

GENERGY SEALED LEAD ACID BATTERY MATERIAL SAFETY DATA SHEET

SECTION 1 – PRODUCT AND MANUFACTURER

Manufacturer	Genergy Battery Co., LTD
Product Name	Sealed Lead Acid Battery (Valve Regulated Lead Acid Battery)
Brand Name	Anda
Address	7 Xinxi Road, RM B209 Languang Technology Building, Nanshan District, Shenzhen, China
Factory Address	666 Gaoxin 2nd Road, Fuzhou City, Jiangxi Province, China
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SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Ingredient	Molecular Formula	Content (about)	CAS No.
Lead	Pb, PbO ₂	60-70	7429-92-1,1309-60-0
Lead Sulfate	Ca	< 0.15	7440-70-2
Lead Dioxide	Sn	< 1	7440-31-5
Sulfuric Acid	H ₂ SO ₄	10-15	7664-93-9
Fiberglass Separator	N/A	5-10	9003-56-9
Container (ABS or PP)	N/A	3-4	N/A

SECTION 3 – HAZARDOUS COMPONENTS

Components	%Wt.	TLV	LD50 Oral	LC50 Inhalation	LC50 Contact
Lead (Pb, PbO, PbSO ₄)	About 70%	0.050mg/m ³	<(500)mg/kg	N/A	N/A
Sulfuric Acid	About 20%	1 mg/m ⁴	2.14mg/kg	N/A	N/A
Fiberglass Separator	About 5%	N/A	N/A	N/A	N/A
Container (ABS or PP)	About 5%	N/A	N/A	N/A	N/A

SECTION 4 – PHYSICAL DATA

Components	Density	Melting Point	Solubility (in H ₂ O)	Odor	Appearance
Lead	11.34	327.4°C	None	None	Silver-Gray Metal
Lead Sulfate	6.2	1170°C	40mg/l (15°C)	None	White Powder
Lead Dioxide	9.4	290°C	None	None	Brown Powder
Sulfuric Acid	About 1.3 (25°C)	About 114°C (Boiling)	100%	Acidic	Clear Colorless Liquid
Fiberglass Separator	N/A	N/A	Slight	Toxic	White Fibrous Glass Membrane
Container (ABS or PP)	N/A	N/A	None	No Odor	Solid Plastics



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SECTION 5 – PROTECTION

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)	A respirator should be worn during reclaim operations if the TLV exceeded
Eyes	Safety goggles, Face shield	In the UK use of this material must be assessed under the COSHH regulations

SECTION 6 – FIRST AID MEASURES

Emergency and First Aid Procedures	Contact with internal components if battery is opened/broken
1. Inhalation	Remove to fresh air and provide medical oxygen / CPR if needed. Obtain medical attention.
2. Eyes	Immediately flush with water for at least 15 mins, hold eyelids open. Obtain medical attention.
3. Skin	Flush contacted area with large amounts of water for at least 15 minutes. Remove contaminated clothing and obtain medical attention if necessary.
4. Ingestion	Do not induce vomiting. If conscious drink large amount of water/milk. Obtain medical attention. Never give anything by mouth to an unconscious person.

SECTION 7 – FLAMMABILITY DATA

Components	Flash Point	Explosive Limits	Comments
Lead	None	None	
Sulfuric Acid	None	None	
Hydrogen	259°C	4% - 74.2%	Emit hydrogen only if over charged (Voltage > 2.4 VPC). To avoid the chance of a fire or explosion, keep sparks and other sources of ignition away from the battery. Extinguishing Media: Dry chemical, Foam, CO ₂
Fiberglass Separator	N/A	N/A	Toxic vapors may be released. In case of fire: wear self-contained breathing apparatus.
ABS	None	N/A	Danger: Vapors may cause Flash Fire. Harmful or Fatal if Swallowed. Vapor Harmful.
PP	None	N/A	Temperatures over 300C (572F) may release combustible gases. In case of fire: wear positive pressure self-contained breathing apparatus.

SECTION 8 – REACTIVITY DATA

Components	Lead/ Lead compounds
Stability	Stable
Incompatibility	Potassium, Carbides, Sulfides, Peroxides, Phosphorus, Sulfurs
Decomposition Products	Oxides of lead and Sulfur
Condition to Avoid	High temperature, sparks and other sources of ignition

Components	Sulfuric Acid
Stability	Stable at all temperature
Polymerization	Will not polymerize
Incompatibility	Reactive metals, strong bases, most organic compounds
Decomposition Products	Sulfuric dioxide, trioxide, hydrogen sulfide, hydrogen
CONDITIONS TO AVOID	Prohibit smoking, sparks, etc. from battery charging area. Avoid mixing acid with other chemicals



SECTION 9 – CONTROL MEASURES

1. 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.
2. 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 industrial batteries.

STEPS TO TAKE IN CASE OF LEAKS OR SPILLS

If Sulfuric Acid is spilled from a battery, neutralize the acid with Sodium Bicarbonate (Baking Soda), Sodium Carbon (Soda Ash), or Calcium Oxide (Lime).

Flush the area with water and discard to the sewage systems. Do not allow un-neutralized acid into the sewage system.

WASTE DISPOSAL METHOD

Neutralized acid may be flushed down the sewer. Spent batteries must be treated as hazardous waste and disposed of according to local state, and federal regulations. A copy of this material safety data must be applied to any scrap dealer or secondary smelter with battery.

ELECTRICAL SAFETY

Due to the battery's low internal resistance and high power density. High levels of short circuit can be developed across the battery terminals. Do not rest tools or cables on the battery. Use insulated tools only.

Follow all installation instruction and diagrams when installing or maintaining battery systems.

SECTION 10 – HEALTH HAZARD DATA

LEAD: The toxic effects of lead are accumulative and slow to appear. It affects the kidneys, reproductive, and central nervous systems. The symptoms of lead overexposure are anemia, vomiting, headache, stomach pain (lead colic), dizziness, loss of appetite, and muscle and joint pain. Exposure to lead from a battery most often occurs during lead reclaim operations through the breathing or ingestion of lead dusts and fumes

THIS DATA MUST BE PASSED TO ANY SCRAP OR SMELTER WHEN A BATTERY IS RESOLD.

SULFURIC ACID: Sulfuric Acid is a strong corrosive. Contact with acid can cause severe burns on the skin and in the eyes. Ingestion of Sulfuric Acid will cause GI tract burns. Acid can be release if the battery case is damaged or if the vents are tampered with.

FIBERGLASS SEPARATOR: Fibrous glass is an irritant of the upper respiratory tract, skin and eyes. For exposure up the 10F/CC use MSA Comfort with type H filter. Above 10F/CC up to 50F/CC use Ultra-Twin with type H filter.
NTP or OSHA does not consider this product carcinogenic.

SECTION 11 – SULFURIC ACID PRECAUTIONS

Stability: Stable substances to be avoided include water, most common metals, organic materials, strong reducing agents, combustible materials, and bases, oxidizing agents. Reacts violently with water - when diluting concentrated acid, carefully and slowly add acid to water, not the reverse. Reaction with many metals is rapid or violent, and generates hydrogen (flammable, explosion hazard).

Inhalation: Acid mist form formation process may cause respiratory irritation, remove from exposure and apply oxygen if breathing is difficult.

Skin Contact: Acid may cause irritation, burns or ulceration. Flush with plenty of soap and water, remove contaminated clothing, and see physician if contact area is large or if blisters form.

Eye Contact: Acid may cause severe irritation, burns cornea damage and blindness. Call physician immediately and flush with water until physician arrives.

Ingestion: Acid may cause irritation of mouth, throat, esophagus and stomach. Call physician. If the patient is conscious, flush mouth with water, have the patient drink milk or sodium bicarbonate solution.

DO NOT GIVE ANYTHING TO AN UNCONSCIOUS PERSON.



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SECTION 12 – TRANSPORTATION REGULATIONS

All GENERGY batteries are identified as “Battery, Electric Storage, Wet, Nonspillable” when transported by air, sea or by land transportation. The battery(s) must be properly packaged with their terminals protected from short circuit. NA or UN numbers do not apply. Orema battery(s) warning label identifies each battery as NONSPILLABLE.

GENERGY seal lead-acid batteries are classified as “Nonspillable” for the purpose of transportation by DOT, and IATA/ICAO as result of passing the Vibration and Pressure Differential Test described in DOT [49 CFR 173.159 (f)] and IATA/ICAO [Special Provision A67]. GENERGY seal lead-acid batteries can be safely transported on deck, or under deck stored on either a passenger or cargo vessel as result of passing the Vibration and Pressure Differential Tests as described in the IMDG regulations(Special Article 238).

To transport these batteries as “non-spillable” they must be shipped in a condition that would protect them from short-circuits and be securely packaged so as to withstand conditions normal to transportation by a consumer, in or out of a device, they are unregulated thus requiring no additional special handling or packaging.

For all modes of transportation, each battery and outer package is labeled “NON-SPILLABLE” per 49 CFR 173.159(f) and 49 CFR 173.159a. If you repackage our batteries either as batteries or as a component of another product you must label the outer package “NON-SPILLABLE” per 49 CFR 173.159(f) and 49 CFR 173.159a.

This product has passed the vibration test, pressure differential test and leakage test at 55°C according to Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations SPESIAL PROVISION 238. It is not restricted to IATA DGR according to special provision A67 and is not restricted to IMDG CODE according to special provision 238.

SECTION 13 – TOXICOLOGICAL INFORMATION

GENERAL: The primary routes of exposures to lead are ingestion 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 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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SECTION 14 – ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Avoid Contact with Skin. Neutralize any spilled electrolyte with neutralizing agents, such as soda ash, sodium bicarbonate, or very dilute sodium hydroxide solutions.

ENVIRONMENTAL PRECAUTIONS:

Prevent spilled material from entering sewers and waterways.

SPILL CONTAINMENT & CLEANUP METHODS/MATERIALS:

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.

Additional Information

Lead acid batteries and their plastic cases are recyclable. Contact Genergy Battery for recycling information.

SECTION 15 – 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 with hydrous oxide 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 16 – 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.

SECTION 17 – OTHER INFORMATION

SOURCES OF INFORMATION:

International Agency for Research on Cancer (1987), IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Overall Evaluations of Carcinogenicity: An updating of IARC Monographs Volumes 1-42, Supplement 7, Lyon, France.
Ontario Ministry of Labour Regulation 654/86. Regulations Respecting Exposure to Chemical or Biological Agents.
RTECS – Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health.

MSDS PREPARATION INFORMATION:

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For and on behalf of
GENERGY BATTERY CO., LIMITED

Y. Lander
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Authorized Signature(s)

DISCLAIMER:

This Material Safety Data Sheet is based upon information and sources available at the time of preparation or revision date. The information in the MSDS was obtained from sources which we believe are reliable, but are beyond our direct supervision or control. We make no Warranty of Merchantability, Fitness for any particular purpose, or any other Warranty, Expressed or Implied, with respect to such information, and we assume no liability resulting from its use. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use of, or disposal of the product. It is the obligation of each user of the product to determine the suitability of this product and comply with the requirements of all applicable laws regarding use and disposal of this product. For additional information concerning products or questions concerning the content of this MSDS, please contact Genergy Battery.

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