

**MATERIAL SAFETY DATA SHEET**

**1. IDENTIFICATION**

**Product** Valve Regulated Lead Acid Batteries  
**Trade name:** SUNLIGHT VRLA BATTERIES  
**Supplier**  
 Name: SYSTEMS SUNLIGHT S.A. (headquarter)  
 Address: 23o klm N.R. Athens-Lamia , 145 65 Agios Stefanos Attika , Greece  
 Phone/Fax: +30 210 6245400 / +30 210 6245409  
 Factory Name: SUNLIGHT MANUFACTURING PLANT  
 Address: 67 200 N. Olvio Xanthi , Greece  
 Phone/Fax: +30 25410 48100 / +30 25410 95446

**2. Composition/Information on Ingredients**

| Ingredient            | Content  | CAS No    |
|-----------------------|----------|-----------|
| Lead                  | 60 - 70% | 7439-92-1 |
| Sulfuric acid         | 15 - 25% | 7664-93-9 |
| Fiberglass separator  | < 5%     | -         |
| Container (ABS or PP) | < 5%     | -         |

**3. HAZARDS IDENTIFICATION**

**Signs and Symptoms of Exposure**

***Acute Hazards***

Do not open battery. Avoid contact with internal components. Internal components include lead and gelatinous electrolyte.

Electrolyte - Electrolyte is corrosive and contact may cause skin irritation and chemical burns. Electrolyte causes severe irritation and burns of eyes, nose and throat. Ingestion can cause severe burns and vomiting.

Lead - Direct skin or eye contact may cause local irritation. Inhalation or ingestion of lead dust or fumes may result in headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia and leg, arm and joint pain.

***Subchronic and Chronic Health Effects***

Electrolyte - Repeated contact with electrolyte causes irritation and skin burns. Repeated exposure to mist may cause erosion of teeth, chronic eye irritation and/or chronic inflammation of the nose, throat and lungs.

Lead – Prolonged exposure may cause central nervous system damage, gastrointestinal disturbances, anemia, wrist-drop and kidney dysfunction. Pregnant women should be protected from excessive exposure to prevent lead from crossing the placental barrier and causing infant neurological disorders.

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### ***Medical Conditions Generally Aggravated by Exposure***

Contact with internal components if battery is broken or opened, then persons with the following medical conditions must take precautions: pulmonary edema, bronchitis, emphysema, dental erosion and tracheobronchitis.

### ***Routes of Entry***

Inhalation – YES , Ingestion – YES , Eye Contact- YES

## 4. FIRST AID MEASURES

|                                 |   |
|---------------------------------|---|
| <b><i>Skin</i></b>              | Wash off skin thoroughly with tap water water for at least 15 minutes. Remove contaminated clothing and wash before reuse. In severe cases obtain medical attention.              |
| <b><i>Eye contact</i></b>       | Immediately flush with plenty of water for at least 15 minutes. Obtain medical attention.   |
| <b><i>Ingestion</i></b>         | Wash out mouth thoroughly with water and give plenty of water to drink. Do not induce vomiting. Obtain medical attention. Never give anything by mouth to an unconscious person   |
| <b><i>Inhalation</i></b>        | Remove to fresh air and provide medical oxygen/CPR if needed, rest and keep warm. In severe cases obtain medical attention.   |
| <b><i>Further treatment</i></b> | All cases of eye contamination, persistent skin irritation and casualties who have swallowed this substance or been affected by breathing its vapours should be seen by a Doctor. |

## 5. FIRE-FIGHTING MEASURES

### ***Special Fire Fighting Procedures***

Batteries burn with difficulty. Do not use water on fires where molten metal is present. Extinguish fire with agent suitable for surrounding combustible materials. Cool exterior of battery if exposed to fire to prevent rupture. The acid mist and vapors generated by heat or fire are corrosive. Use approved self-contained breathing apparatus and full protective equipment operated in positive pressure mode.

### ***Unusual Fire and Explosion Hazards***

Sulfuric acid vapors are generated upon overcharge and polypropylene case failure. Use adequate ventilation. Avoid open flames/sparks/other sources of ignition near battery.

### ***Fiberglass Separator***

Toxic vapors may be released. In case of fire: wear self-contained breathing apparatus.

### ***ABS***

Danger: Vapors may cause Flash Fire. Harmful or Fatal if Swallowed. Vapor Harmful.

### ***PP***

Temperatures over 300 °C (572°F) may release combustible gases. In case of fire: wear positive pressure self-contained breathing apparatus.

***Extinguishing Media*** Class ABC, CO<sub>2</sub>, Halon

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### 6. ACCIDENTAL RELEASE MEASUREMENTS

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

**Personal Precautions:**

| Exposure    | Protection                         | Comments  |
|-------------|------------------------------------|---|
| Skin        | Rubber gloves, Apron, Safety shoes | Protective equipment must be worn if battery is cracked or otherwise damaged. |
| Respiratory | Respirator (for lead)              |   |
| Eyes        | Safety goggles, Face Shield        |   |

**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.

### 7. HANDLING AND STORAGE

**Precautions to be Taken in Handling and Storage**

Store lead/acid batteries with adequate ventilation. Room ventilation is required for batteries utilized for standby power generation. Never recharge batteries in an unventilated, enclosed space.

Store away from reactive materials, open flames and sources of ignition as defined in Section 10 – Stability and Reactivity Data. Store batteries in cool, dry, well-ventilated areas. Batteries should be stored under roof for protection against adverse weather conditions. Avoid damage to containers.

**Other Precautions**

Do not remove vent caps. Follow shipping and handling instructions that are applicable to the battery type. To avoid damage to terminals and seals, do not double-stack batteries.

GOOD PERSONAL HYGIENE AND WORK PRACTICES ARE MANDATORY. Refrain from eating, drinking or smoking in work areas. Thoroughly wash hands, face, neck and arms, before eating, drinking and smoking. Work clothes and equipment should remain in designated lead contaminated areas, and never taken home or laundered with personal clothing. Wash soiled clothing, work clothes and equipment before reuse.

### 8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

**Hand Protection**



Wear rubber or plastic acid resistant gloves (necessary in the event of leakage)

**Respiratory Protection**



None required under normal conditions. Use self-contained breathing apparatus in all fire situations.

**Eye Protection**



Safety glasses with side shields/face shield are recommended during handling.

**Other**



In the event of leakage, wear chemical apron.

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### 9. PHYSICAL & CHEMICAL PROPERTIES

**Boiling Point:** Not Applicable

**Vapor Pressure:** Not Applicable

**Specific Gravity:** 1.250-1.330

**Melting Point:** Not Applicable

**Solubility in water:** 100% soluble (electrolyte)

**Reactivity in Water:** Electrolyte – Water Reactive

**Appearance and Odor:**

**Battery:** Co-polymer polypropylene, solid; may be contained within an outer casing of aluminum or steel. Case has metal terminals.

**Lead:** Gray, metallic, solid; brown/grey oxide

**Electrolyte:** Odorless, liquid absorbed in glass mat material.

No apparent odor.

### 10. STABILITY & REACTIVITY

**Conditions to avoid** Avoid overcharging and smoking, or sparks near battery surface. High temperatures-cases decompose at >320°F. Deform. Mutilate. Crush. Pierce. Disassemble. Recharge. Short circuit.

**Materials to avoid** Sparks, open flames, keep battery away from strong oxidizers.

**Hazardous** Combustion can produce carbon dioxide and carbon monoxide.

**Decomposition Products**

### 11. 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. Chronic over-exposure to lead has been implicated as a causative agent for the impairment of male and female reproductive capacity, but there is at present, no substantiation of the 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.

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### 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.

### 13. DISPOSAL CONSIDERATIONS

Lead-acid batteries are completely recyclable. Return whole scrap batteries to distributor, manufacturer or lead smelter for recycling. For neutralized spills, place residue in acid-resistant containers with sorbent material, sand or earth and dispose of in accordance with local, state and federal regulations for acid and lead compounds. Contact local and/or state environmental officials regarding disposal information.

### 14. TRANSPORT INFORMATION

#### Road & Rail (ADR/RID) & Sea (IMDG)

Exemptive from the requirements because batteries have passed the Vibration and Pressure Differential performance tests for Non spillable designation.

#### Air (IATA)

|                       |                               |
|-----------------------|-------------------------------|
| UN No:                | 2800                          |
| Proper shipping name: | Batteries, wet, non-spillable |
| Class :               | 8                             |
| Packing Group:        |                               |
| Label:                | COROSSIVE                     |

### 15. REGULATORY INFORMATION



#### Risk Phrase

R35 Causes severe burns.

#### Safety Phrases

S1/2 Keep locked up and out of the reach of children.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S30 Never add water to this product

S45 In case of accident or if you feel unwell, seek medical advice immediately.

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**16. Other information**

This information is based on data considered to be accurate, however, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.

This information relates to the specific materials designated and may not be valid for such material used in combination with other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use.

SYSTEMS SUNLIGHT S.A. does not accept liability for any loss or damage that may occur, whether direct, indirect or consequential, from the use of this information.