



Material Safety Data Sheet

Product and Company Identification

Manufacturer's Name: XS Power Batteries

Transport Information: All XS POWER AGM batteries, when transported by air, surface or by vessel are identified as "Battery, Electric Storage, Dry, Nonspillable, Not Regulated".

Chemical / Trade Name (as used on label): Absorbed Electrolyte Battery, Sealed Valve Regulated Lead Acid Battery

Chemical Family / Identification: Electric Storage Battery

Hazardous Ingredients/Identify Information

| COMPONENTS | APPROXIMATE % BY WEIGHT | CAS # | OSHA PEL | ACGIH TLV | NIOSH |
|---|----------------------------|-----------|------------------------|------------------------|-----------------------|
| Inorganic Lead/ Lead Compounds | 65% – 75% | 7439-92-1 | 50 µg/m ³ | 150 µg/m ³ | 100 µg/m ³ |
| Sulfuric Acid/Battery Electrolyte 1.300sg 40wt% | 16% – 21% | 7664-93-9 | 1 gm/m ³ | 1 gm/m ³ | 1 gm/m ³ |
| Case Material: Acrylonitrile, Butadiene, Styrene(ABS) | 5% – 10% | 9003-56-9 | N/A | N/A | N/A |
| Fiberglass Separator | 5% | – | N/A | N/A | N/A |
| Tin | <0.5% | 7440-31-5 | 2000 µg/m ³ | 2000 µg/m ³ | N/A |
| Calcium | <0.2% | 7440-70-2 | N/A | N/A | N/A |

Note: Inorganic lead and electrolyte (water and sulfuric acid solution) are the primary components of every XS Power battery. Other ingredients may be present dependent upon battery type.

HEALTH HAZARD INFORMATION

Routes of Entry

Lead Compounds: Hazardous exposure can occur only when product is heated, oxidized or otherwise processed or damaged to create dust, vapor or fume.

Sulfuric Acid: Harmful by all routes of entry.

Inhalation

Lead Compounds: Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.

Sulfuric Acid: Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation

Fiberglass Separator: Fiberglass is an irritant to the upper respiratory tract, skin and eyes. For exposure up to 10F°/ use MSA Comfoll with type H filter. Above 10F use Ultra Twin with type H filter. This product is not considered carcinogenic by NTP or OSHA.

Ingestion

Sulfuric Acid: May cause severe irritation of mouth, throat, esophagus and stomach.
Lead Compounds: Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping. This may lead rapidly to systemic toxicity and must be treated by a physician.

Skin Contact

Lead Compounds: Not absorbed through the skin.

Sulfuric Acid: Severe irritation, burns and ulceration.

Eye Contact

Lead Components: May cause eye irritation.

Sulfuric Acid: Severe irritation, burns, cornea damage, and blindness.

Effects of Overexposure - Acute

Lead Compounds: Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability.

Sulfuric Acid: Severe skin irritation, damage to cornea, upper respiratory irritation.

Effects of Overexposure - Chronic

Lead Compounds: Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in males and females.

Sulfuric Acid: Possible erosion of tooth enamel, inflammation of nose, throat and bronchial tubes.

Carcinogenicity:

Lead Compounds: Lead is listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present.

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

Medical Conditions Generally Aggravated by Exposure

Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of sulfuric acid with skin may aggravate diseases such as eczema and contact dermatitis. Lead and its compounds can aggravate some forms of kidney, liver and neuralgic diseases.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation

Lead Compounds: Remove from exposure, gargle, wash nose and lips; consult physician.

Sulfuric Acid: Remove to fresh air immediately. If breathing is difficult, give oxygen.

Ingestion

Lead Compounds: Consult physician immediately.

Sulfuric Acid: Give large quantities of water; do not induce vomiting; consult physician.

Skin

Lead Compounds: Wash immediately with soap and water.

Sulfuric Acid: Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes.

Eyes

Sulfuric Acid and Lead: Flush immediately with large amounts of water for a least 15 minutes; consult physician.

FIRE AND EXPLOSION HAZARD DATA

FIRE AND EXPLOSIVE PROPERTIES

Hydrogen Flammable Limits in Air (% by Volume): LEL: 4.1 UEL: 74.2
Lower Explosion Limit (LEL), Upper Explosion Limit (UEL)

Hydrogen Flash point: N/A Hydrogen Auto ignition point: 580°C

Special Fire Fighting Procedures: Use Positive Pressure, self-contained breathing apparatus.

Extinguishing Media: Dry chemical, foam, CO2

Unusual Fire and Explosion Hazards:

In operation, batteries generate and release flammable hydrogen gas. They must always be assumed to contain this gas which, if ignited by burning cigarette, naked flame or spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery.

PRECAUTIONS FOR SAFE HANDING AND USE

Handling and Storage:

Store batteries in cool, dry, well-ventilated areas with impervious surfaces and adequate containment in the event of spills. Batteries should also be stored under roof for protection against adverse weather conditions. Separate from incompatible materials. Store

and handle only in areas with adequate water supply and spill control. Avoid damage to containers. Keep away from fire, sparks and heat.

Precautionary Labeling:

POISON - CAUSES SEVERE BURNS DANGER - CONTAINS SULFURIC ACID

Charging:

There is a possible risk of electric shock from charging equipment and from strings of series connected batteries, whether or not being charged. Shut-off power to chargers whenever not in use and before detachment of any circuit connections. Batteries being charged will generate and release flammable hydrogen gas. Charging space should be ventilated. Keep battery vent caps in position. Prohibit smoking and avoid creation of flames and sparks nearby. Wear face and eye protection when near batteries being charged.

Spill or Leak Procedures:

Stop flow of material; contain/absorb small spills with dry sand, earth, and vermiculite. Do not use combustible materials. If possible, carefully neutralize spilled electrolyte with soda ash, sodium bicarbonate, lime, etc. Wear acid-resistant clothing, boots, gloves, and face shield. Do not allow discharge of un-neutralized acid to sewer.

Waste Disposal Method:

Spent batteries: Send to secondary lead smelter for recycling.

CONTROL MEASURES

Work Practices:

Handle batteries cautiously to avoid spills. Make certain vent caps are on securely. Avoid contact with internal components. Wear protective clothing when filling or handling batteries.

Engineering Controls:

Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid-resistant.

Eye Protection:

Chemical goggles or face shield.

Respiratory Protection:

None required under normal conditions. When concentrations of sulfuric acid mist are known to exceed the PEL, use NIOSH or MSHA-approved respiratory protection.

Protective Gloves:

Rubber or plastic acid-resistant gloves with elbow-length gauntlet.

Other Protection:

Acid-resistant apron. Under severe exposure emergency conditions, wear acid-resistant clothing and boots.

Emergency Flushing:

In areas where sulfuric acid is handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided, with unlimited water supply.

Physical Data

| | | | |
|--|--|--|-------------|
| Electrolyte: | | | |
| Boiling Point: | 203-240°F | Specific Gravity(H₂O=1): | 1.300-1.330 |
| Melting Point: | N/A | Vapor Pressure(mm Hg): | 10 |
| Solubility in Water: | 100% | Vapor Density (AIR = 1): | 3.4 |
| Evaporation Rate: (Butyl Acetate = 1) | Less than 1 | % Volatile by Weight: | N/A |
| Appearance and Odor: | Manufactured article; no apparent odor. Electrolyte is a clear liquid with a sharp, penetrating, pungent odor. | | |

Reactivity Data

Stability: Stable

Conditions to Avoid:

High temperature, Sparks and other sources of ignition.

Incompatibility (materials to avoid):

Electrolyte (Water and Sulfuric Acid Solution): Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulfur trioxide gas strong oxidizers, and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas.

Lead compounds:

Avoid contact with strong acids, bases, halides, halogenated, potassium nitrate, permanganate, peroxides, nascent hydrogen, and reducing agents.

Hazardous Byproducts:

Sulfuric Acid: Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, and hydrogen.

Lead Compounds:

High temperatures likely to produce toxic metal fume, vapor, or dust; contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.

Ecological Information

Lead and its compounds can pose a threat if released into the environment.

Transport Information

All XS POWER AGM batteries, when transported by air, surface or by vessel are identified as "Battery, Electric Storage, Dry, Nonspillable, Not Regulated".

The battery(s) must be identified as above on the Bill of Lading and properly packaged with their terminals protected from short circuit. NA or UN numbers do not apply.

XS POWER AGM battery(s) warning label identifies each battery as NONSPILLABLE.

XS POWER AGM battery(s) preprinted cartons identify each battery as NONSPILLABLE.

XS POWER AGM battery(s) shipped without XS POWER cartons (bulk packed) need to be Identified as NONSPILLABLE or NONSPILLABLE BATTERY on the outer packaging.

Air: XS POWER AGM batteries meet the conditions in IATA/ICAO Special Provision A67.

Surface: XS POWER AGM batteries meet the conditions for DOT Haz Mat Regulations CFR-Tittle 49 parts 171-189.

Vessel: XS POWER Batteries meet the conditions of IMDG.

Regulatory Information

See 29 CFR 1910.268(b)(2)

Other Information

The information herein is given is good faith, but no warranty, expressed or implied, is made.