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|  | Material Safety Data sheet (MSDS) | Control No. | |
| | | Date First | May 16 2008 |
| | | Date Revised | January 2011 |

1. PRODUCT AND COMPANY IDENTIFICATION

- A. PRODUCT NAME : MSB(ESG)/UXL Series Battery
- B. RECOMMENDED USE OF THE CHEMICAL AND RESTRICTIONS ON USE
: Electric Storage Battery.
- C. MANUFACTURER/SUPPLIER/DISTRIBUTOR INFORMATION
MANUFACTURER : Sebang Global Battery CO.,Ltd.
Namsan-dong 601-9, Changwon-city, Gyeongnam
TEL: +82-55-279-9733 FAX: +82-55-282-2658

2. COMPOSITION / INFORMATION ON INGREDIENTS

| <u>Chemical name / Synonym</u> | <u>CAS No. or ID</u> | <u>Content (%)</u> |
|---|----------------------|--------------------|
| Lead | 7439-92-1 | 69 |
| Sulfuric acid / Oil of vitriol | 7664-93-9 | 19 - 22 |
| Silicon Dioxide | 7631-86-9 | 1 - 2 |
| Butadiene-Acrylonitrile-Styrene copolymer / ABS Resin | 9003-56-9 | 7 - 10 |
| Separator | Not available | 3 - 4 |

3. HAZARDS IDENTIFICATION

Do not open battery. Avoid contact with internal components.

- A. EYES : Not a likely route of exposure. If a battery ruptures, direct contact with the liquid or exposure to vapors or mists may cause tearing, redness, swelling, corneal damage and irreversible eye damage. Splashes in the eyes will cause severe burns.
- B. SKIN : Not a likely route of exposure. Direct contact with internal components of a battery can be severely irritating to the skin and may result in redness, swelling, burns and severe skin damage. Skin contact may aggravate an existing dermatitis condition.
- C. INHALATION : Not a likely route of exposure. If a battery ruptures, may be harmful or fatal if inhaled in a confined area. May cause severe irritation and burns of the nose, throat and respiratory tract.
- D. INGESTION : Not a likely route of exposure. Causes serious burns of the mouth or perforation of the esophagus or stomach. May be fatal if swallowed.
- E. CHRONIC TOXICITY : Lead may cause toxic to blood, kidneys, central nervous system (CNS). Repeated or prolonged exposure to lead can produce target organs damage.

4. FIRST AID MEASURES

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- A. EYE : If a battery ruptures, do not rub or scratch exposed eye. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention immediately.
- B. SKIN : If a battery ruptures, do not rub or scratch exposed skin. If liquid get on the skin, immediately flush the contaminated skin with water for at least 15 minutes.
If liquid penetrate through the clothing, immediately remove the clothing and shoes under a safety shower and continue to wash the skin for at least 15 minutes. Get medical attention immediately.
- C. INHALATION : If a battery ruptures, move to fresh air in case of accidental inhalation of mist. If breathing has stopped, perform artificial respiration. If breathing is difficult, give oxygen. Get medical attention as soon as possible.
- D. INGESTION : If solutions of a battery chemicals have been swallowed and the person is conscious, give one glass of water. Vomiting may occur spontaneously, but Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

5. FIRE AND EXPLOSION HAZARD DATA

- A. SUITABLE (AND UNSUITABLE) EXTINGUISHING MEDIA
: Use extinguishing media appropriate for surrounding fire.
: If a battery ruptures, use dry chemical, soda ash, lime, sand or carbon dioxide.
- B. SPECIFIC HAZARDS ARISING FROM THE CHEMICAL
: Lead, lead compounds and sulfuric acid fume may be released during a fire involving the product.
- C. SEPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHTERS
: Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing.
- D. FIRE AND EXPLOSION HAZARD
Not flammable.
: Battery may rupture due to pressure buildup when exposed to excessive heat and may be result in the release of corrosive materials.

6. ACCIDENTAL RELEASE MEASURES

- A. NECESSARY MEASURES AND PROTECTIVE GEAR TO PROTECT HUMANS
: If a battery ruptures, avoid contact with skin, eyes and clothing. Do not touch spilled material. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection).
- B. NECESSARY MEASURES TO PROTECT ENVIRONMENT
: Notify authorities and appropriate federal, state, and local agencies. Prevent the product from spreading into the environment. Avoid direct discharge into drains.
- C. METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

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- Small spills : Collect all released material in a plastic lined metal container. If necessary neutralize the residue with a dilute solution of sodium carbonate. Wash affected area.
- Large spills : Contain liquid using absorbent material, by digging trenches or by building a dike. Absorb with dry earth, sand or other non-combustible material. Neutralize the residue with a dilute solution of sodium carbonate. Dispose of all contaminated materials in accordance with current local regulations.

7. HANDLING AND STORAGE

A. PRECAUTIONS FOR SAFE HANDLING

- : Protect from physical damage.

B. CONDITIONS FOR SAFE STORAGE (INCLUDING ANY INCOMPATIBILITIES)

- : Avoid contact with eyes. Store in a cool, dry, ventilated area away from sources of heat, moisture, incompatibilities, and direct sunlight. Have emergency equipment (for fires, spills, leaks, etc.) readily available.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. OCCUPATIONAL EXPOSURE LIMIT(S), BIOLOGICAL EXPOSURE STANDARD

OSHA-PEL 0.05mg/m³ (Lead), 1mg/m³ (Sulfuric acid)

ACGIH-TLV TWA 0.05mg/m³ (Lead), TWA 0.2mg/m³ (Sulfuric acid)

B. APPROPRIATE ENGINEERING CONTROLS

- : Use local exhaust ventilation if necessary to control airborne mist and vapor.

C. INDIVIDUAL PROTECTION MEASURES

Respiratory protection : If significant mists or aerosols are generated an approved respirator is recommended.
: If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

Eye protection : None required under normal conditions. If a battery ruptures, Wear safety goggles or face shield.

Hand protection : None required under normal conditions. If a battery ruptures, Wear chemical resistant gloves.

Body protection : Use good work and personal hygiene practices to avoid exposure. Consider the provision in the work area of a safety shower and eyewash. Always wash thoroughly after handling chemicals.

9. PHYSICAL AND CHEMICAL PROPERTIES

A. APPEARANCE : Rectangular polypropylene case with metal terminals, may be contained an outer casing of aluminum or steel. (Lead: Gray, metallic)

B. Odor : Characteristics.

C. ODOR THRESHOLD : Not available.

D. pH : Not applicable.



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- E. MELTING POINT : Not applicable.
F. BOILING POINT : Not available.
G. FLASH POINT : Non-flammable.
H. EVAPORATION RATE : Not available.
I. FLAMMABILITY : Not available.
J. VAPOR PRESSURE : Not available.
K. SOLUBILITY : Soluble in water (electrolyte)
L. VAPOR DENSITY : Not available.
M. SPECIFIC GRAVITY : Not available.

10. STABILITY AND REACTIVITY

- A. CHEMICAL STABILITY: Stable at normal temperatures and storage conditions.
B. POSSIBILITY OF HAZARDOUS REACTIONS
: Hazardous polymerization will not occur.
C. CONDITIONS TO AVOID (STATIC DISCHARGE, SHOCK, VIBRATION etc.):
: Overcharging. Sources of ignition. Mechanical impact. Contact with incompatible chemicals.
D. SUBSTANCES TO AVOID
: If a battery ruptures, avoid contact with organic materials and alkaline materials.
E. HAZARDOUS DECOMPOSITION PRODUCTS
: Lead, Lead compounds and sulfuric acid fumes may be released during a fire involving the product.

11. TOXICOLOGICAL INFORMATION

- A. Information on the likely routes of exposure
INHALATION : Corrosive. severe irritation and burns.
INGESTION : Serious burns.
EYES : Tearing, redness, swelling, corneal damage, irreversible eye damage and severe burns.
SKIN : Redness, swelling, burns and severe skin damage.
B. Delayed and immediate effects and also chronic effects from short and long term exposure
Acute toxicity (possible route of exposure)
Oral (LD50): Rat 2140mg/kg (Sulfuric acid), 1530 mg/kg (Phosphoric acid)
Inhalation (LC50): Rat 0.347 mg/L(4hr) (dust/mist)
Skin corrosion/irritation : cat 1
Serious eye damage/irritation : cat 1
Respiratory sensitization : Not available.
Skin sensitization : Not available.

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Carcinogenicity : cat 1B
 ACGIH Group A2, IARC Group1 (sulfuric acid)
 ※ Note: Sulfuric acid mist is not expected under normal use of the product.
 ACGIH Group A3, IARC Group 2B (Lead), IARC Group 3 (ABS Resin)

Germ cell mutagenicity : cat 2
 Reproductive toxicity : Not available.

STOST-single exposure : cat 1
 STOST-repeated exposure : cat 1

12. ECOLOGICAL INFORMATION

- A. Lead Compounds : Not available.
 B. Sulfuric Acid : Lower PH below about 4 would induce fatalities in aquatic life.

13. DISPOSAL CONSIDERATIONS

A. DISPOSAL METHODS

Dispose of in accordance with local, state, and federal regulations. Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

B. PRECAUTIONS (INCLUDING DISPOSAL OF CONTAMINATED CONTAINER OR PACKAGE)

Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. TRANSPORT INFORMATION

All Global's ESG(UXL) series are valve regulated lead acid (VRLA) batteries. GLOBAL's VRLA batteries meet test specifications for "non-spillable electric storage batteries", as required by D.O.T., 49 CFR 173. 159(d), and IMO/IMDG, and ICAO/IATA packing instruction 806 and note A67; therefore, are non-regulated when protected against short circuits, kept upright, and securely packaged. The battery and the outer packaging must be plainly and durably marked "NONSPILLABLE" or "NONSPILLABLE BATTERY".

These batteries meet the requirements contained in the following special provisions.

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|--------------------|---|
| A. Regulatory Body | Special provisions |
| B. U. S. DOT | Unregulated, meets the requirement of 49 CFR 173.159(d) |
| C. IATA / ICAO | Unregulated, meets the requirements of Special Revisions A67 |
| D. IMO IMDG | Unregulated, meets the requirements of Special Revisions #238 |

* Proper Shipping Name : Batteries, wet, non-spillable

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15. REGULATORY INFORMATION

▣ INVENTORIES

EINECS/EU : (EINECS No. 231-100-4(Lead), 231-639-5(Sulfuric acid))

TSCA/US : Listed. (Lead, Sulfuric acid)

ENCs/JAPAN : (ENCs No. 1-527(Lead), 1-430(Sulfuric acid))

AICS/AUSTRALIA : Listed.

DSL/CANADA : Listed.

IECSC/CHINA : Listed.

PICCS/PHILIPPINES : Listed.

KECI/S.KOREA : Listed (KE-21887(Lead)), (KE-32570(Sulfuric acid))

▣ U.S. Federal, Health and Environment) and U.S. Federal, Right-To-Know

CERCLA Section 103 (40 CFR 302.4)

: Lead : 10lb (4.535kg), Sulfuric acid : 1000lb (453.599kg)

EPCRA (SARA Title III) Section 302 (EHS -TPQ)

: Sulfuric acid : 1000lb (453.599kg)

EPCRA (SARA Title III) Section 304 (EHS - Reporting Quantities)

: Sulfuric acid : 1000lb (453.599kg)

EPCRA (SARA Title III) Section 313 - Toxic chemical release reporting

: Sulfuric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)

16. OTHER INFORMATION

A. OTHER INFORMATION

The above information is believed to be correct but does not propose to be all inclusive and shall be used only as a guide. Sebang Global Battery CO.,Ltd. shall not be held liable for any damage resulting from handling or from contact with the above product. Each individual should make a determination as to the suitability of the information for their particular purpose(s). Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product which may not be covered by this MSDS. The user is responsible for full compliance.

GLOBAL BATTERY CO., LTD.