

Rolls

SAFETY DATA SHEET – AGM BATTERY

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME:	Absorbed Electrolyte Battery (AGM) / HGL, DC, HGHL Sealed Valve Regulated Lead-Acid Battery		
PRODUCT USE:	Electric Storage Battery	Supplier's Name & Address:	Refer to supplier
MANUFACTURER'S NAME & ADDRESS:	Surrette Battery Co. Ltd. P.O. Box 2020, 1 Station Road Springhill, Nova Scotia, Canada B0M1X0 1 (902) 597-3767	Emergency Phone #:	CANUTEC (613) 996-6666

SECTION II – HAZARDS IDENTIFICATION

GHS CLASSIFICATION:	Specific Target Organ Toxicity (Repeated Exposure) – Category 2 Acute Toxicity (Oral, Dermal, Inhalation) – Category 4 Reproductive Toxicity – Category 1A Skin Corrosion – Category 1A Eye Damage – Category 1 Carcinogenicity (lead) – Category 1B Carcinogenicity (arsenic) – Category 1A Carcinogenicity (acid mist) – Category 1 Flammable Gas – Category 1 Acute Hazards to the Aquatic Environment – Category 1 Chronic Hazards to the Aquatic Environment – Category 1
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SIGNAL WORD: Danger

PICTOGRAMS:



HAZARD STATEMENTS:

H302 – Harmful if swallowed.
 H314 – Causes severe skin burns and eye damage.
 H318 – Causes serious eye damage.
 H332 – Harmful if inhaled.
 H350 – May cause cancer if ingested or inhaled.
 H360 – May damage fertility or the unborn child.
 H373 – Causes damage to central nervous system, blood and kidneys through prolonged or repeated exposure.
 H220 – Extremely flammable gas (Hydrogen).
 H203 – Explosive, fire, blast or projection hazard.
 H410 – Very toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:

P260 – Do not breathe dust/fume/gas/mist/vapors/spray.
 P264 – Wash hands thoroughly after handling.
 P270 – Do not eat, drink or smoke when using this product.
 P280 – Wear protective gloves/protective clothing/eye protection/face protection.
 P271 – Use only outdoors or in a well-ventilated area.

SECTION III – COMPOSITION / INFORMATION ON INGREDIENTS

Substance	CAS Number	% by Wt.
Inorganic Lead / Lead Compounds	7439-92-1	65-75
Tin	7440-31-5	<0.5
Calcium	7440-70-2	<0.2
Sulfuric Acid (40%)	7664-93-9	16-21
Fiberglass Separator	-	5
Acrylonitrile Butadiene Styrene (ABS)	9003-56-9	5-10
Antimony	7440-36-0	2.7-3.3
Arsenic	7440-38-2	<0.2

SECTION IV – FIRST AID MEASURES**INHALATION:**

Sulfuric acid: Remove to fresh air immediately. If breathing is difficult, give oxygen.
Lead compounds: Remove from exposure, gargle, wash nose and lips; consult physician.

SKIN CONTACT:

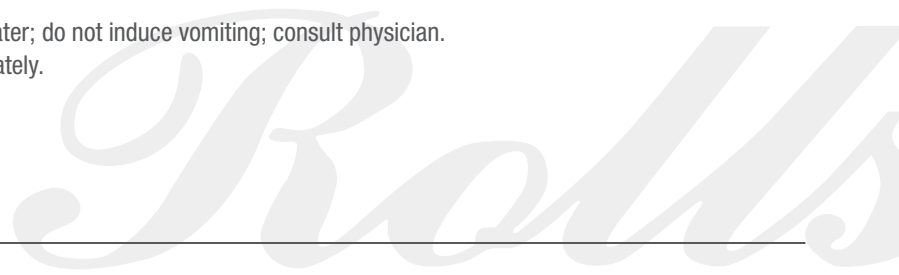
Sulfuric acid: Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes.
Lead compounds: Wash immediately with soap and water.

EYE CONTACT:

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

INGESTION:

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



SECTION V – FIRE FIGHTING MEASURES

COMPOUND:	Hydrogen Gas
FLASH POINT:	Not Applicable
FLAMMABLE LIMITS:	LEL = 4.1% (hydrogen gas in air), UEL = 74.2%
EXTINGUISHING MEDIA:	Dry Chemical, Foam, CO2. Do not use CO2 directly on cells.

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.

HAZARDOUS COMBUSTION PRODUCTS:

If AGM batteries are properly charged they will not release any flammable hydrogen gas. If they are excessively overcharged the safety relief valve can open and release flammable hydrogen gas. They must always be assumed to contain this gas 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 instruction for installation and service. Keep away all sources of gas ignition and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery.

SECTION VI – 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 un-neutralized acid to sewer. Acid must be managed in accordance with approved local, state, and federal requirements. Consult state environmental agency and/or federal EPA.

SECTION VII – HANDLING AND STORAGE

HANDLING: Unless involved in recycling operations, do not breach the casing or empty the contents of the battery. Handle carefully and avoid tipping, which may allow electrolyte leakage. There may be increased risk of electric shock from strings of connected batteries. Keep containers tightly closed when not in use. If battery case is broken, avoid contact with internal components. Place cardboard between layers of stacked batteries to avoid damage and short circuits. Keep away from combustible materials, organic chemicals, reducing substances, metals, strong oxidizers and water.

STORAGE: Store batteries under roof in cool, dry, well-ventilated areas separated from incompatible materials and from activities that may create flames, spark, or heat. Store on smooth, impervious surfaces 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.

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 when 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.

SECTION VII – EXPOSURE CONTROLS AND PERSONAL PROTECTION

EXPOSURE LIMITS (mg / m3):

Ingredient	OSHA PEL	ACGIH REL	US NIOSH
Lead, inorganic	0.05	0.05	0.05
Antimony	0.5	0.5	0.5
Tin	2	2	2
Arsenic	0.01	0.01	0.01
Sulfuric acid	1	0.2	0.2

RESPIRATORY PROTECTION: None required under normal conditions. When concentrations of sulfuric acid mist are known to exceed PEL, use NIOSH or MSHA-approved respiratory protection.

ENGINEERING CONTROLS: Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid-resistant. Handle batteries cautiously, do not tip to avoid spills. 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 filling, charging, or handling batteries. Charge batteries in areas with adequate ventilation. General dilution ventilation is acceptable.

SKIN PROTECTION: Rubber or plastic acid-resistant gloves with elbow-length gauntlet. Acid-resistant apron. Under severe exposure or emergency conditions, wear acid-resistant clothing, gloves, and boots.

EYE PROTECTION: Chemical splash goggles or face shield.

OTHER PROTECTIVE EQUIPMENT: 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. Chemically impervious apron and face shield recommended when adding water or electrolyte to batteries. Wash hands after handling.

SECTION IX – PHYSICAL AND CHEMICAL PROPERTIES

MANUFACTURED ARTICLE

Appearance: An opaque case and sealed cover fitted with side or top terminals and vent caps, odorless.

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
pH:	Less than 1	Flash Point:	Below room temperature (as hydrogen gas)
LEL (Lower Explosive Limit)	4% (as hydrogen gas)	UEL (Upper Explosive Limit)	74% (as hydrogen gas)
Appearance and Odor:	Manufactured article; no apparent odor. Electrolyte is a clear liquid with a sharp, penetrating, pungent odor.		

SECTION X – STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS OF REACTIVITY: High temperature, sparks and other sources of ignition. Prolonged overcharge at high current.

INCOMPATIBLE MATERIALS:

Electrolyte (Water And Sulfuric Acid Solution): Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metal, sulfuric 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, halogenated, potassium nitrate, permanganate, peroxides, nascent hydrogen, and reducing agents.

Arsenic Compounds: Strong oxidizers; bromine azide. NOTE: hydrogen gas can react with inorganic arsenic to form the highly toxic gas arsine.

HAZARDOUS DECOMPOSITION PRODUCTS:

Electrolyte (Water And Sulfuric Acid Solution):

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 a strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.

Hazardous

Polymerization:

Will not occur.

SECTION XI – TOXICOLOGICAL INFORMATION

ROUTES OF ENTRY:

Electrolyte

Harmful by all routes of entry.

Lead Compounds

Hazardous exposure can occur only when product is heated above the melting point, oxidized or otherwise processed or damaged to produce dust, vapor or fume. The presence of nascent hydrogen may generate highly toxic arsine gas.

SYMPTOMS:

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.

Skin Contact

Electrolyte:

Severe irritation, burns, and ulceration. Sulfuric acid is not readily absorbed through the skin and is not a dermal sensitizer.

Lead Compounds:

Not absorbed through the skin and not a dermal sensitizer

Eye Contact

Electrolyte:

Severe irritation, burns, cornea damage, blindness.

Lead Compounds:

May cause eye irritation.

Effects of Overexposure (Acute)

Electrolyte:

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. Repeated exposure to lead and lead compounds in the workplace may result in nervous system toxicity. Some toxicologists report abnormal conduction velocities in persons with blood lead levels of 50 µg/100 ml or higher. Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues.

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

ACUTE TOXICITY:

Inhalation LD50:

Electrolyte:	LC50 rat: 375 mg/m ³ ; LC50: guinea pig: 510 mg/m ³
Elemental Lead:	Acute Toxicity Point Estimate = 4500 ppmV (based on lead bullion)
Elemental arsenic:	No data

Oral LD50:

Electrolyte:	rat: 2140 mg/kg
Elemental lead:	Acute Toxicity Estimate (ATE) = 500 mg/kg body weight (based on lead bullion)
Elemental arsenic:	LD50 mouse: 145 mg/kg
Elemental Antimony:	LD50 rat: 100 mg/kg

Additional Health Data: All heavy metals, including the hazardous ingredients in this product, are taken into the body primarily by inhalation and ingestion. Most inhalation problems can be avoided by adequate precautions such as ventilation and respiratory protection covered in Section 8. Follow good personal hygiene to avoid inhalation and ingestion: wash hands, face, neck and arms thoroughly before eating, smoking or leaving the work site. Keep contaminated clothing out of non-contaminated areas, or wear cover clothing when in such areas. Restrict the use and presence of food, tobacco and cosmetics to non-contaminated areas. Work clothes and work equipment used in contaminated areas must remain in designated areas and never taken home or laundered with personal non-contaminated clothing. This product is intended for industrial use only and should be isolated from children and their environment.

The 19th Amendment to EC Directive 67/548/EEC classified lead compounds, but not lead in metal form, as possibly toxic to reproduction. Risk phrase 61: May cause harm to the unborn child, applies to lead compounds, especially soluble forms.

SECTION XII – ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE:

Lead is very persistent in soil and sediments. No data on environmental degradation. Mobility of metallic lead between ecological compartments is slow. Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants but little bioaccumulation occurs through the food chain. Most studies include lead compounds and not elemental lead.

ENVIRONMENTAL TOXICITY:

Aquatic Toxicity:

Sulfuric acid:	24-hr LC50 freshwater fish (Brachydanio rerio)	82 mg/L
	96 hr- LOEC LOEC, freshwater fish (Cyprinus carpio)	22 mg/L
Lead:	48 hr LC50 (modeled for aquatic invertebrates)	<1 mg/L, based on lead bullion
Arsenic:	24 hr LC50, freshwater fish (Carrassius auratus)	>5000 g/L.

Additional Information:

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



SECTION XIII – DISPOSAL CONSIDERATIONS

Spent Batteries:	Send to secondary lead smelter for recycling. Spent lead-acid batteries are not regulated as hazardous waste when recycled. Spilled sulfuric acid is a characteristic hazardous waste; EP hazardous waste number D002 (corrosivity) and D008 (lead).
Electrolyte:	Place neutralized slurry into sealed acid resistant containers and dispose of as hazardous waste, as applicable. 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.

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

SECTION XIV – TRANSPORTATION INFORMATION

All AGM batteries, when transported by ground, air or water are identified as “Battery, electric storage, nonspillable” as they meet test and specification requirements for non-spillable designation.

DOT:
These batteries have been tested and meet the non-spillable criteria listed in 49 CFR 173.159 (a). Non-spillable batteries are excepted from 49 CFR 173.159 requirements, provided that the following criteria are met:

- 1) Batteries must be protected against short circuits, kept upright and securely packaged
- 2) The batteries and their outer packaging must be plainly and durably marked “NON-SPILLABLE” or “NON-SPILLABLE BATTERY”

IATA:
These batteries have been tested and meet the non-spillable criteria listed in IATA Special Provision A67. Non-spillable batteries are excepted from the IATA regulations provided that the following criteria are met:

- 1) Batteries must be protected against short circuits, kept upright and securely packaged
- 2) The batteries and their outer packaging must be plainly and durably marked “NON-SPILLABLE” or “NON-SPILLABLE BATTERY”

IMDG:
These batteries have been tested and meet the non-spillable criteria listed in IMDG Code Special Provision 238. Non-spillable batteries are excepted from the IMDG regulations provided that the following criteria are met:

- 1) Batteries must be protected against short circuits, kept upright and securely packaged
- 2) The batteries and their outer packaging must be plainly and durably marked “NON-SPILLABLE” or “NON-SPILLABLE BATTERY”



SECTION XV – REGULATORY INFORMATION

UNITED STATES:

EPA SARA Title III:

Section 302 EPCRA Extremely Hazardous Substances (EHS): Sulfuric acid is a listed “Extremely Hazardous Substance” under EPCRA, with a Threshold Planning Quantity (TPQ) of 1,000 lbs. EPCRA Section 302 notification is required if 500 lbs or more of sulfuric acid is present at one site (40 CFR 370.10). An average automotive/commercial battery contains approx. 5 lbs of sulfuric acid.

Section 304 CERCLA Hazardous Substances: 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.

Section 311/312 Hazard Categorization: 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.

Section 313 EPCRA Toxic Substances

Supplier Notification: This product contains toxic chemicals that 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 provided to enable you to complete the required reports:

Toxic Chemical	CAS Number	Approximate % by Weight
Lead	7439-92-1	65 - 75
Sulfuric Acid/Water Solution	7664-93-9	16 - 21
Antimony	7440-36-0	2.7 - 3.3
Arsenic	7440-38-2	<0.2
Tin	7440-31-5	<0.5

Note: the Section 313 supplier notification requirement does not apply to batteries that are “consumer products”.

TSCA: TSCA Section 8b – Inventory Status: All chemicals comprising this product are either exempt or listed on the TSCA Inventory.

TSCA Section 12b – Export Notification: If the finished product contains chemicals subject to TSCA Section 12b export notification, they are listed below:

Toxic Chemical	CAS Number
Lead	7439-92-1
Sulfuric Acid/Water Solution	7664-93-9
Antimony	7440-36-0
Arsenic	7440-38-2
Tin	7440-31-5

OSHA: hazardous in accordance with Hazard Communication Act (29CFR1910.1200)

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) and D008 (lead).

State Regulations (US):**California Proposition 65**

The following chemicals identified to exist in the finished product as distributed into commerce are known to the State of California to cause cancer, birth defects, or other reproductive harm:

Toxic Chemical	CAS Number	Approximate % by Weight
Arsenic (as arsenic oxides)	7440-38-2	<0.2
Strong inorganic acid mists including sulfuric acid	7664-93-9	16-21
Lead	7439-92-1	65-75

California Consumer Product Volatile Organic Compound Emissions: This Product is not regulated as a Consumer Product for purposes of CARB/OTC VOC Regulations, as-sold for the intended purpose and into the industrial/Commercial supply chain.

INTERNATIONAL REGULATIONS: Distribution into Quebec to follow Canadian Controlled Product Regulations (CPR) 24(1) and 24(2). Distribution into the EU to follow applicable Directives to the Use, Import/Export of the product as-sold.

SECTION XVI – OTHER INFORMATION

NFPA Hazard Rating for sulfuric acid:

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

Sulfuric acid is water-reactive if concentrated.

Reference Material

International Agency for Research on Cancer (1987), IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Overall Evaluations of Carcinogenicity: An updating of IARC Monographs Volumes 1-42, Supplement 7, Lyon, France.

Ontario Ministry of Labour Regulation 654/86. Regulations Respecting Exposure to Chemical or Biological Agents.

RTECS – Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health.