



Firefly Batteries Pvt. Ltd.

Corporate Office: 199, Neelkanth Bungalows,
Behind Delhi Public School, Bopal,
Ahmedabad – 380058, Gujarat, INDIA.

MATERIAL SAFETY DATA SHEET

SECTION I: PRODUCT IDENTIFICATION

Product Identity:

Sealed Microcell Foam Lead Acid Battery

Non-Spillable, wet, filled with acid

Manufacturer:

Firefly Batteries Private Limited

Survey No. 61/20, Opp. Super Gas Plant,

Bavla-Bagodara Highway, Village: Kalyangadh,

Taluka: Bavla, AHMEDABAD – 382 240

Trade Name:

Microcell Foam VRLA Rechargeable Battery

Telephone Number for Information:

+919687673929

SECTION II: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

Component	Chemical Name	Approx. %	OSHA PEL	ACGIH TLV	CAS#
Pb	Lead	35% by weight	0.05 mg/m ³	0.15 mg/m ³	7439-92-1
PbO ₂	Lead Dioxide	18% by weight	0.05 mg/m ³	0.15 mg/m ³	7309-60-0
H ₂ SO ₄	Sulfuric Acid	18% by weight	1 mg/m ³	1 mg/m ³	7664-93-9
C	Carbon	3% by weight	--	10 mg/m ³	7440-44-0

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ECC NO:- AACCE7935MEM001

TIN NO :- 24073804821

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SECTION III: HEALTH HAZARD DATA

Inhalation:

Lead Compounds: Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.

Sulfuric Acid: Inhalation of liquid or mist may produce severe respiratory tract irritation particularly of the mucous membranes. Severe over exposure can be fatal.

Ingestion:

Lead Compounds: Acute ingestion may cause severe cramping, abdominal pain, nausea, vomiting, and diarrhea.

Sulfuric Acid: Ingestion of liquid or mist may produce tissue damage particularly of the mucous membranes. Severe over exposure can be fatal.

Skin Contact:

Lead Compounds: Not absorbed through the skin.

Sulfuric Acid: Severe irritation and burns.

Eye Contact:

Lead Compounds: May cause irritation.

Sulfuric Acid: Severe irritation, permanent eye damage, and burns. Liquids or mists may produce tissue damage particularly of the mucous membranes.

Effects of Overexposure – Acute:

Lead Compounds: Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances, and



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irritability.

Sulfuric Acid: Severe skin irritation, damage to cornea, upper respiratory irritation.

Severe overexposure can be fatal.

Effects of Overexposure – Chronic:

Lead Compounds: Anemia, wrist drop, foot drop, kidney damage, reproductive problems

in males and females.

Sulfuric Acid: Possible erosion of tooth enamel, inflammation of nose, throat, and bronchial tubes. Severe over exposure can be fatal.

Carcinogenicity:

Lead Compounds: Not a known human carcinogen.

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. Sulfuric acid mist is not generated under normal use of this product.

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 Dermatis. Contact of electrolyte (water and sulfuric acid) with eyes may damage the cornea and/or cause blindness. Lead and its compounds can aggravate some forms of kidney, liver and neurologic diseases.

SECTION IV: EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: Immediately remove any contact lenses if present. Flush eyes with water for at least 15 minutes. Seek medical attention immediately.

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Skin Contact: Remove contaminated clothing. Flush with water for at least 15 minutes. Seek medical attention immediately.

Inhalation: Remove to fresh air. If not breathing give artificial respiration. If breathing is difficult give oxygen. Seek medical attention immediately.

Ingestion: Do not induce vomiting. If conscious dilute by drinking water or milk. Do not give anything by mouth to an unconscious person. Seek medical attention immediately.

SECTION V: FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable

Flammable Limits: Hydrogen Gas – Lower 4.10%, Upper 74.20%

Extinguishing Media: CO₂, Dry Chemical or Foam

Special Fire Fighting Procedures:

If batteries are on charge, turn off power. Use positive pressure, self-contained breathing apparatus in fighting fire. Water applied to electrolyte generates heat and causes it to splatter. Wear acid resistant clothing.

Unusual Fire and Explosion Hazards:

Hydrogen and oxygen gas are generated in batteries during normal battery operations or when on charge. Oxygen is combustible and hydrogen is flammable. To avoid risk of fire or explosion, keep sparks or other sources of ignition away from batteries. Do not allow metallic objects to simultaneously come in contact with both the positive and negative terminals of the batteries.

SECTION VI: ACCIDENTAL RELEASE MEASURES

Procedures for Cleanup: Avoid contact with any spilled material. Contain spill, isolate hazard area and deny entry. Limit site access to emergency responders. Neutralize with sodium bicarbonate, soda



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ash, lime or other neutralizing agent. Place battery in suitable container for disposal. Dispose off contaminated material in accordance with applicable local, state and federal regulations. Sodium bicarbonate, soda ash, sand, lime or other neutralizing agents should be kept on-site for spill remediation.

Personal Precautions: Acid resistant aprons, boots and protective clothing. ANSI approved safety glasses with side shield/face shield recommended.

Environmental Precautions: Lead and its compounds and sulfuric acid can pose a severe threat to the environment. Contamination of water, soil and air should be prevented.

SECTION VII: PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case of Broken Battery Case or Electrolyte Leakage:

Neutralize spilled electrolyte and exposed battery parts with soda ash, sodium bicarbonate, lime, etc. Do not use organic or combustible material. Wear acid resistant clothing, boots, gloves, face shield, and proper respiratory protection.

Waste Disposal Information:

Please observe all federal, local, and state regulations regarding the disposal of lead/acid batteries.

Precautions to be taken in Handling, Storing, and Transportation:

Store in cool, dry area away from combustible materials. Store in well ventilated areas.

Other Precautions:

Do not charge in unventilated areas.

SECTION VIII: CONTROL MEASURES / PERSONAL PROTECTIVE EQUIPMENT

Ventilation: Under normal conditions store and handle in well ventilated areas.

Personal Protective Equipment:

Respiratory Protection: None required under normal conditions.

Eye Protection: Wear safety glasses with side shields, goggles, or full face shields.



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Hand Protection: Wear acid resistant gloves.

Protective Clothing: Under severe exposure or emergency conditions wear acid resistant clothing, aprons, and boots.

Work / Hygienic Practices: Do not eat, drink, smoke, or apply cosmetics while handling batteries.

Thoroughly wash hands after handling.

SECTION IX: PHYSICAL / CHEMICAL CHARACTERISTICS

Boiling Point:	Electrolyte 110 – 112°C
Vapor Pressure:	Electrolyte 11.7 mm Hg at 20°C
Vapor Density (Air = 1):	Electrolyte 3.4
Solubility in water:	Lead, Lead Oxide and Lead sulfate are insoluble in water. Sulfuric Acid is 100% soluble in water
Appearance and Odor:	The battery is a solid article with apparent odor. The electrolyte is a clear liquid.
Specific Gravity:	Electrolyte – 1.323

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SECTION X: STABILITY & REACTIVITY DATA

Stability: Stable under normal conditions.

Conditions to Avoid: Sparks and other sources of ignition. Prolonged overcharge.

Incompatibility: Combination of sulfuric acid with combustibles and organic materials may cause fire and explosion. Avoid contact with strong reducing agents and metals.

Hazardous Decomposition: Sulfur oxides, carbon monoxide, carbon dioxide, and hydrogen gas.

Products:

Hazardous Polymerization: Will not occur.

SECTION XI: TOXICOLOGICAL INFORMATION

General: The primary routes of exposure to lead are ingestion or inhalation of dust and fumes.

ACUTE:

Inhalation/Ingestion: Exposure to lead and its compounds may cause headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia and pain in the legs, arms and joints. Kidney damage as well as anemia can occur from acute exposure.

CHRONIC:

Inhalation/Ingestion: Prolonged exposure to lead and its compounds may produce many of the symptoms of short-term exposure and may also cause central nervous system damage, gastrointestinal disturbances, anemia and wrist drop. Symptoms of central nervous system damage include fatigue, headaches, tremors, hypertension, hallucination, convulsions and delirium. Kidney dysfunction and possible injury has also been associated with chronic lead poisoning. Chronic over-exposure to lead has been implicated as a causative agent for the impairment of male and female reproductive capacity, but

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there is at present no substantial proof for this implication. Pregnant women should be protected from excessive exposure. Lead can cross the placental barrier and unborn children may suffer neurological damage or developmental problems due to excessive lead exposure in pregnant women.

SECTION XII: ECOLOGICAL INFORMATION

In most surface water and ground water, 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 be chelation with humic or fulvic acids in the soil. Lead (dissolved phase) is bio-accumulated by plants and animals, both aquatic and terrestrial.

SECTION XIII: WASTE DISPOSAL METHODS

Spent Batteries: Send waste batteries to government approved smelters for recycling

Electrolyte: Place neutralized slurry into sealed acid resistant containers and dispose off 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.

SECTION XIV: TRANSPORTATION INFORMATION

DOT:

Firefly's batteries meets the non-spillable criteria listed in CFR 49, 173.159 (d) (3) (i) and (ii). They fall under UN 2800, Class 8 and packing Group III.

Non-spillable batteries are exempted from CFR 49, Sub-chapter C requirements, provided that the following criteria are met:

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1. The batteries must be protected against short circuits and securely packaged.
2. The batteries and their outer packaging must be plainly and durable marked “NON-SPILLABLE” or “NON-SPILLABLE BATTERY”.

The exception from CFR 49, Subchapter C translates to no proper shipping name, no hazardous class, no UN number, no packaging group and no hazardous labels when transporting a non-spillable battery.

IATA:

Firefly’s VRLA batteries meet the non-spillable criteria listed in IATA Packaging Instruction 872, as well as meeting IATA special provision A67. These batteries are exempted from all IATA regulations provided that the battery terminals are protected against short circuits. The exception from IATA regulations translates to no proper shipping name, no hazardous class, no UN number, no packaging group and no hazardous labels when transporting a non-spillable battery.

*Batteries must be securely packed to prevent short circuiting.

SECTION XV: REGULATORY INFORMATION

NFPA Hazard Rating For Sulfuric Acid (Estimated):

Health (Blue) = 3
Flammability (Red) = 0
Reactivity (Yellow) = 2
Special Hazard = -W-

SECTION XVI: OTHER INFORMATION – NOTICE TO READERS

Notice to Readers – Disclaimer:

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, Firefly Batteries Private Limited does not assume any liability whatsoever for the accuracy or completeness of the

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information contained herein. Users should make their own investigations to determine the suitability of the information for their particular purposes. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. Firefly Batteries Private Limited does not assume liability as a result of the battery's use or application. This product is provided "AS IS" and without warranty of any kind, express or implied, including but not limited to implied warranties of merchantability and fitness and statutory warranty of non-infringement.

MSDS Preparation Date: 17/08/2015

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