



MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION		
MANUFACTURER Exide Technologies Industrial Energy 3950 Sussex Avenue Aurora, IL 60504-7932	CHEMICAL/TRADE NAME as used on label)	MARATHON and SPRINTER Valve Regulated Lead Acid Battery
FOR INFORMATION Primary: MACTEC Engineering and Consulting, Inc. Attention: Juliann Cothran (770) 421-3485 Secondary: Environmental, Safety & Health Attention: Eric Murray (800) 523-4622 or Fred Ganster (610) 921-4052	CHEMICAL FAMILY/ CLASSIFICATION DATE ISSUED:	Electrical Storage Battery Monobloc type May 2009
FOR EMERGENCY CHEMTREC (800) 424-9300 24-hour Emergency Response Contact Ask for Environmental Coordinator	CHEMTREC INTERNATIONAL (703) 527-3887 – Collect	

II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

			Approximate Air Exposure Limits ($\mu\text{g}/\text{m}^3$)		
Components	CAS Number	% by Wt.	OSHA	ACGIH	NIOSH
Inorganic components of:					
Lead	7439-92-1	71-76	50	50	50
Copper	7440-50-8	< 0.1	1000	1000	1000
Tin	7440-31-5	0.4-0.6	2000	2000	2000
Electrolyte (sulfuric acid)	7664-93-9	16-18	1000	200	1000
Case Material:					
Polypropylene	9003-07-0	6-7	N/A	N/A	N/A
Talc (Non-Asbestos Type)	14807-96-6	< 1.2	20 mppcf*	2000*	2000
Plate separator material:					
Glass	N/A	2-3	N/A	N/A	N/A

*Respirable dust
 NOTE: Inorganic lead and electrolyte (water and sulfuric acid solution) are the primary components of every battery manufactured by Exide Technologies or its subsidiaries. Other ingredients may be present dependent upon battery type. Polypropylene is the principal case material of automotive and commercial batteries.

III. PHYSICAL DATA

Boiling Point (Electrolyte)	203° F (at 760 mm Hg)		Specific Gravity (H ₂ O=1)	1.230 to 1.350
Melting Point	Not Applicable		Vapor Pressure (mm Hg at 20 °C)	10
Solubility in Water	100%		Vapor Density (AIR=1)	Greater than 1
Evaporation Rate (Butyl acetate=1)	Less Than 1		% Volatiles by Weight	Not Applicable
Appearance and Odor	A clear liquid with a sharp, penetrating, pungent odor. A battery is a manufactured article; no apparent odor.			

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable

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

Extinguishing media: CO₂; foam; dry chemical

Special Fire Fighting Procedures:

Use positive pressure, self-contained breathing apparatus. Beware of acid splatter during water application and wear acid-resistant clothing, gloves, face and eye protection. If batteries are on charge, shut off power to the charging equipment, but, note that strings of series connected batteries may still pose risk of electric shock even when charging equipment is shut down.

Unusual Fire and Explosion Hazards:

In operation or when on charge, batteries generate hydrogen and oxygen gases (hydrogen is highly flammable and oxygen supports combustion). They must always be assumed to contain these gases 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, ensure that adequate ventilation is provided, and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery.

V. REACTIVITY DATA

Stability: Stable Unstable

Conditions to Avoid: Prolonged overcharging and overheating current; sparks and other sources of ignition.

Incompatibility: (materials to avoid)

Electrolyte: Contact of sulfuric acid with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, most metals, carbides, chlorates, nitrates, and picrate, 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, potassium, carbides, sulfides, phosphorus, sulfur and reducing agents.

Hazardous Decomposition Products:

Electrolyte: Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen sulfide, hydrogen.

Lead compounds: Temperatures above the melting point are 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.

Hazardous Polymerization: May Occur Will Not Occur

VI. HEALTH HAZARD DATA

Routes of Entry:

Electrolyte: Harmful by all routes of entry. Under normal conditions of use, sulfuric acid vapors and mist are not generated. Sulfuric acid vapors and mist may be generated when product is overheated, oxidized, or otherwise processed or damaged.

Lead compounds: Under normal conditions of use, lead dust, vapors, and fumes are not generated. Hazardous exposure can occur only when product is heated above the melting point, oxidized or otherwise processed or damaged to create dust, vapor, or fume.

Inhalation:

Electrolyte: 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:

Electrolyte: 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. Acute ingestion should be treated by physician.

Skin Contact/Skin Absorption

Electrolyte: Severe irritation, burns, and ulceration. Sulfuric acid is not readily absorbed through the skin.

Lead compounds: Not readily absorbed through the skin.

Eye Contact:

Electrolyte: Severe irritation, burns, cornea damage, blindness.

Lead compounds: May cause eye irritation.

VI. HEALTH HAZARD DATA (CONTINUED)

Effects of Overexposure - Acute:

Electrolyte: Severe skin irritation, burns, damage to cornea may cause blindness, upper respiratory irritation.

Lead compounds: Headache, fatigue, abdominal pain, loss of appetite, nausea, vomiting, diarrhea, muscular aches and weakness, sleep disturbances, and irritability.

Effects of Overexposure - Chronic:

Electrolyte: Possible erosion of tooth enamel; inflammation of nose, throat, and bronchial tubes, and scarring of the cornea.

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

Carcinogenicity:

Electrolyte: The National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) have classified "strong inorganic acid mist containing sulfuric acid" as a substance that is carcinogenic to humans. This classification does not apply to sulfuric acid solutions in static liquid state or to electrolyte in batteries. Batteries subjected to abusive charging at excessively high currents for prolonged periods of time without vent caps in place may create a surrounding atmosphere of the offensive strong inorganic acid mist containing sulfuric acid.

Lead compounds: 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 electrolyte (water and sulfuric acid solution) with skin may aggravate skin diseases such as eczema and contact dermatitis. Contact of electrolyte (water and sulfuric acid solution) with eyes may damage cornea and/or cause blindness. Lead and its compounds can aggravate some forms of kidney, liver, and neurologic diseases.

Emergency and First Aid Procedures:

Inhalation:

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

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

Ingestion:

Electrolyte: Give large quantities of water; **do not** induce vomiting; consult physician.

Lead compounds: Consult physician immediately.

Skin:

Electrolyte: Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes and do not wear clothes again until cleaned. If acid is splashed on shoes, remove and discard if they contain leather.

Lead compounds: Wash immediately with soap and water. Lead compounds are not readily absorbed through the skin.

Eyes: Electrolyte and Lead compounds: Flush immediately with large amounts of water for at least 15 minutes; consult physician immediately.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Handling and Storage:

Store batteries under roof in cool, dry, well-ventilated areas that are separated from incompatible materials and from activities which may create flames, sparks, or heat. Keep away from metallic objects that could bridge the terminals on a battery and create a dangerous short-circuit. Single batteries pose no risk of electric shock but there may be increasing risk of electric shock from strings of connected batteries exceeding three 12-volt units.

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:

Remove combustible materials and all sources of ignition. Stop flow of material and contain spill by diking with soda ash, etc. Carefully neutralize spill with soda ash, etc. Make certain mixture is neutral then collect residue and place in a drum or other suitable container with a label specifying "contains hazardous waste" (or if uncertain call distributor regarding proper labeling procedures). Dispose of as hazardous waste. If battery is leaking, place battery in a heavy duty plastic bag. Wear acid resistant boots, face shield, chemical splash goggles and acid resistant gloves. **DO NOT RELEASE UNNEUTRALIZED ACID.**

VII. PRECAUTIONS FOR SAFE HANDLING AND USE (CONTINUED)

Waste Disposal Methods:

Sulfuric Acid: Neutralize as described above for a spill, collect residue and place in a container labeled as containing hazardous waste. Dispose of as a hazardous waste. If uncertain about labeling procedures, call your local battery distributor or listed contact. DO NOT FLUSH LEAD CONTAMINATED ACID TO SEWER

Spent batteries: Send to secondary lead smelter for recycling following applicable federal, state, and local regulations.

Precautionary Labeling:

POISON - CAUSES SEVERE BURNS

DANGER - EXPLOSIVE GASES

CORROSIVE - CONTAINS SULFURIC ACID

KEEP AWAY FROM CHILDREN

VIII. CONTROL MEASURES

Engineering Controls and Work Practices:

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

Handle batteries cautiously. Make certain vent caps are on securely. If battery case is damaged, avoid bodily contact with internal components. Wear protective clothing, eye and face protection, when charging or handling batteries. Follow all manufacturers' recommendations when stacking or palletizing. Do not allow metallic materials to simultaneously contact both the positive and negative terminals of the batteries. Use a battery carrier to lift a battery or place hands at opposite corners to avoid spilling acid through the vents. Avoid contact with internal components of the batteries.

Hygiene Practices:

Wash hands thoroughly before eating, drinking or smoking after handling batteries.

Respiratory Protection:

None required under normal conditions. If an overcharging or overheating condition exists and concentrations of sulfuric acid mist are known or suspected to exceed PEL, use NIOSH or MSHA-approved respiratory protection.

Protective Clothing:

None required under normal conditions. If battery case is damaged, use rubber or plastic acid-resistant gloves with elbow-length gauntlet, acid-resistant apron, clothing, and boots.

Eye Protection:

None required under normal conditions. If battery case is damaged, chemical goggles or face shield.

Emergency Flushing:

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

IX. OTHER REGULATORY INFORMATION

NFPA Hazard Rating for sulfuric acid:

Flammability (Red) = 0 Health (Blue) = 3 Reactivity (Yellow) = 2

TRANSPORTATION:

Not regulated pursuant to §173.159(d) of the DOT Hazardous Materials Regulations (49 CFR Parts 171-180) provided each package is marked 'NONSPILLABLE' or 'NONSPILLABLE BATTERY'. For air shipments, reference IATA Dangerous Goods Regulations Special Provision A-67. For ocean shipments, reference IMDG Special Provision #238.

Note: Exide Technologies batteries which have met the test requirements for "nonspillable batteries" in shipment must be protected against short circuit and securely packaged.

Label: NONSPILLABLE

IX. OTHER REGULATORY INFORMATION (CONTINUED)

RCRA: Spent lead-acid batteries are not regulated as hazardous waste when recycled. Spilled sulfuric acid is a characteristic hazardous waste; EPA hazardous waste number D002 (corrosivity).

CERCLA (Superfund) and EPCRA:

- (a) Reportable Quantity (RQ) for spilled 100% sulfuric acid under CERCLA (Superfund) and EPCRA (Emergency Planning and 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. An average automotive/commercial battery contains approximately 5 lbs of sulfuric acid. Contact your Exide representative for additional information.
- (d) EPCRA Section 312 Tier Two reporting is required for non-automotive 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 a toxic chemical or chemicals subject to the reporting requirements of section 313 of (Title) III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

<u>Chemical</u>	<u>CAS</u>	<u>Percent by Weight</u>
Lead (Pb)	7439-92-1	71-76
Electrolyte: Sulfuric Acid	7664-93-9	16-18

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.

Note: The Section 313 supplier notification requirement does not apply to batteries that are "consumer products".

CAA: Exide Technologies 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, Exide established a policy to eliminate the use of Class I ODC's prior to the May 15, 1993 deadline.

TSCA: Each ingredient chemical listed in Section II of this MSDS is also listed on the TSCA Registry.

CANADIAN REGULATIONS: All chemical substances in this product are listed on the CEPA DSL/NDSL or are exempt from list requirements.

CALIFORNIA PROPOSITION 65:

"WARNING: This product contains lead, a chemical known to the State of California to cause cancer, or birth defects or other reproductive harm."

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