

MATERIAL SAFETY DATA SHEET TUBULAR RE

Flooded Lead Acid Battery, Filled with Acid

SECTION 1: IDENTIFICATION

Product/Chemical Name: Lead Acid Battery Wet, Filled with Acid	Chemical Family/Classification: Wet / Flooded lead acid storage battery
Other Product Names: Flooded or wet-celled lead acid battery Ca/Ca alloy lead acid battery	Product Use: Electrical storage batteries for industrial, commercial and personal use.
Manufacturer's Name and Address: Discover Energy Corp. Unit 4&5 - 13511 Crestwood Place Richmond BC V6V 2E9 Canada	Emergency Telephone Number: US: INFOTRAC 1.800.535.5053 CN: CHEMTREC 1.800.424.9300

SECTION 2: HAZARDOUS INGREDIENTS

INGREDIENTS (chemical/common names)	CAS NUMBER:	HAZARD CATEGORY	% by WEIGHT:	ACGIH TLV	OSHA PEL/TWA
Lead, Lead Oxide, Lead Sulfate	7439-92-1	Acute-Chronic	70 – 80%	0.15mg/m3	0.05mg/m3
Antimony	7440-36-0	Chronic	0.5-5%	0.5mg/m3	0.5mg/m3
Arsenic	7440-38-2	Acute-Chronic	<0.1	0.2mg/m3	0.01mg/m3
Battery Electrolyte (35% Sulfuric Acid)	7664-93-9	Reactive-Oxidizer	35%	1.0mg/m3	100mg/m3
Polypropylene	9003-07-0	N/A	5-6%	N/A	N/A

SECTION 3: HAZARD IDENTIFICATION

Hazard Statements	Contact with internal components may cause irritation or 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 / gel.	
Emergency Overview	May form explosive air/gas mixture during charging. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin. Prolonged inhalation or ingestion may result in serious damage to health. Pregnant women exposed to internal components may experience reproductive/developmental effects.	
Potential Health Effects	Eyes	Direct contact of internal electrolyte gel with eyes may cause severe burns or blindness.
	Skin	Direct contact of internal electrolyte gel with the skin may cause skin irritation or damaging burns.
	Ingestion	Swallowing this product may cause severe burns to the esophagus and digestive tract and harmful or fatal lead poisoning. Lead ingestion may cause nausea, vomiting, weight loss, abdominal spasms, fatigue, and pain in the arms, legs and joints.
	Inhalation	Respiratory tract irritation and possible long term effects.

Acute Health Hazards	Repeated or prolonged contact may cause mild skin irritation.
Chronic Health Hazards	Lead poisoning if persons are exposed to internal components of the batteries. Lead absorption may cause nausea, vomiting, weight loss, abdominal spasms, fatigue, and pain in the arms, legs and joints. Other effects may include central nervous system damage, kidney dysfunction, and potential reproductive effects. Chronic inhalation of sulfuric acid mist may increase the risk of lung cancer.
Medical Conditions Generally Aggravated By Exposure	Respiratory and skin diseases may predispose one to acute and chronic effects of sulfuric acid and/or lead. Children and pregnant women must be protected from lead exposure. Persons with kidney disease may be at increased risk of kidney failure.
Additional Information	No health effects are expected related to normal use of this product as sold.

SECTION 4: FIRST AID MEASURES

Eye Contact	Flush eyes with large amounts of water for at least 15 minutes. Seek immediate medical attention if eyes have been exposed directly to acid gel.
Skin Contact	Flush affected area(s) with large amounts of water using deluge emergency shower, if available, shower for at least 15 minutes. Remove contaminated clothing. If symptoms persist, seek medical attention.
Ingestion	If swallowed, give large amounts of water. Do NOT induce vomiting or aspiration into the lungs may occur and can cause permanent injury or death.
Inhalation	If breathing difficulties develop, remove person to fresh air. If symptoms persist, seek medical attention.

SECTION 5: FIRE FIGHTING MEASURES

Boiling Point, °F Electrolyte:	2350 F Approx.
Vapor Pressure, mm Hg Electrolyte:	10 mm Hg
Specific Gravity (H₂O)	1.250
pH	Electrolyte <1 %
Volatility (by volume) NA	N/A
Vapor Density	H ₂ (Air =1): 0.069 Electrolyte (Air =1): 3.4
Evaporation Rate	N/A
Appearance & Odor	Battery: Individual cells in white polypropylene case. Lead: gray, metallic, solid. Electrolyte: Liquid, colorless, oily fluid; acid odor when hot or charging battery.
Flash Point (For H₂)	NA
Flammable limits (For H₂)	LEL- 4.1; UEL -74.2
Auto ignition temperature	Hydrogen - 5800 C

Suitable/unsuitable extinguishing media	Dry chemical, carbon dioxide, water, foam. Do not use water on live electrical circuits.
Special fire fighting procedures & protective equipment	Use appropriate media for surrounding fire. Do not use carbon dioxide directly on cells. Avoid breathing vapours. Use full protective equipment (bunker gear) and self-contained breathing apparatus.
Unusual fire and explosion hazards	Batteries evolve flammable hydrogen gas during charging and may increase fire risk in poorly ventilated areas near sparks excessive heat or open flames.
Specific hazards in case of fire	Thermal shock may cause battery case to crack open. Containers may explode when heated.
Additional Information	Firefighting water runoff and dilution water may be toxic and corrosive. May cause adverse environmental impacts.

SECTION 6: ACCIDENTAL RELEASE MEASURES

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. Contact a Discover representative for recycling info.

SECTION 7: HANDLING & STORAGE

Precautions for safe handling/storage	<ul style="list-style-type: none"> • Keep containers tightly closed when not in use. • If battery case is broken, avoid contact with internal components. • Do not handle near heat, sparks, or open flames. • Protect containers from physical damage to avoid leaks and spills. • Place cardboard between layers of stacked batteries to avoid damage and short circuits. • Do not allow conductive material to touch the battery terminals. A dangerous short-circuit may occur and cause battery failure and fire. • Keep away from combustible materials, organic chemicals, reducing substances, metals, strong oxidizers and water.
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SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls/system design	Store and handle in well-ventilated areas. If mechanical ventilation is used, components must be acid resistant
Ventilation	General dilution ventilation is acceptable.
Respiratory protection	Not required for normal condition use. See special firefighting procedures (Section 5)
Eye protection	Wear protective glasses with side shields or goggles.
Skin protection	Wear chemical resistant gloves as a standard procedure to prevent skin contact.
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.
Other protective clothing or equipment	Chemically-impervious apron and face shield recommended when adding water or electrolyte to batteries. Wash Hands after handling.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Industrial/commercial lead acid battery
Odor	Odorless
Physical state	Sulfuric Acid, Liquid; Lead, solid
PH	<1
Boiling point	Lead – 1755°C Electrolyte : 110-112°C
Melting point	Lead 327°C
Freezing point	N/A
Vapor pressure	10 mmHg
Vapor density (air = 1)	> 1
Specific gravity (h2o = 1)	1.21–1.300
Evaporation rate	Not determined
Solubility in water	100% (as sulfuric acid)
Flash point	Below room temperature (as hydrogen gas)
Auto-ignition temperature	N/A
Lower explosive limit (lel)	4% (as hydrogen gas)
Upper explosive limit (uel)	74% (as hydrogen gas)
Partition coefficient	N/A
Viscosity (poise @ 25° c)	N/A

SECTION 10: STABILITY & REACTIVITY

Stability	Industrial/commercial lead acid battery.
Incompatibility (Materials to avoid)	Lead/lead compounds: Potassium, carbides, sulfides, peroxides, phosphorus, sulfur. Battery electrolyte (acid): Combustible materials, strong reducing agents, most metals, carbides, organic materials, chlorates, nitrates, picrates, and fulminates.
Hazardous decomposition	Lead/Lead compounds: Oxides of lead and sulfur Battery electrolyte (acid): Hydrogen, sulfur dioxide, sulfur trioxide.
Hazardous polymerization	Will not occur.
Conditions to avoid	Sparks and other sources of ignition may ignite hydrogen gas. High temperature. Battery electrolyte (acid) will react with water to produce heat. Can react with oxidizing or reducing agents.

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE TOXICITY (test results basis & comments)	
Sulfuric acid	LD ₅₀ , Rat: 21409 mg/kg LC ₅₀ , Guinea pig: 510 mg/m ³
Lead	No data available for elemental lead
SUBCHRONIC/CHRONIC TOXICITY (Test Results And Comments)	Repeated exposure to lead and lead compounds in the workplace may result in nervous system toxicity. Some toxicologists report that abnormal conduction velocities in person 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.
Reproductive Toxicity	Lead is known to cause birth defects in human and animals.
Teratogenicity	Lead is known to cause birth defects in human and animals.
Mutagenicity	Lead has been found to be mutagenic.
Synergistic Effects	Other heavy metals (arsenic, cadmium, mercury) may cause additive toxic effects.

SECTION 12: ECOLOGICAL INFORMATION

Effects Of Materials On Plants Or Animals	Lead and its compounds may cause an adverse effect to animals and plants that come into contact with them.
Effects On Aquatic Life	Lead and its compounds may cause an adverse effect to animals and plants in an aquatic environment that come into contact with them.

SECTION 13: DISPOSAL CONSIDERATIONS

Battery Electrolyte (Acid)	Neutralize as above for a spill, collect residue, and place in a drum or suitable container. Dispose of as a hazardous waste. DO NOT FLUSH LEAD-CONTAMINATED ACID INTO SEWER.
Batteries	Send to lead smelter for reclamation following applicable Canadian, provincial, and local regulations.

SECTION 14: TRANSPORT INFORMATION

	Proper Shipping Name	Hazard Class	ID	Packing Gr.	Label
GROUND: US-DOT / CAN-TDG / EU-ADR / APEC-ADR	Batteries, Wet, Filled with Acid	8	UN2794	III	Corrosive
AIRCRAFT: ICAO-IATA	Batteries, Wet, Filled with Acid	8	UN2794	II	Corrosive
VESSEL: IMO-IMDG	Batteries, Wet, Filled with Acid	8	UN2794	III	Corrosive

SECTION 15: REGULATORY INFORMATION

TSCA (Toxic Substance Control Act) Registry	
Ingredients listed in the TSCA Registry are:	
	Lead
	Lead Oxide
	Lead Sulfate
	Sulfuric Acid

SARA TITLE III (Superfund Amendments and Reauthorization Act)
The contents of this product are toxic chemicals that are subject to the reporting requirements of section 302 and 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40CFR 355 and 372).

CERCLA (Comprehensive Response Compensation, and Liability Act)		
Chemicals present in the product which could require reporting under the statute:		
	Chemical	CAS#
	Lead	7439-92-1
	Sulfuric Acid	7664-93-9

SECTION 16: OTHER INFORMATION

MSDS Preparation Information:	Date Issued: June 1, 2015
DISCLAIMER	The information furnished here is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.