




Safety Data Sheet

EnergyCell GH Batteries

Section I: Chemical Product and Company Identification		
Product Name:	EnergyCell GH	
Chemical Trade Name (as used on battery)	Non-Spillable Lead-Acid VRLA Pure Lead Battery	
Chemical Family/Classification	Electric Storage Battery	
Manufacturer's Name:	EnerSys Energy Products Inc.	
Address and Telephone:	617 N. Ridgeview Drive Warrensburg, MO 64093-9301	EnerSys Environmental, Health & Safety Department: +1.610.208.1996
North America 24-Hour Emergency (CHEMTREC Domestic):	+1.800.424.9300	
International 24-Hour Emergency (CHEMTREC International):	+1.703.527.3877	

Section II: Hazard Identification		
HEALTH	ENVIRONMENTAL	PHYSICAL
		
Acute Toxicity (Oral/Dermal/Inhalation)	Aquatic Chronic 1	Explosive Chemical, Division 1.3
Skin Corrosion/Irritation	Aquatic Acute 1	
Eye Damage		
Reproductive		
Carcinogenicity (lead compounds)		
Carcinogenicity (acid mist)		
Specific Target Organ Toxicity (repeated exposure)		
Hazard Statements DANGER <ul style="list-style-type: none"> Causes severe skin burns and eye damage. Causes serious eye damage. May damage fertility or the unborn child if ingested or inhaled. Causes damage to central nervous system, blood, and kidneys through prolonged or repeated exposure. May cause cancer if ingested or inhaled. May form explosive air/gas mixture during charging. Extremely flammable gas (hydrogen). Explosive, fire, blast, or projection hazard. 	Precautionary Statements <ul style="list-style-type: none"> Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing, eye protection/face protection. Irritating to eyes, respiratory system, and skin. Causes skin irritation, serious eye damage. Contact with internal components may cause irritation or severe burns. Avoid contact with internal acid. 	

Section II: Composition / Information on Ingredients					
Material	CAS Number	% By Weight	Material	CAS Number	% By Weight
Inorganic Lead Compound			Case Material		
Lead	7439-92-1	45 to 60	Polypropylene	9003-07-0	5 to 10
Lead Dioxide	1309-60-0	15 to 25	Polystyrene	9003-53-6	
Tin	7440-31-5	0.2	Styrene Acrylonitrile	9003-54-7	
			Acrylonitrile Butadiene Styrene	9003-56-9	
Other			Styrene Butadiene	9003-55-8	
Absorbent Glass Mat	—	1 to 2	Polyvinylchloride	9002-86-2	
			Polyphenylene Oxide	25134-01-4	
Electrolyte			Polycarbonate/Polyester Alloy	—	
Sulfuric Acid (H ₂ SO ₄ /H ₂ O)	7664-93-9	10-30	Polycarbonate, Hard Rubber, Polyethylene	9002-88-4	

NOTE: Inorganic lead and electrolyte (sulfuric acid) are the primary components of every battery sold by OutBack. There are no mercury or cadmium containing products present in batteries manufactured by EnerSys Energy Products.

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Section IV: First Aid Measures

Inhalation	Sulfuric Acid	Remove to fresh air immediately. If breathing is difficult, give oxygen. Consult a physician.
	Lead	Remove from exposure, gargle, wash nose and lips; consult physician.
Ingestion	Sulfuric Acid	Give large quantities of water; do not induce vomiting, or aspiration into the lungs may occur and can cause permanent injury or death; consult physician.
	Lead	Consult physician immediately.
Skin Exposure	Sulfuric Acid	Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes. If symptoms persist, seek medical attention. Wash contaminated clothing before reuse. Discard contaminated shoes.
	Lead	Wash immediately with soap and water.
Eye Exposure	Sulfuric Acid and Lead	Flush immediately with large amounts of water for at least 15 minutes while lifting lids. Seek immediate medical attention if eyes have been exposed directly to acid.

Section V: Firefighting Measures

Hydrogen Flammable Limits (% by Volume): Lower Explosion Limit (LEL): 4.1% Upper Explosion Limit (UEL): 74.2% **Flash Point:** N/A

Extinguishing Media

CO₂; foam; dry chemical. Do not use carbon dioxide directly on cells. Avoid breathing vapors. Use appropriate media for surrounding fire.

Special Firefighting Procedures

- If batteries are on charge, shut off power.
- NOTE:** Strings of series-connected batteries may still pose risk of electric shock even when charging equipment is shut down.
- Use positive-pressure, self-contained breathing apparatus.
 - Water applied to electrolyte generates heat and causes it to spatter. Wear acid-resistant clothing, gloves, face and eye protection.

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.

Section VI: Accidental Release Measures

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 non-neutralized acid to sewer. Acid must be managed in accordance with 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.
- Keep vent caps on and cover terminals to prevent short circuits. 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. Use banding or stretch wrap to secure items for shipping.

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. Avoid damage to containers.
- Store and handle only in areas with adequate water supply and spill control.
- Keep away from fire, sparks, and heat. Keep away from metallic objects which 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 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.

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Section VIII: Exposure Controls / Personal Protection

INGREDIENTS (Chemical/Common Names)	Exposure limits are measured in mg/m ³					
	OSHA PEL	ACGIH	US NIOSH	Quebec PEV	Ontario OEL	EU OEL
Lead and Lead Compounds (inorganic)	0.05	0.05	0.05	0.05	0.05	0.15 (b)
Tin	2	2	2	2	2	N.E
Electrolyte (Sulfuric Acid)	1	0.2	1	1	0.2	0.05 (c)
Polypropylene	N.E	N.E	N.E	N.E	N.E	N.E
Polystyrene	N.E	N.E	N.E	N.E	N.E	N.E
Styrene Acrylonitrile	N.E	N.E	N.E	N.E	N.E	N.E
Acrylonitrile Butadiene Styrene	N.E	N.E	N.E	N.E	N.E	N.E
Styrene Butadiene	N.E	N.E	N.E	N.E	N.E	N.E
Polyvinylchloride	N.E	N.E	N.E	N.E	1	N.E
Polycarbonate, Hard Rubber, Polyethylene	N.E	N.E	N.E	N.E	N.E	N.E
Polyphenylene Oxide	N.E	N.E	N.E	N.E	N.E	N.E
Polycarbonate/Polyester Alloy	N.E	N.E	N.E	N.E	N.E	N.E
Absorbent Glass Mat	N.E	N.E	N.E	N.E	N.E	N.E
ABBREVIATIONS N.E.= Not Established OEL = Occupational Exposure Limit	NOTES (b) As inhalable aerosol (c) Thoracic fraction					

Engineering Controls (ventilation)

- Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid-resistant.
- Handle batteries cautiously to avoid spills. Make certain vent caps are on securely. Avoid contact with internal components. Wear protective clothing, eye, and face protection when filling, charging, or handling batteries.
- Do not allow metallic materials to simultaneously contact both the positive and negative terminals of the batteries.
- Charge the batteries in areas with adequate ventilation. General dilution ventilation is acceptable.

Respiratory Protection (NIOSH/MSHA approved)

None required under normal conditions. When concentrations of sulfuric acid mist are known to exceed the PEL (Permissible Exposure Limit), use NIOSH or MSHA-approved respiratory protection.

Skin Protection

- If battery case is damaged, use rubber or plastic acid-resistant gloves with elbow-length gauntlet, acid-resistant apron, clothing, and boots.

Eye Protection

- If battery case is damaged, use chemical goggles or face shield.

Other Protection

- Acid-resistant apron. Under severe exposure emergency conditions, wear acid-resistant clothing and boots.

Section IX: Physical and Chemical Properties

Properties Listed Below are for Electrolyte:			
Boiling Point	203 to 240° F	Specific Gravity (H ₂ O = 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	~1 to 2	Flash Point	Below room temperature (as hydrogen gas)
LEL (Lower Explosive Limit)	4.1% (Hydrogen)	UEL (Upper Explosive Limit)	74.2% (Hydrogen)
Appearance and Odor	Monoblock battery is a manufactured article; no apparent odor. Electrolyte is a clear liquid with a sharp, penetrating, pungent odor.		

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Section X: Stability and Reactivity

Stability: Stable X Unstable _____

This product is stable under normal conditions at ambient temperature.

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.
	Arsenic Compounds	Strong oxidizers; bromine azide. NOTE: Hydrogen gas can react with inorganic arsenic to form highly toxic arsine gas.
Hazardous Decomposition Products	Sulfuric Acid	Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, and hydrogen sulfide.
	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.

Hazardous Polymerization: Will not occur.

Section XI: 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. The presence of nascent hydrogen may generate highly toxic arsine gas.
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. 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 50mcg/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 Group 1 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 Group 2A carcinogen, likely in animals at extreme doses. Per the guidance found in OSHA 29 CFR 1910.1200 Appendix F, this is approximately equivalent to GHS Category 1B. <i>Proof of carcinogenicity in humans is lacking at present.</i>

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	Oral LD50	Electrolyte	Rat: 2140 mg/kg
	Electrolyte	LC50 rat: 37 mg/m ³ LC50 guinea pig: 510 mg/m ³		Elemental Lead	Acute Toxicity Estimate = 500 mg/kg body weight (based on lead bullion)
	Elemental Lead	Acute Toxicity Point Estimate = 4500 ppmV (based on lead bullion)		Elemental Arsenic	LD50 mouse: 145 mg/kg
	Elemental Arsenic	No data		Elemental Antimony	LD50 rat: 100 mg/kg

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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 worksite. 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 be 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	Sulfuric Acid	24-hr LC50, freshwater fish (Brachydanio rerio): 82 mg/L 96 hr- LOEC, freshwater fish (Cyprinus carpio): 22 mg/L
	Lead	48 hr LC50 (modeled for aquatic invertebrates): <1 mg/L, based on lead bullion

Additional Information:

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

Section XIII: Disposal Considerations (United States)

Spent batteries	Spent batteries: Send to secondary lead smelter for recycling. Spent lead-acid batteries are not regulated as hazardous waste when the requirements of 40 CFR Section 266.80 are met. This should be managed in accordance with approved local, state, and federal requirements. Consult state environmental agency and/or federal EPA.
Electrolyte	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.
NOTE: Following local, State/Provincial, and Federal/National regulations applicable to end-of-life characteristics will be the responsibility of the end user.	

Section XIV: Transport Information

U.S. DOT	<ul style="list-style-type: none"> • Excepted from the hazardous materials regulations (HMR) because the batteries meet the requirements of 49 CFR 173.159(f) and 49 CFR 173.159a of the U.S. Department of Transportation's HMR. • Battery and outer package must be marked "NONSPILLABLE" or "NONSPILLABLE BATTERY" • Battery terminals must be protected against short circuits.
IATA Dangerous Goods Regulations DGR	<ul style="list-style-type: none"> • Excepted from the dangerous goods regulations because the batteries meet the requirements of Packing Instruction 872 and Special Provisions A67 of the International Air Transportation Association (IATA) Dangerous Goods Regulations and International Civil Aviation Organization (ICAO) Technical Instructions. • Battery terminals must be protected against short circuits. • The words "NOT RESTRICTED, SPECIAL PROVISION A67" must be provided on an air waybill when air waybill is issued.
IMDG	<ul style="list-style-type: none"> • Excepted from the dangerous goods regulations for transport by sea because the batteries meet the requirements of Special Provision 238 of the International Maritime Dangerous Goods (IMDG CODE). • Battery terminals must be protected against short circuits.

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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 1,000 lbs. or more of sulfuric acid is present at one site (40 CFR 370.10). For more information consult 40 CFR Part 355. The quantity of sulfuric acid will vary by battery type. Contact your OutBack representative for additional information.											
	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. For more information consult 40 CFR 370.10 and 40 CFR 370.40.											
	Section 313 EPCRA Toxic Substances	40 CFR section 372.38 (b) states: If a toxic chemical is present in an article at a covered facility, a person is not required to consider the quantity of the toxic chemical present in such article when determining whether an applicable threshold has been met under § 372.25, § 372.27, or § 372.28 or determining the amount of release to be reported under § 372.30. This exemption applies whether the person received the article from another person or the person produced the article. However, this exemption applies only to the quantity of the toxic chemical present in the article.											
	<p>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:</p> <table border="1"> <thead> <tr> <th>Toxic Chemical</th> <th>CAS Number</th> <th>Approximate % by Weight</th> </tr> </thead> <tbody> <tr> <td>Lead</td> <td>7439-92-1</td> <td>45 to 60</td> </tr> <tr> <td>Electrolyte (Sulfuric Acid / Water)</td> <td>7664-93-9</td> <td>15 to 20</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>0.1 to 0.2</td> </tr> </tbody> </table> <ul style="list-style-type: none"> See 40 CRG Part 370 for more details. 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". 		Toxic Chemical	CAS Number	Approximate % by Weight	Lead	7439-92-1	45 to 60	Electrolyte (Sulfuric Acid / Water)	7664-93-9	15 to 20	Tin	7440-31-5
Toxic Chemical	CAS Number	Approximate % by Weight											
Lead	7439-92-1	45 to 60											
Electrolyte (Sulfuric Acid / Water)	7664-93-9	15 to 20											
Tin	7440-31-5	0.1 to 0.2											
TSCA	Section 8b Inventory Status	All chemicals comprising this product are either exempt or listed on the TSCA Inventory.											
	Section 12b (40 CFR Part 707.60(b))	No notice of export will be required for articles, except PCB articles, unless the Agency so requires in the context of individual section 5, 6, or 7 actions.											
	Section 13 (40 CFR Part 707.20)	No import certification required (EPA 305-B-99-001, June 1999, Introduction to the Chemical Import Requirements of the Toxic Substances Control Act, Section IV.A).											
RCRA	<ul style="list-style-type: none"> Spent lead-acid batteries are subject to streamlined handling requirements when managed in compliance with 40 CFR section 266.80 or 40 CFR part 273. Waste sulfuric acid is a characteristic hazardous waste; EPA hazardous waste number D002 (corrosivity) and D008 (lead). 												
STATE REGULATIONS (U.S.)	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.											
INTERNATIONAL REGULATIONS	<ul style="list-style-type: none"> 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

The information herein is given in good faith, but no warranty, expressed or implied, is made.		Revised: 05/14/2015
NFPA Hazard Rating for Sulfuric Acid	Flammability (Red) = 0 Health (Blue) = 3	Reactivity (Yellow) = 2 Sulfuric acid is water-reactive if concentrated.

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