


MATERIAL SAFETY DATA SHEET

I. PRODUCT AND COMPANY IDENTIFICATION															
	Chemical Trade Name (as used on label): Lead-Acid Battery Wet, Filled with Acid	Chemical Family/Classification: Electric Storage Battery, SLI or Industrial Battery, UN2794 H.S. Code No. 8507.10													
	Manufacturer's Name/Address: Exide Industries Limited, Exide House, 59E, Chowringhee Road, Kolkata: 700 020	Emergency Telephone Numbers: +91 033-22832636, +91 033-22832171, +91 033-22861860													
II. HAZARDOUS IDENTIFICATION															
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Health</th> <th style="width: 33%;">Environmental</th> <th style="width: 33%;">Physical</th> </tr> </thead> <tbody> <tr> <td> Acute Toxicity – Not listed (NL) Eye Corrosion – Corrosive* Skin Corrosion – Corrosive* Skin Sensitization – NL Mutagenicity/Carcinogenicity – NL Reproductive/Developmental – NL Target Organ Toxicity (Repeated) – NL *as sulfuric acid </td> <td>Aquatic Toxicity – NL</td> <td> NFPA – Flammable gas, hydrogen (during charging) CN - NL EU - NL </td> </tr> </tbody> </table> <p>GHS Label: Lead Acid Battery, Wet</p> <p>Symbols: C (Corrosive)</p> <div style="text-align: center;">  </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Hazard Statements</th> <th style="width: 50%;">Precautionary Statements</th> </tr> </thead> <tbody> <tr> <td>Contact with internal components may cause irritation of severe burns. Irritating to eyes, respiratory system, and skin.</td> <td>Keep out of reach of children. Keep containers tightly closed. Avoid heat, sparks, and open flame while charging batteries. Avoid contact with internal acid.</td> </tr> </tbody> </table>					Health	Environmental	Physical	Acute Toxicity – Not listed (NL) Eye Corrosion – Corrosive* Skin Corrosion – Corrosive* Skin Sensitization – NL Mutagenicity/Carcinogenicity – NL Reproductive/Developmental – NL Target Organ Toxicity (Repeated) – NL *as sulfuric acid	Aquatic Toxicity – NL	NFPA – Flammable gas, hydrogen (during charging) CN - NL EU - NL	Hazard Statements	Precautionary Statements	Contact with internal components may cause irritation of severe burns. Irritating to eyes, respiratory system, and skin.	Keep out of reach of children. Keep containers tightly closed. Avoid heat, sparks, and open flame while charging batteries. Avoid contact with internal acid.
Health	Environmental	Physical													
Acute Toxicity – Not listed (NL) Eye Corrosion – Corrosive* Skin Corrosion – Corrosive* Skin Sensitization – NL Mutagenicity/Carcinogenicity – NL Reproductive/Developmental – NL Target Organ Toxicity (Repeated) – NL *as sulfuric acid	Aquatic Toxicity – NL	NFPA – Flammable gas, hydrogen (during charging) CN - NL EU - NL													
Hazard Statements	Precautionary Statements														
Contact with internal components may cause irritation of severe burns. Irritating to eyes, respiratory system, and skin.	Keep out of reach of children. Keep containers tightly closed. Avoid heat, sparks, and open flame while charging batteries. Avoid contact with internal acid.														
III. INFORMATION ON INGREDIENTS															
		Air Exposure Limits (ug/m³)													
Components	CAS Number	Approximate % by Wt. Or Vol.	OSHA	ACGIH	NIOSH										
Inorganic Lead Compound:															
Lead	7439-92-1	60	50	150	100										
❖ Antimony	7440-36-0	2	500	500	--										
❖ Calcium	7440-70-2	0.2	--	--	--										
❖ Tin	7440-31-5	0.2	2000	2000	--										
Electrolyte (Sulfuric Acid)	7664-93-9	10-30	1000	1000	1000										
Case Material:															
Polypropylene	9003-07-0	5-10	N/A	N/A	N/A										
Polystyrene															
Styrene Acrylonitrile															
Acrylonitrile Butadiene Styrene															
Styrene Butadiene															
Polyvinylchloride															
Polycarbonate, Hard Rubber, Polyethylene	9002-88-4	1-2	N/A	N/A	N/A										
Other:															
Silicon Dioxide (Gel batteries only)			N/A	N/A	N/A										
Sheet Molding Compound		20-40	N/A	N/A	N/A										
(Glass reinforced polyester)															
Inorganic lead and electrolyte (sulfuric acid) are the primary components of every battery manufactured by EIL Industries Limited. Other ingredients may be present dependent upon battery type. Contact your EIL representative for additional information.															
IV PHYSICAL DATA															
Electrolyte:															
Boiling Point:		203 -240° F	Specific Gravity (H₂O = 1):	1.215 to 1.350											
Melting Point:		N/A	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:	N/A											
Appearance and Odor:		Manufactured article; no apparent odor. Electrolyte is a clear liquid with a sharp, penetrating, pungent odor.													
V. FIRE AND EXPLOSION HAZARD DATA															
Flash Point: N/A		Flammable Limits: LEL = 4.1% (Hydrogen Gas) UEL = 74.2%													
Extinguishing Media: CO ₂ ; 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-resistant 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.

VI. STABILITY AND REACTIVITY DATA

Stability: Stable

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.

VII. HEALTH HAZARD DATA /TOXICOLOGICAL INFORMATION**Routes of 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.

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 neurologic diseases.

VIII. 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. Batteries also contain other chemicals known to the State of California to cause cancer. Wash hands after handling.

IX. PRECAUTIONS FOR SAFE HANDLING AND USE**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 unneutralized acid to sewer.

Waste Disposal Methods:

Spent batteries: Send to secondary lead smelter for recycling. Place neutralized slurry into sealed containers and handle as applicable with state and federal regulations. Large water-diluted spills, after neutralization and testing, should be managed in accordance with approved local, state and federal requirements. Consult state environmental agency and/or federal EPA.

PRECAUTIONS FOR SAFE HANDLING AND USE (Cont.)

GHS Label: Lead Acid Battery, Wet

Symbols: C (Corrosive)



Hazard Statements

Contact with internal components may cause irritation of severe burns.
Irritating to eyes, respiratory system, and skin.

Precautionary Statements

Keep out of reach of children. Keep containers tightly closed.
Avoid heat, sparks and open flame while charging batteries.
Avoid contact with internal acid.

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

ANGER -CONTAINS SULFURIC ACID

X. ACCIDENTAL RELEASE MEASURE

PERSONAL PRECAUTIONS: Avoid Contact with Skin. Neutralize any spilled electrolyte with neutralizing agents, such as soda ash, sodium bicarbonate, or very dilute sodium hydroxide solutions. **ENVIRONMENTAL PRECAUTIONS:** Prevent spilled material from entering sewers and waterways. **SPILL CONTAINMENT & CLEANUP METHODS/MATERIALS:** Add neutralizer/absorbent to spill area. Sweep or shovel spilled material and absorbent and place in approved container. Dispose of any non-recyclable materials in accordance with local, state, provincial or federal regulations. Additional Information Lead acid batteries and their plastic cases are recyclable.

XI. CONTROL MEASURES

Engineering Controls:

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

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.

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.

Eye Protection:

Chemical goggles or face shield.

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.

XII. ECOLOGICAL INFORMATION

PERSISTENCE & DEGRADABILITY:

Lead is very persistent in soils and sediments. No data available on biodegradation.

BIOACCUMULATIVE POTENTIAL (Including Mobility):

Mobility of metallic lead between ecological compartments is low. Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants, but very little bioaccumulation occurs through the food chain. Most studies have included lead compounds, not solid inorganic lead.

AQUATIC TOXICITY (Test Results & Comments):

Sulfuric acid: 24-hour LC50, fresh water fish (*Brachydanio rerio*): 82 mg/l
96-hour LOEC, fresh water fish (*Cyprinus carpio*): 22 mg/l (lowest observable effect concentration)

Lead (metal): No data available

Additional Information

- No known effects on stratospheric ozone depletion.
- Volatile organic compounds: 0% (by Volume)
- Water Endangering Class (WGK): NA

XIII. DISPOSAL CONDITION

WASTE DISPOSAL METHOD:

Following local, State/Provincial, and Federal/National regulations applicable to end-of-life characteristics will be the responsibility of the end-user.

XIV. TRANSPORT INFORMATION

GROUND – US-DOT/CAN-TDG/EU-ADR/APEC-ADR:

Proper Shipping Name	Batteries, Wet, Filled with Acid	ID Number	UN2794
Hazard Class	8	Labels	Corrosive
Packing Group	III		

AIRCRAFT – ICAO-IATA:

Proper Shipping Name	Batteries, Wet, Filled with Acid	ID Number	UN2794
Hazard Class	8	Labels	Corrosive
Packing Group	III		

Reference IATA packing instructions 870

VESSEL – IMO-IMDG:

Proper Shipping Name	Batteries, Wet, Filled with Acid	ID Number	UN2794
Hazard Class	8	Labels	Corrosive
Packing Group	III		

Reference IMDG packing instructions P801

Additional Information

Transport requires proper packaging and paperwork, including the Nature and Quantity of goods, per applicable origin/destination/customs points as-shipped.

XV. OTHER REGULATORY INFORMATION

IMDG:

The international transportation of wet and moist charged (moist active) batteries are regulated by the International Maritime Dangerous Goods code (IMDG). These regulations also classify these types of batteries as hazardous material. The batteries must be packed according to IMDG code pages 8120 and 8121.

The shipping information is as follows:

Proper Shipping Name: Lead Acid Batteries, wet, filled with acid	Packing Group: III
Hazardous Class: 8	Label/Placard Required: Corrosive
UN Identification: UN2794	

Some EIL batteries have been tested and meet the non-spillable criteria listed on page 8121. Non-spillable batteries must be packed according to IMDG page 8121.

RCRA:

Spent lead-acid batteries are not regulated as hazardous waste by the EPA when recycled, however state and international regulations may vary.

CERCLA (Superfund) and EPCRA:

(a) Reportable Quantity (RQ) for spilled 100% sulfuric acid under CERCLA (Superfund) and EPCRA (Emergency Planning Community Right to Know Act) is 1,000 lbs. State and local reportable quantities for spilled sulfuric acid may vary.

(b) Sulfuric acid is a listed "Extremely Hazardous Substance" under EPCRA, with a Threshold Planning Quantity (TPQ) of 1,000 lbs.

(c) EPCRA Section 302 notification is required if 1,000 lbs. or more of sulfuric acid is present at one site. The quantity of sulfuric acid will vary by battery type. Contact your EIL representative for additional information.

(d) EPCRA Section 312 Tier 2 reporting is required for batteries if sulfuric acid is present in quantities of 500 lbs. or more and/or if lead is present in quantities of 10,000 lbs. or more.

(e) Supplier Notification: This product contains toxic chemicals, which may be reportable under EPCRA Section 313 Toxic Chemical Release Inventory (Form R) requirements.

For a manufacturing facility under SIC codes 20 through 39, the following information is provide to enable you to complete the required reports:

Toxic Chemical	CAS Number	Approximate % by Weight
Lead	7439-92-1	55-63
Sulfuric Acid/Water Solution	7664-93-9	10-30
*Antimony	7440-36-0	2

If you distribute this product to other manufacturers in SIC Codes 20 through 39, this information must be provided with the first shipment of each calendar year.

The Section 313 supplier notification requirement does not apply to batteries, which are "consumer products".

* Not present in all battery types. Contact your EIL representative for additional information.

TSCA:

Ingredients in EIL batteries are listed in the TSCA Registry as follows:

Components	CAS No.	TSCA Status Listed
Electrolyte: Sulfuric Acid (H ₂ SO ₄)	7664-93-9	Listed
<u>Inorganic Lead Compound:</u>		
Lead (Pb)	7439-92-1	Listed
Lead Oxide (PbO)	1317-36-8	Listed
Lead Sulfate (PbSO ₄)	7446-14-2	Listed
Antimony (Sb)	7440-36-0	Listed
Calcium (Ca)	7440-70-2	Listed
Tin (Sn)	7440-31-5	Listed

CAA:

EIL supports preventative actions concerning ozone depletion in the atmosphere due to emissions of CFC's and other ozone depleting chemicals (ODC's), defined by the USEPA as Class I substances. Pursuant to Section 611 of the Clean Air Act Amendments (CAAA) of 1990, finalized on January 19, 1993, EIL established a policy to eliminate the use of Class I ODC's prior to the May 15, 1993 deadline.

DISCLAIMER:

This Material Safety Data Sheet is based upon information and sources available at the time of preparation or revision date.

The information in the MSDS was obtained from sources which we believe are reliable, but are beyond our direct supervision or control. We make no Warranty of Merchantability, Fitness for any particular purpose or any other Warranty, Expressed or Implied, with respect to such information and we assume no liability resulting from its use. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. It is the obligation of each user of this product to determine the suitability of this product and comply with the requirements of all applicable laws regarding use and disposal of this product. For additional information concerning Exide Industries Ltd.(EIL) products or questions concerning the content of this MSDS please contact your EIL representative.