

Material Safety Data Sheet

Batteries, Wet, Filled with Acid

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COMPANY DETAILS

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IDENTIFICATION

Product Name: **LEAD ACID BATTERY, WET**
Other Name: Battery, Wet, Filled with Acid, Electric Storage
Manufacturers Product Code: Battery, Automotive
UN Number: 2794
Dangerous Goods Class: 8
Packing Group: III
Hazchem Code: 2W
Poisons Schedule Number: S6
Use: Starting, lighting, ignition for car, truck, etc

Physical Description/Properties

Appearance: The battery is a manufactured article. The sulphuric acid electrolyte is a clear, mobile liquid.
(Sulphuric Acid Electrolyte)
Boiling Point/Melting Point: (Sulphuric Acid Electrolyte) 95°C / -7 to -70°C
Vapour Pressure: (Sulphuric Acid Electrolyte) 13 to 22 mmHg @ 25°C
Specific Gravity: (Sulphuric Acid Electrolyte) 1.2 to 1.3 @ 25°C
Flashpoint: (Sulphuric Acid Electrolyte) Not Applicable
Flammability Limits: (Sulphuric Acid Electrolyte) Not Applicable
Solubility in Water: (Sulphuric Acid Electrolyte) 100%

Other Properties

Sulphuric Acid: Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulphur trioxide gas, strong oxidisers and water. Contact with metals may produce toxic sulphur 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.

Ingredients

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Proportion by Weight</u>
Lead / Lead Dioxide	7439-92-1	55 – 70%
Sulphuric Acid	7664-93-9	20 – 35%
Antimony	7440-36-0	1 – 1.7%
Arsenic	7440-38-2	< 0.5%

HEALTH HAZARD INFORMATION

Health Effects

Acute:

Swallowed: Sulphuric acid - Corrosive and causes severe burns. May cause severe irritation of mouth, throat, oesophagus and stomach.
Lead compounds - Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhoea and severe cramping.
Eye: Sulphuric acid - Severe irritation, burns, cornea damage, blindness.
Lead compounds - May cause eye irritation.
Skin: Sulphuric acid - Severe irritation, burns and ulceration.
Lead compounds - Not readily absorbed through the skin.
Inhaled: Sulphuric acid - Breathing of vapours or mists may cause respiratory irritation.
Lead compounds - Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.

Chronic:

Sulphuric acid: Possible erosion of tooth enamel, inflammation of nose, throat and bronchial tubes. Evidence available indicates exposure to strong inorganic acid mists containing sulphuric acid is carcinogenic to humans. (World Health Organisation: IARC. Copy draft report "Acid Toxicology" File, Chem. Prods NW Registry.) This classification does not apply to sulphuric acid solutions or to electrolyte in batteries.
Lead compounds: May cause constipation, weight loss, anaemia, fatigue, kidney damage, pain in joints, neuropathy (particularly of the motor nerves) and reproductive changes in male and female.

First Aid:

Swallowed:	Sulphuric acid – Do not induce vomiting. Give a glass of water. Seek immediate medical assistance.
Eye Contact:	Sulphuric acid – Irrigate with water for 15 minutes. Seek immediate medical assistance.
Skin Contact:	Remove contaminated clothing and wash skin thoroughly with water. Seek medical assistance if symptoms persist.
Inhaled:	Sulphuric acid – Apply artificial resuscitation and seek immediate medical assistance if not breathing.
	Lead compounds – Gargle, wash nose and lips, seek immediate medical assistance.
First Aid Facilities:	Access to a sufficient supply of potable water may be necessary.

Advice to Doctor: Treat symptomatically.

PRECAUTIONS FOR USE

Exposure Standard:	Workplace Exposure Standard for Metallic Lead is 0.15 mg/m ³ in air. Workplace Exposure Standard for Sulphuric acid is 1 mg/m ³ in air.								
Engineering Controls:	Use only in a well ventilated area.								
Work Practices:	Batteries are heavy, appropriate material handling equipment and techniques should be used. Handle batteries cautiously to avoid spills. Ensure vent caps are on securely. Avoid contact with internal components. Wear protective clothing when filling batteries as detailed below in "Personal Protection". Follow manufacturers instructions for installation and service.								
Personal Protection:	<table> <tr> <td>Respirator Type -</td><td>Not applicable under normal use.</td></tr> <tr> <td>Glove Type -</td><td>When handling Sulphuric acid, wear impervious PVC acid resistant gloves with elbow length gauntlet. When handling lead, wear leather or similar type work gloves.</td></tr> <tr> <td>Eye Protection -</td><td>When handling Sulphuric acid, wear chemical goggles/face shield.</td></tr> <tr> <td>Clothing -</td><td>When handling batteries, wear safety boots.</td></tr> </table>	Respirator Type -	Not applicable under normal use.	Glove Type -	When handling Sulphuric acid, wear impervious PVC acid resistant gloves with elbow length gauntlet. When handling lead, wear leather or similar type work gloves.	Eye Protection -	When handling Sulphuric acid, wear chemical goggles/face shield.	Clothing -	When handling batteries, wear safety boots.
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Flammability:	Under some operating conditions/ charging or Sulphuric acid contact with most common metals, flammable hydrogen gas can be liberated, it is recommended that 2% hydrogen concentration is not exceeded. Do not use close to ignition sources. Use in a well ventilated area.								

SAFE HANDLING INFORMATION

Storage and Transport:	Cover battery terminals always with coloured "Terminal protectors" to avoid accidental shorting and melting of terminals and potential explosion of battery. This product contains a Scheduled Poison (S6) and must therefore be stored, maintained and used in accordance with the relevant State Poisons Act. At all times store away from explosives, "dangerous when wet" substances, foodstuffs, oxidisable materials, organic peroxides, radioactive substances, combustible materials and sources of ignition. Check regularly for spills and leaks. Store batteries in cool, dry, well ventilated areas with adequate containment in the event of spills.
Spills:	Wear personal safety equipment at all times as detailed in "Personal protection". Establish a hazard zone. Bund and neutralise liquid with Soda Ash or Sodium Bicarbonate. Slowly pour neutralising powder from the outside of the spill inwards. Continue until the entire spill is covered. Wait until the reaction is complete. Absorb excess liquid with dry earth, sand or a similar material.
Disposal:	Refer to the local waste disposal authority for disposal of lead compounds, sulphuric acid and spent soda ash/sodium bicarbonate. Spent batteries should be sent to a secondary lead smelter for recycling.

Fire/Explosion Hazard :

Conductive/ metallic objects in contact with live battery terminals can get hot enough to burn the skin. Spark and molten metal may be ejected and could result in fire or explosion.

Fire Fighting Recommendations :

Use Carbon Dioxide or Dry Chemical extinguishers. Firefighters to wear acid-resistant full protective clothing, including rubber footwear and self-contained breathing apparatus. Water (fine spray or fog) should not be used unless from a safe distance due to vigorous and exothermic reaction which will result.

List of Dangerous Decomposition or Combustion Products:

Sulphuric acid may decompose to sulphur trioxide, carbon monoxide, sulphuric acid mist, sulphur dioxide and hydrogen. Exposure of lead compounds to high temperatures are likely to produce toxic metal fume, contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas. Exposure of plastic container and components to high temperatures may produce carbon dioxide, carbon monoxide, noxious aldehydes (eg. formaldehyde and acrolein), ketones, methane and ethane.

Disclaimer:

This Material Safety Data Sheet is offered solely for information, consideration and investigation to determine the suitability of adopting safety and health precautions as may be necessary under the user's specific conditions and processes. All such conditions and processes are beyond the control of Shield Batteries Ltd.

Shield Batteries Ltd reserves the right to revise this Material Safety Data Sheet as information becomes available. The user has the responsibility, by making contact with this company or otherwise, to make certain the Material Safety Data sheet being consulted is the latest issued