



MATERIAL SAFETY DATA SHEET-2

Revision Date: May 2003

Total : 5 Pages

Section I : Product and Manufacturer Identity

Product Identity :

GEL Battery

Telephone :

Emergency Telephone Number :

+886-2-25810413

Manufacturer's Name and Address :

Kung Long Batteries Industrial Co., Ltd.

No.6, Tzu-Li 3 Rd., Nantou Taiwan, R.O.C.

Customer Service Telephone Number :

+886-2-25810413

Web-site : <http://www.klb.com.tw>

Section II : Hazardous Ingredients / Identity Information

<u>Components</u>	<u>CAS #</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>% (By weight)</u>
Lead	7439-92-1	0.05 mg/m ³	0.15 mg/m ³	45 ~ 60%
Lead Dioxide	1309-60-0	0.05 mg/m ³	0.15 mg/m ³	15 ~ 25%
Sulfuric Acid Electrolyte	7664-93-9	1.00 mg/m ³	1.00 mg/m ³	15 ~ 20%
Non-Hazardous Materials	N/A	N/A	N/A	5 ~ 10%

(The non-hazardous materials include ABS plastic ,glass fiber ,rubber ,copper, benjamin)

Section III : Physical / Chemical Characteristics - Electrolyte

Boiling Point : 110 ~ 112

Vapor Pressure : 21 mm Hg. at 25

Vapor Density (AIR = 1) : Greater than 1

Specific Gravity (H2O = 1) : 1.270 ~ 1.330

Solubility in Water : Sulfuric Acid is 100% soluble in water.

Appearance and Odor : Electrolyte is a white translucent gel; no apparent odor. A battery is a manufactured article consisting of an opaque plastic case; no apparent odor.



MATERIAL SAFETY DATA SHEET-2

Revision Date: May 2003

Section IV : Fire and Explosion Hazard Data

Flash Point : Not Applicable

Flammable Limits : Lower limit 4.10% (Hydrogen gas in air) Upper limit 74.20%

Extinguishing Media : Dry chemical, CO₂, or water spray

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 spatter. Wear acid resistant clothing. Ventilate area well.

Unusual Fire and Explosion Hazards : Hydrogen gas may be produced and may explode if ignited. Remove all sources of ignition.

Section V : Reactivity Data

Stability : Stable under normal conditions

Conditions to Avoid : Avoid shorting. Avoid prolonged over-charging. Use only approved charging methods. Do not charge in gas tight containers.

Section VI : Health Hazard Data

Do not open battery. Avoid contact with internal components. Internal components include lead and gelled electrolyte. Gelled Electrolyte is corrosive and contact may cause skin irritation, chemical burns and severe respiratory irritation.

Effects of Overexposure – Acute :

Acute effects of overexposure to lead compounds are GI (gastrointestinal) upset, loss of appetite, diarrhea, constipation with cramping, difficulty in sleeping and fatigue. Exposure and/or contact with battery electrolyte (acid) may lead to acute irritation of the skin, corneal damage of the eyes if not washed immediately, and irritation of the mucous membranes of the eyes and upper respiratory system, including the lungs.

Effects of Overexposure – Chronic :

Lead and its compounds may cause chronic anemia, damage to the kidneys and nervous system. Lead may also cause reproductive system damage and can affect developing fetuses in pregnant women. Battery electrolyte (acid) may lead to scarring of the cornea and chronic bronchitis, as well as erosion of tooth enamel in mouth breathers in repeated exposures.



MATERIAL SAFETY DATA SHEET-2

Revision Date: May 2003

Potential to cause cancer :

The International Agency for Research on Cancer (IARC) has classified “ strong inorganic acid mist containing sulfuric acid” as a Category 1 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 the battery. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of the product, such as overcharging, may result in the generation of sulfuric acid mist

The IARC study classified lead as an A3 carcinogen. While the agent is carcinogenic in experimental animals at relative high doses, the agent is unlikely to cause cancer in humans except under uncommonly high levels of exposure.

Medical Conditions Generally Aggravated by Exposure :

Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of electrolyte with skin may aggravate skin diseases such as eczema and contact dermatitis. Contact of electrolyte with eyes may damage cornea and/or cause blindness. Lead and its compounds can aggravate some forms of kidney, liver, and neurologic and diseases.

Emergency and First Aid Procedures :

Battery Electrolyte :

- Inhalation : Remove to fresh air. Give oxygen or artificial respiration if needed. Get immediate medical attention.
- Eye Contact : Flush with plenty of cool running water for at least 15 minutes. Get immediate medical attention.
- Skin Contact : Remove contaminated clothing and flush affected areas with plenty of water for at least 15 minutes.
- Ingestion : Do not induce vomiting. Dilute by giving large quantities of water. If available give several glass of milk. Do not give anything by mouth to an unconscious person. Give CPR if breathing has stopped. Get immediate medical attention.

Section VII : Precautions for Safe Handling and Use

Handling :

No hazard under normal usage as the sulfuric acid is immobilized in a gel structure.



MATERIAL SAFETY DATA SHEET-2

Revision Date: May 2003

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

Avoid contact with acid materials. Use soda ash or lime to neutralize. Flush with water. Dispose of clean-up materials as a hazardous waste.

Waste Disposal Method :

Dispose of in accordance with Federal, State and Local Regulations. Do not incinerate. Batteries should be shipped to a reclamation facility for recovery of the metal and plastic components as the proper method of waste management. Contact distributors for appropriate product return procedures.

Other Precautions :

Do not charge in unventilated areas. Do not use organic solvents or other than recommended chemical cleaners on battery.

Section VIII : Control Measures

General :

Normal room ventilation is sufficient during normal use and handling.

Personal Protective Equipment (in the Event of Battery Case Breakage) :

Always wear safety glasses with side shields or full-face shield.

Use rubber or neoprene glove.

Wear acid resistant boots, apron or clothing.

Work / Hygienic Practices :

Remove jewelry, rings, watch and any other metallic objects while working on batteries. All tools should be adequately insulated to avoid the possibility of shorting connections. Do not lay tools on top of battery. Be sure to discharge static electricity from tools and individual person by touching a grounded surface in the vicinity of the batteries, but away from cells. Batteries are heavy. Serious injury can result from improper lifting or installation. Do not lift, carry, install or remove cells by lifting or pulling the terminal posts for safety reasons and because terminal posts and post seals may be damaged. Do not wear nylon clothes or overalls as they can create static electricity. Do keep a fire extinguisher and emergency communications device in the work area.

Section IX : Other Regulatory Information

NEPA Hazard Rating for Sulfuric Acid :

Flammability (Red) = 0

Health (Blue) = 3

Reactivity (Yellow) = 2

Transportation Information



MATERIAL SAFETY DATA SHEET-2

Revision Date: May 2003

Identification and Proper Shipping Name :

“ Gel Batteries, Non-Spillable,”

U.S. DOT :

Batteries meet the requirements of 49 CFR 173.159(d). They do not have an assigned UN number nor do they require additional DOT hazard labeling.

IATA / ICAO :

Batteries meet the requirements of Special Provision A67. They are exempt from hazardous goods regulations, and classified as a “non-spillable battery”.

For all modes of transportation, each battery and outer package must be labeled :

“Non-Spillable” or “Non-Spillable GEL Battery”. This label must be visible during transportation.

IMDG:

The international transportation of wet and moist charged (moist active) batteries is regulated by the International Maritime Dangerous Goods code (IMDG) .Some Kung Long Batteries have been tested and meet the non-spillable criteria listed in the IMDG code page 8121. These batteries are excepted from all IMDG code provided that the batteries terminal are protected against short circuits.

California Proposition 65 :

The State of California has determined that certain battery terminals contain lead and lead compounds, chemicals known to the State of California to cause cancer, birth defects and other reproductive harm. **IMPORTANT : WASH HANDS THOROUGHLY AFTER WORKING WITH BATTERIES AND BEFORE EATING, DRINKING OR SMOKING.**

Section X : Additional Information

The Material Safety Data Sheet is supplied for informational purposes only. The information and recommendations contained herein have been compiled from sources believed to be reliable and represent current opinion on the subject. No warranty, guarantee, or representation is made by Kung Long Batteries Industrial Co., Ltd. as to the absolute correctness or sufficiency of any representation contained herein and Kung Long Batteries Industrial Co., Ltd. assumes no responsibility in connection therewith, nor can it be assumed that all acceptable safety measures are contained herein, or that additional measures may not be required under particular or exceptional conditions or circumstances.