The Power Behind Performance

CROWN® BATTERY SINCE 1926

EFFECTIVE DATE: 3/1/13

MATERIAL SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: LEAD ACID BATTERIES: DEEP CYCLE & INDUSTRIAL
UN NUMBER: 2794

MANUFACTURER: CROWN BATTERY MANUFACTURING COMPANY
ADDRESS: P.O. Box 990
1445 Majestic Drive, Fremont Ohio, 43420

EMERGENCY PHONE: (800) 424-9300 (Domestic) | (703) 527-3887 (International)
CHEMTREC PHONE: (800) 424-9300
OTHER CALLS: (419) 334-7181
FAX PHONE: (419) 334-7416

CHEMICAL NAME: Lead acid battery
CHEMICAL FAMILY: NA
CHEMICAL FORMULA: $PbO2 + Pb + 2H2SO4 = 2PbSO4 + 2H2O$

PRODUCT USE: Batteries, wet, filled with acid
PREPARED BY: Jim Anderson

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	RTECS #	OSHA PEL mg/m3	ACGIH TLV mg/m3	% WT
Lead	7439-92-1	OF7525000	.05	.15	50-60
Lead Oxide	1309-60-0	OG0700000	.05	.15	0-5
Lead Sulfate	7446-14-2	OG4375000	.05	.15	0-5
Sulfuric Acid	7664-93-9	WS5600000	1.00	0.20	5-10
Antimony	7440-36-0	CC4025000	0.50	0.50	<1.0
Water	7732-18-5	ZC0110000	N.A.	N.A.	15-25
Inert Components	N.A.	N.A.	N.A.	N.A.	0-5

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY Potential hazards include exposure to electrolyte (battery acid) and lead compounds if battery casing is compromised. Electrolyte is corrosive and can cause chemical burns to exposed skin.

ROUTES OF ENTRY: If the battery casing is compromised, the most probable routes of entry would include eyes, skin, mouth, and inhalation. Lead compounds: 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.

POTENTIAL HEALTH EFFECTS:

EYES: Electrolyte can cause severe irritation, burns, cornea damage, and blindness. Exposure to lead compounds may cause eye irritation.

SKIN: Exposure the electrolyte can cause severe irritation, burns, and ulceration of the skin. Exposure to lead compounds can cause mild irritation depending on exposure time and sensitivity.

INGESTION: Ingestion of electrolyte can cause severe irritation of mouth, throat, esophagus and stomach. Ingestion of Lead compounds may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping. This may lead rapidly to systemic toxicity and must be treated by a physician.

INHALATION: Inhalation of sulfuric acid vapors or mists may cause severe respiratory irritation. Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.

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ACUTE HEALTH HAZARDS:

Electrolyte can cause severe skin irritation, damage to corneas, and upper respiratory irritation.

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

CHRONIC HEALTH HAZARDS:

Electrolyte can cause possible erosion of tooth enamel, as well as 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.

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.

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.

SECTION 3 NOTES: CALIFORNIA 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.

SECTION 4: FIRST AID MEASURES

INHALATION:	In case of inhalation to electrolyte, remove to fresh air immediately. If breathing is difficult, give oxygen. In the case of inhalation of Lead compounds, remove from exposure, gargle, wash nose and lips; consult physician.
INGESTION:	In case of exposure to electrolyte, give large quantities of water. Do not induce vomiting. Consult physician. In the case of ingestion of Lead compounds: Consult physician immediately.
SKIN:	In case of exposure to electrolyte, flush with large amounts of water for at least 15 minutes. Remove contaminated clothing completely, including shoes. In the case of skin contact with Lead compounds: Wash immediately with soap and water.
EYES:	In case of exposure to electrolyte and Lead compounds: Flush immediately with large amounts of clean water or saline for at least 15 minutes; consult with a physician immediately.

SECTION 5: FIRE-FIGHTING MEASURES

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.

Flammable Limits: LEL = 4.1% (Hydrogen Gas in air) ; UEL = 74.2%
Extinguishing media: CO_2; foam; dry chemical

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SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES:

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.

SECTION 7: HANDLING AND STORAGE

Store batteries under roof in cool, dry, well-ventilated areas that are separated from incompatible materials and from activities that may create flames, spark, or heat. Store on smooth, impervious surfaces that are provided with measures for liquid containment in the event of electrolyte spills.

Keep away from metallic objects that could bridge the terminals on a battery and create a dangerous short-circuit. Handle carefully and avoid tipping, which may allow electrolyte leakage. 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.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:	Not necessary under normal conditions of use. Use engineering controls (work station design & ventilation) to reduce exposure below OSHA PEL when potential exposure to battery contents exists. (see section 2).
VENTILATION:	Provide ventilation in areas where batteries are stored and charged. Charging batteries generate heat and potentially flammable hydrogen gas.
RESPIRATORY PROTECTION:	Not required under normal conditions of use. When responding to a spill involving damaged batteries or potential exposure to battery contents, use a NIOSH approved respirator with particulate and acid gas cartridges.
EYE PROTECTION:	Wear safety glasses when handling sealed batteries as a general precaution. If topping off a battery or if potential exposure to battery contents exist, wear splash goggles and or a full face shield.
SKIN PROTECTION:	Wear acid resistant clothing such as apron or splash suit if handling damaged or leaking batteries. Wear chemical & acid resistant gloves when handling electrolyte.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT:	Acid-resistant apron. Under severe exposure or emergency conditions, wear acid-resistant clothing, gloves, and boots.
WORK HYGIENIC PRACTICES:	Ensure availability of eye wash & drench shower if potential exposure to battery contents exists.
EXPOSURE GUIDELINES:	Maintain exposures below OSHA PELs listed in section 2 when potential exposure to battery contents exists.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES – ELECTROLYTE

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
Appearance and Odor:	Manufactured article; no apparent odor.

Electrolyte is a clear liquid with a sharp, penetrating, pungent odor.

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SECTION 10: STABILITY AND REACTIVITY

STABLE	UNSTABLE
X	

CONDITIONS TO AVOID: Prolonged overcharge at high current; sources of ignition.

INCOMPATIBILITY (MATERIALS TO AVOID):

ELECTROLYTE: 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:

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

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.

SECTION 11: TOXICOLOGICAL INFORMATION

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.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: Lead Acid Batteries are one of the most widely recycled products in the world. Please contact Crown Battery for information regarding recycling of batteries in your area.

SECTION 13: DISPOSAL CONSIDERATIONS

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

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.

SECTION 14: TRANSPORT INFORMATION

Transport of wet, spillable batteries is regulated under DOT rules specified in 49 CFR 173.59(e). When transported by highway or rail, electric storage batteries containing electrolyte or corrosive battery fluid are not subject to any other requirements of this subchapter, if all of the following are met:

1. No other hazardous materials may be transported in the same vehicle;
2. The batteries must be loaded or braced so as to prevent damage and short circuits in transit;
3. Any other material loaded in the same vehicle must be blocked, braced, or otherwise secured to prevent contact with or damage to the batteries; and
4. The transport vehicle may not carry material shipped by any person other than the shipper of the batteries.

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If any of these requirements are not met, the batteries must be shipped as a hazardous material, in which case the shipping information would be as follows:

Proper Shipping Name: Batteries, wet, filled with acid, Packing Group: III

Hazardous Class: 8 Label/Placard Required: Corrosive

UN Identification: UN2794

SECTION 15: REGULATORY INFORMATION

CERCLA (Superfund) and EPCRA:

(a) Reportable Quantity (RQ) for spilled 100% sulfuric acid under CERCLA (Superfund) and EPCRA (Energency 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 Crown 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.

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

Toxic Chemical	CAS Number
Lead	7439-92-1
Sulfuric Acid	7664-93-9

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."

SECTION 16: OTHER INFORMATION

OTHER INFORMATION: For questions concerning MSDS, call 419-334-7181

PREPARATION INFORMATION: Prepared by Jim Anderson, Crown Battery, 419-334-7181