

| 1. Identification : | | Lead Acid Batteries Wet | | | |
|---|--|---|----------------|-------|-------|
| 2. Composition and Ingredients: | | | | | |
| Components | CAS Number | Approximate % by Wt. or Vol. | OSHA | ACGIN | NIOSH |
| Inorganic lead Compound: | | | | | |
| Lead | 7439-92-1 | 60 | 50 | 150 | 100 |
| *Antimony | 7440-36-0 | 2 | 500 | 500 | - |
| *Arsenic | 7440-38-2 | 0.2 | 10 | 200 | - |
| *Calcium | 7440-70-2 | 0.2 | - | - | - |
| *Tin | 7440-31-5 | 0.2 | 2000 | 2000 | - |
| Electrolyte (sulphuric acid) | | | | | |
| | 7664-93-9 | 10-30 | 1000 | 1000 | 1000 |
| Case Material | | | | | |
| | | 5-10 | N/A | N/A | N/A |
| Polypropylene | 9003-07-0 | | | | |
| Polystyrene | 9003-53-6 | | | | |
| Styrene Acrylonitrile | 9003-54-7 | | | | |
| Acrylonitrile Butadiene Styrene | 9003-56-9 | | | | |
| Styrene Butadiene | 9003-55-8 | | | | |
| Polyvinylchloride | 9002-86-2 | | | | |
| Polycarbonate | - | | | | |
| Hard Rubber | - | | | | |
| Polyethylene | - | | | | |
| Plate Separator Material: | | | | | |
| Glass reinforced polyester | - | | | | |
| Inorganic lead and electrolyte (sulphuric acid) are the primary components of every battery manufactured by Willard Batteries, Inc. Other ingredients may be present dependent upon battery type. Contact your Willard Batteries representative for additional information. | | | | | |
| 3. Physical and Chemical Properties: | | | | | |
| Electrolyte: | | | | | |
| Boiling Point | 203-204F | Specific Gravity (H2) = 1) | 1.215 to 1.350 | | |
| Melting Point | Not Applicable | Vapor Pressure (mm Hg): | 10 | | |
| Solubility in Water | 100% | Vapor Density (AIR = 1) | Greater than 1 | | |
| Evaporation Rate: (Butyl acetate = 1) | Less than 1 | % Volatile by Weight: | Not Applicable | | |
| Appearance and Odor | Manufactured article; no apparent odor. Electrolyte is a clear liquid with a sharp, penetrating, pungent odor. | | | | |
| 4. Stability and Reactivity: | | | | | |
| Stability : Stable <u>X</u> Unstable ___ | | Conditions to Avoid: Prolonged overcharge; 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, 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, halogenates, potassium nitrate, Permanganate, peroxides, nascent hydrogen and reducing agents.

Hazardous Decomposition Products:

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.

5. Toxicology:

Routes on Entry:

Sulfuric acid: Harmful by all 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.

Inhalation:

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

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

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:

Sulfuric acid: Severe irritation, burns and ulceration.

Lead compounds: Not absorbed through the skin.

Eye Contact:

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

Lead compounds: May cause eye irritation.

Effects of Overexposure – Acute:

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

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

Effects of Overexposure – Chronic :

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

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

Carcinogenicity:

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.

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), International for Research on Cancer (IARC), OSHA and NIOSH as a carcinogen only after prolonged exposure at high levels.

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 skin diseases such as eczema and contact dermatitis. Lead and its compounds can aggravate some forms of kidney, liver and neurologic diseases.

Emergency and First Aid Procedures:

Inhalation:

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

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

Ingestion:

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

Lead: Consult physician immediately.

Skin:

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

Lead: Wash immediately with soap and water.

Eyes:

Sulfuric acid and lead: Flush immediately with large amounts of water for at least 15 minutes; consult physician.

Proposition 65:

Warning: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm. Wash hands after handling.

6. Ecology:

Users should ensure that they comply with the environmental legislation.

Environmental fate and mobility: may be very dangerous if allowed to enter drinking water.

Persistence, degrading and bioaccumulation: Fish toxicity critical conc. = 10mg/l
(7,34mg/148hrs-Lymnaea Palustris 0-100% mortality)

Effect on effluent treatment: Harmful to aquatic life in low conc.

IF THE COMPANY LOGO IS NOT IN COLOUR, THIS DOCUMENT IS A PHOTO COPY AND MAY BE OUT OF DATE

MATERIAL SAFETY DATA SHEET**7. Accidental Release:**

- a) Personal protection Use chemical resistance gloves, apron, face shield and respirators
- b) Environmental precautions: Downwind evacuation may be necessary.
- c) Cleaning up method: Contain spillages by damming or creating barriers. Neutralise with alkali (e.g. Soda Ash). If possible absorb with earth or non-organic absorbent material, then place waste in dry labeled containers for disposal or recovery. Wash spillage area well with water.

8. Handling and Storage:

Handling: Avoid contact with skin and eyes

Do not breathe fumes.

Provide adequate ventilation.

Storage: Store in stainless steel or glass containers, in well ventilated area, away from sunlight or moisture.

Keep away from strong bases and organic compounds.

9. Exposure:

TLV-TWA;1 mg/m³

TVL-STEL:3mg/m³ (ACGIH 92 to 93)

10 Transport:

Proper Shipping Name: Batteries, wet, filled with acid

Hazardous Class: 8

UN Identification: UN2794

Packing Group: III

Label / Placard Required: Corrosive

11. Regulations:

Users should ensure that they comply with relevant regulations.

Dangerous Substances Directive 67/548/ECC

C / Corrosive

R35 / Causes severe burns

S2 / Keep out of reach of children

S26 / In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S30 / Never add water to this product

12. Disposal:

Disposal should be in accordance with relevant regulations.

Do not dispose of any waste into the sewage system.

13. Hazards:

- a) May cause corrosion to skin, eyes and respiratory tract.
- b) Inhalation of fumes at high concentration may be fatal.
- c) May react with organic compounds to cause fire and explosion.

MATERIAL SAFETY DATA SHEET**14. First Aid:****SPECIAL IMMEDIATE TREATMENT**

Inhalation: Remove patient from exposure, keep warm and at rest.

OBTAIN IMMEDIATE MEDICAL ATTENTION

Skin Contact: Remove contaminated clothing. Wash skin with water

OBTAIN IMMEDIATE MEDICAL ATTENTION

Eye Contact: Immediately irrigate with clean water, holding the eyelids apart, for at least 20 minutes

OBTAIN IMMEDIATE MEDICAL ATTENTION

Ingestion: Wash out mouth with water and give 200-300ml of water to drink. Do not induce vomiting

OBTAIN IMMEDIATE MEDICAL ATTENTION**Further Professional Medical Assistance**

Symptomatic treatment and supportive therapy as indicated.

Following severe exposure the patient should be kept under medical review for at least 24 hours as delayed lung oedema may develop.

15. Fire Fighting:

FLASH POINT:- **AUTO IGNITION TEMP.:-** **LEL:-** **UEL:-**

Flashing Point: Not Applicable

Flammable Limits: LEL = 4.1% (Hydrogen Gas) UEL = 74.2%

Extinguishing media: CO₂; foam; dry chemical

Special Fire Fighting Procedures: If batteries are on charge, shut off power. Use positive pressure, self-contained breathing apparatus. Water applied to electrolyte generates heat and causes it to spatter. Wear acid-resistance clothing.

Unusual Fire and Explosion hazards: Highly flammable hydrogen gas is generated during charging and operation of batteries. To avoid risk of fire or explosion, keep sparks or other sources of ignition away from batteries. Do not allow metallic materials to simultaneously contact negative and positive terminals of cells and batteries. Follow manufacturer's instructions for installation and service.

16. Other:

All information is given in good faith but without guarantee in respect of accuracy, and no responsibility is accepted for errors or omission or the consequences thereof. It is the user's obligation to determine the conditions of safe use of the material.