)	N/A	N/A	N/A	~3.4	~ 0.07	N/A
Melting Point	327.4 °C	630 °C	814 °C	-56 °C	-259 °C	Polypropylene: >160 °C
Specific Gravity (H₂O =1)	11.3	6.68	5.72	1.3	0.089 (gas) g/l	0.9
Solubility in Water	17 ppm @ pH=7 (Lead oxide)	Insoluble	Insoluble	100 %	N/A	N/A
Appearance and Odor:	Silver-gray metal.	Silver-white metal.	Silver-gray solid	Oily colorless liquid, characteristic acid odor when hot or charging.	Colorless, odorless gas.	Solid
pH:	N/A	N/A	N/A	< 1	N/A	N/A

Section 4: Fire and Explosion Hazard Data

◆ **Flash Point:** Not Applicable ◆ **Flammable Limits:** Hydrogen LEL: 4 %; UEL: 74.2 % ◆ Hydrogen gas may be flammable and explosive when mixed with oxygen, air or chlorine. **Unusual Hazards:** Hydrogen and oxygen gases are generated in the cells during normal battery operations. Highly flammable hydrogen gas is generated during charging and operation of batteries. Keep sparks and other ignition sources away from the batteries. Ensure proper ventilation of charging areas consistent with OSHA (40 CFR 1910), National Fire Code, ACGIH, Building Code and other relevant standards. Lead acid batteries will not burn or will burn with difficulty. ◆ **Special Fire Fighting Procedures:** If batteries are on charge, shut off power. Use positive pressure, self contained breathing apparatus and acid resistant clothing. Water applied to electrolyte generates heat and can cause it to splatter. Use "ABC" Type Fire extinguisher for battery fires. ◆ **Extinguishing Media:** Halon, dry chemical, foam or CO₂. Cool exterior of batteries exposed to fire to prevent ruptures. Hydrogen gas may be present. Hydrogen gas and acid mist are generated during charging, or in fire. Sulfuric acid mist and vapors generated by battery overcharge, heat or fire are corrosive. Do not allow metallic materials to contact negative and positive terminals simultaneously of cells and batteries. Follow manufacturer's instructions for installation and service.

Section 5: Reactivity Data

Stable: yes No

Hazardous Polymerization: Will not occur.

Conditions to Avoid: Avoid overcharging battery. Avoid mixing acid with other chemicals. Avoid high temperatures. Do not allow smoking, open flame or sparks near batteries while charging. Battery electrolyte will react with water and produce heat. Keep battery case away from strong oxidizers. Short circuits may result in fire.

Incompatibility: **Lead/lead compounds:** carbides, phosphorus, peroxides, potassium, sulfur. **Battery electrolyte:** strong bases, combustible and organic materials, most metals, nitrates, chlorates. **Battery case:** strong oxidizing agents.

Hazardous Decomposition/ Byproducts: Sulfur Dioxide, Sulfur Trioxide, Hydrogen Sulfide, Hydrogen. An explosive hydrogen and oxygen mixture within the battery may be generated during charging and overcharging. Sanding and grinding of battery posts, post building and connector burning activities will release airborne lead.

Section 6: Health Hazard Data

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

- ◆ **Routes of entry:** Sulfuric Acid: Harmful by all routes of entry.
Exposure to lead from a battery can occur during lead reclaim operations by breathing or ingesting lead dusts and fumes.
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 for lead. Battery electrolyte is corrosive to skin.
- ◆ **Acute Health Effect:** Overexposure to lead compounds may cause upset stomach, vomiting, headache, loss of appetite, sleeplessness, and dizziness. 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** The toxic effects of lead are cumulative, and slow to appear. Overexposure to lead may cause chronic anemia, kidney and nervous system damage, muscles and joints pain. 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:** **Sulfuric Acid:** The IARC has classified strong inorganic acid mists containing sulfuric acid as a Category 1 carcinogen, a substance that is carcinogenic to humans. The ACGIH 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. Misuse of the product, such as overcharging, may result in the generation of sulfuric acid mist.
Lead: NTP and IARC have classified lead as an animal carcinogen (A3), likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present and lead is unlikely to cause cancer in humans except under uncommonly high levels of exposure.
Arsenic: Listed by the National Toxicology Program (NTP), International Agency for Research on Cancer (IARC), OSHA and NIOSH as a carcinogen only after prolonged exposure at high levels.
- ◆ **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.
- ◆ **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 7 First Aid Measures

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: Call physician immediately. Flush with cool water lifting lids until physician arrives. 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. Do not give anything to an unconscious person.

Section 8 Preventative Measures

Respiratory Protection: None required under normal handling conditions. During battery formation or recharge, acid mist may be generated. If irritation occurs use a high efficiency particulate respirator for protection. HEPA respirators should be worn during reclaim operations, if OSHA PEL is exceeded.

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 battery maintenance and non-routine tasks.

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.

Electrical safety: due to low internal resistance of POWER batteries 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 manufacturer's installation instructions and diagrams when installing or maintaining battery systems.

Section 9 Storage and Handling

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 or honeycomb layer sheet between battery layers for storage. **Protect terminals to prevent short circuits.** Keep out of reach of children.

Section 10 Spill Clean-up and Waste Disposal

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 sodium bicarbonate (baking soda), sodium carbonate (soda ash), calcium oxide (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. Acid waste that is not neutralized (pH<=2.0) is hazardous waste, Class D002 (corrosive). Cracked or leaking batteries being recycled must be stored and shipped in a container that is sturdy, acid resistant, leak proof and kept closed. Recycle 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 11 Battery Recycling -

Battery recycling

It is illegal to discard batteries in the trash. State and provincial 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. Place heavier batteries on bottom layer of pallet.
3. Arrange layers to avoid pallet overhang.
4. Place a 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 band with plastic banding is mandatory. No steel strapping.

Shipping Classification for ALL Scrap or spent VRLA, Non-spillable batteries:

DOT, IATA and IMA: Battery, wet, filled with acid, hazard class 8, UN 2794, PG III, Corrosive

IMO: Batteries, wet, filled with acid, hazard class 8, UN 2794, PG III, Corrosive

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 and province.

A copy of this material safety data sheet must accompany shipment and be supplied to any scrap dealer or secondary lead smelter.

Power Battery Company and its subsidiaries can coordinate, collect and recycle all Lead Acid batteries at an EPA approved recycling plant. All documentation, transportation and certificates will be provided. 1-800-769-6992 in USA, 1-450-346-3273 in Canada.

Disclaimer: "The information and recommendations presented herein are based on sources believed to be reliable as of the date hereof. Power Battery Company Inc. makes no representation as to the completeness or accuracy thereof. It is the user's responsibility to determine the product's suitability for its intended use, the product's safe use, and the product's proper disposal. No representations or warranties not expressly set forth herein are made hereunder, whether express or implied by operation of law or otherwise, including, but not limited to any implied warranties of MERCHANTABILITY OR FITNESS. Power Battery Company Inc. neither assumes or authorizes any other person to assume for it, any other or ADDITIONAL LIABILITY OR RESPONSIBILITY resulting from the use of, or reliance upon, this information."

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