

## SAFETY DATA SHEET

Lead Acid Battery (Gel Electrolyte) - TUBULAR RE | OPzV

### SECTION 1: IDENTIFICATION

<b>Product/Chemical Name:</b> Lead Acid Battery (Gel electrolyte)	<b>Chemical Family/Classification:</b> Battery OPzV type
<b>Other Product Names:</b> Lead acid (gel) battery	<b>Usage:</b> Telecom systems / Monitoring and control systems at power plants and energy stations / Signaling systems at railway stations, airports and seaports / Emergency lighting systems / Data processing systems / Uninterruptible power supply systems (UPS) / RE Systems (solar, wind and hydro-electric) / Automation systems / Military Applications
<b>Manufacturer/Supplier's Name and Address:</b> Discover Energy Corp. 880-999 West Broadway Vancouver, BC, V5Z 1K5, Canada	<b>Emergency Telephone Number:</b> US: INFOTRAC 1.800.535.5053

### SECTION 2: HAZARD IDENTIFICATION

<b>Hazard Statements</b>	Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin.
<b>Precautionary Statements</b>	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.
<b>Emergency Overview</b>	May form explosive air/gas mixture during charging. Contact with internal components may cause irritation of 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.
<b>Potential Health Effects</b>	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.

<b>Acute Health Hazards</b>	Repeated or prolonged contact may cause mild skin irritation.
<b>Chronic Health Hazards</b>	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.
<b>Medical Conditions Generally Aggravated By Exposure</b>	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.
<b>Additional Information</b>	No health effects are expected related to normal use of this product as sold.

SIGNAL WORD: DANGER



<b>Hazard statement:</b>	<b>Environmental statement:</b>
<ul style="list-style-type: none"> <li>Severe skin burns and eye damage</li> <li>Serious eye damage</li> <li>May damage fertility or the unborn child if ingested or inhaled</li> <li>May cause cancer if ingested or inhaled</li> <li>Causes damage to central nervous system, blood and kidneys through prolonged or repeated exposure</li> <li>May form explosive air/gas mixture during charging</li> <li>Extremely flammable gas (hydrogen)</li> <li>Explosive, fire, blast or projection hazard</li> </ul>	<ul style="list-style-type: none"> <li>Wash thoroughly after handling</li> <li>Do not eat, drink or smoke when using this product</li> <li>Wear protective gloves and clothing, as well as eye and face protection</li> <li>Avoid breathing dust, fume, gas, mist, vapor or spray</li> <li>Outdoors use only or in a well ventilated area</li> <li>Causes skin and respiratory system, as well as serious eye damage</li> <li>Contact with internal components may cause irritation or severe burns</li> <li>Avoid contact with internal acid</li> </ul>

## SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENTS (chemical/common names)	CAS NUMBER:	% by WEIGHT:
Lead	7439-92-1	53 –74%
Lead Oxide	1309-60-0	
Antimony	7440-36-0	<0.001%
Calcium	7440-70-2	<1%
Arsenic	7440-38-2	<1%
Tin	7440-31-5	<1%
Acrylonitrile Butadiene Styrene (ABS)	9003-56-9	5-15%
Other	-	
Electrolyte (Sulfuric Acid)	7664-93-9	20-30%
Silicon dioxide	7631-86-9	1-2%

## SECTION 4: FIRST AID MEASURES

<b>Eye Contact</b>	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.
<b>Skin Contact</b>	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.
<b>Ingestion</b>	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.
<b>Inhalation</b>	If breathing difficulties develop, remove person to fresh air. If symptoms persist, seek medical attention.

## SECTION 5: FIRE FIGHTING MEASURES

<b>Suitable/unsuitable extinguishing media</b>	Dry chemical, carbon dioxide, water, foam. Do not use water on live electrical circuits.
<b>Special fire fighting procedures &amp; protective equipment</b>	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.
<b>Unusual fire and explosion hazards</b>	Batteries evolve flammable hydrogen gas during charging and may increase fire risk in poorly ventilated areas near sparks excessive heat or open flames.
<b>Specific hazards in case of fire</b>	Thermal shock may cause battery case to crack open. Containers may explode when heated.
<b>Additional Information</b>	Firefighting water runoff and dilution water may be toxic and corrosive. May cause adverse environmental impacts.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

<b>Personal precautions</b>	Avoid Contact with Skin. Neutralize any spilled electrolyte with neutralizing agents, such as soda ash, sodium bicarbonate, or very dilute sodium hydroxide solutions.
<b>Environmental precautions</b>	Prevent spilled material from entering sewers and waterways.
<b>Spill containment &amp; cleanup Methods/materials</b>	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.
<b>Additional Information</b>	Lead acid batteries and their plastic cases are recyclable. Contact a Discover representative for recycling info.

## SECTION 7: HANDLING & STORAGE

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

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

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical shape and color as supplied</b>	
<b>Specific gravity</b>	1.240 – 1.300 pH<2
<b>Solubility in water (20°C)</b>	Gel electrolyte is not soluble
<b>Appearance and Odor</b>	
<b>Battery</b>	ABS, solid; may be contained within an outer casing and metal terminals
<b>Lead</b>	Gray, metallic, solid; brown/grey oxide
<b>Electrolyte</b>	GEL No apparent odor.

## SECTION 10: STABILITY & REACTIVITY

<b>Stability</b>	Stable under normal temperature conditions.
<b>Incompatibility (Materials to avoid)</b>	Sparks, open flames, keep battery away from strong oxidizers
<b>Hazardous decomposition</b>	Temperatures above the melting point are likely to produce toxic acid fumes, vapor or contact with strong acid or base or the presence of nascent hydrogen may generate highly toxic gas
<b>Hazardous polymerization</b>	Will not occur. Product is stable under conditions described in Section 7
<b>Conditions to avoid</b>	Sparks and other sources of ignition. Prolonged overheating. Deformation Crushing Piercing Disassemble

## SECTION 11: TOXICOLOGICAL INFORMATION

<b>Signs and Symptoms</b>	None, unless battery ruptures. In the event of exposure to internal contents, acid fumes may be very irritating to the eyes and skin
<b>Inhalation</b>	Lung irritant
<b>Skin Contact</b>	Skin irritant
<b>Eye Contact</b>	Eye irritant
<b>Ingestion</b>	Poisoning if swallowed. Tissue damage to throat and gastro/respiratory tract if swallowed
<b>Medical Conditions Generally Aggravated by exposure</b>	In the event of exposure to internal contents, moderate to severe irritation, burning and dryness of the skin may occur.

## SECTION 12: ECOLOGICAL INFORMATION

In most surface water and groundwater, lead forms compounds with anions such as hydroxides, carbonates, sulfates, and phosphates, and precipitates out of the water column. Lead may occur as sorbed ions or surface coatings on sediment mineral particles or may be carried in colloidal particles in surface water. Most lead is strongly retained in soil, resulting in little mobility. Lead may be immobilized by ion exchange with hydrous oxides or clays or by chelation with humic or fulvic acids in the soil. Lead (dissolved phase) is bioaccumulated by plants and animals, both aquatic and terrestrial.

## SECTION 13: DISPOSAL CONSIDERATIONS

<b>Battery Electrolyte (Acid)</b>	Do not dispose as household waste. Follow local and National regulations to dispose. Return for recycling. Neutralize as above for a spill, collect residue, and place in a drum or suitable container. Dispose of as a hazardous waste. <b>DO NOT FLUSH LEAD-CONTAMINATED ACID INTO SEWER.</b>
<b>Batteries</b>	Send to lead smelter for reclamation following applicable regulations.

## SECTION 14: TRANSPORT INFORMATION

Per DOT, ADR/RID, IATA, ICAO and IMDG rules and regulations, SUNLIGHT OPzV Lead Acid batteries are exempt from hazardous classifications as a result of successful completion of the following tests: 1) vibration tests; 2) pressure differential tests; 3) case rupturing tests (no free liquids). The batteries must be shipped in a condition that would protect from short circuits, and be securely packaged so as to withstand conditions normal to transportation

<b>UN No:</b>	“NOT RESTRICTED” Exempted from the requirements because batteries have passed the Vibration and Pressure Differential performance tests for Non-spillable designation.
<b>Proper Shipping Name:</b>	
<b>Class:</b>	
<b>Packing Group:</b>	
<b>Label:</b>	

## SECTION 15: REGULATORY INFORMATION

<b>TSCA (Toxic Substance Control Act) Registry</b>							
Ingredients listed in the TSCA Registry are:							
	Lead						
	Lead Oxide						
	Lead Sulfate						
	Sulfuric Acid						
<b>SARA TITLE III (Superfund Amendments and Reauthorization Act)</b>							
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).							
<b>CERCLA (Comprehensive Response Compensation, and Liability Act)</b>							
Chemicals present in the product which could require reporting under the statute:							
	<table border="1"> <thead> <tr> <th>Chemical</th> <th>CAS#</th> </tr> </thead> <tbody> <tr> <td>Lead</td> <td>7439-92-1</td> </tr> <tr> <td>Sulfuric Acid</td> <td>7664-93-9</td> </tr> </tbody> </table>	Chemical	CAS#	Lead	7439-92-1	Sulfuric Acid	7664-93-9
Chemical	CAS#						
Lead	7439-92-1						
Sulfuric Acid	7664-93-9						

## SECTION 16: OTHER INFORMATION

<b>MSDS Preparation Information:</b>	<b>Date Issued: June 1<sup>st</sup>, 2015. Supersedes all previous versions.</b>
<b>DISCLAIMER</b>	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.