



SHENZHEN RITAR POWER CO., LTD

MATERIAL SAFETY DATA SHEET

Product: AGM-GEL COMBINATION BATTERY / SEALED LEAD ACID BATTERY

Description: Batteries, wet, sealed, maintenance-free, non-spill able.

IATA:	Not restricted for air transport-complies Special Revision A67
IMO:	Not classified as of 1922
Required Label	NON-SPILLABLE
Unrestricted U.S.A. shipment. Complies with IATA/ICAO Special Provision A67 for air transport. Recognized by DOT as “Dry Charge”49 CFR 173-159 for surface transport. Classified per MG Amendment 33 as a non-hazardous material for water transport	
RITAR seal lead-acid batteries are classified as “non-spillable” 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(d) and IATA/ICAO <Special Provision A67>.	
RITAR 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 regulations.	
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 device, they are unregulated thus requiring no additional special handling or packaging.	

Hazardous components

Item	% W _t	CSHAPEL (TLV)	LD50 Oral	LD50 Inhalation	LD50 Contact
Lead(Pb,PbO ₂)	70%	0.050mg/m ³	<500mg/kg	<20mg/m ³	n/a
Gel	20%	1mg/m ³	2.135mg/kg	17mg/m ³	130mg/kg
Fiberglass separator	5%	—	—	—	—
ABS (absafil)	5%	—	—	—	—

Physical Data

Component	Density	Melting Points	Solubility in Water	Odor	Appearance
Lead	11.34	327°C	None	None	Grey metal
Lead powder	6.2	107°C	40mg/L(15°C)	None	White powder
Lead dioxide	9.4	290°C	None	None	Brown powder
Gel	1.300(20°C)	N/A	None	None	Colorless solid
Fiberglass Separator	N/A	N/A	None	None	White Membrane
ABS	N/A	N/A	None	None	Solid plastics

Flammability Data

Component	Flashpoint	Explosive limits	Comments
Lead	None	None	
Gel	N/A	None	
Hydrogen		None	
Fiberglass separator	None	N/A	

ABS		N/A	
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.HEALTH HAZARD INFORMATION

Under normal operating conditions, the internal material will not be hazardous to your health. Only internally exposed material during production or case breakage or extreme heat (fire) may be hazardous to your health.

Routes of Entry:

- Skin Contact: Lead powder may cause irritation, burns and/or ulceration.
- Skin Absorption: Not a significant route of entry.
- Eye Contact: Lead powder may cause sever irritation, burns, cornea damage and/or blindness.
- Ingestion: Lead powder may cause irritation of mouth, throat, esophagus and stomach.

Sign and Symptoms of Over Exposures:

Acute Effects:

Over exposure to lead may lead to loss of appetite, constipation, sleeplessness and fatigue.

Chronic Effects:

Lead and its components may cause damage to kidneys and nervous system. Gel and its components may cause lung damage and pulmonary conditions.

Emergency and First Aid Procedures:

- **Inhalation:** Remove from exposure and apply oxygen if breathing is difficult.
- **Skin:** Wash with plenty of soap and water. Remove any contaminated clothing.
- **Eyes:** Flush with plenty of water immediately for at least 15 minutes. Consult a physician.
- **Ingestion:** Consult a physician immediately.

FIRE AND EXPLOSION HAZARD DATA:

Flash Point:

Hydrogen = 259 °C

Auto ignition Temperature:

Hydrogen = 580 °C

Extinguishing Media:

Dry Chemical, foam, CO2

Unusual Fire and Explosion Hazards:

Hydrogen and oxygen gases are produced in the cells during normal battery operation (hydrogen is flammable and oxygen supports combustion). These gases enter the air through the vent caps. To avoid the chance of a fire or explosion, keep sparks and other sources of ignition away from the battery.

REACTIVITY DATA:

Stability:

Stable

Conditions to Avoid: Sparks and other sources of ignition.

Incompatibility: (materials to avoid)

Lead/lead compounds:

Potassium, carbides, sulfides, peroxides, phosphorus.

Hazardous Decomposition Products:

Lead/lead compounds:

Oxides of lead and powder.

CONTROL MEASURES:

Engineering Controls:

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

PERSONAL PROTECTIVE EQUIPMENT:

Respirator:

Protective equipment must be worn if the battery is cracked or otherwise damaged. HEPA respirator is required for maintenance operations. If the PEL is exceeded.

Eye safety: Goggles, face shield.

Electrical safety: Due to the low internal resistance of power batteries and high power density, high voltages are developed across the battery terminals. Do not rest tools or cables on the battery use insulated tools only follow an diagrams when installing or maintaining battery systems

1. Respiratory Protection:

None required under normal handling conditions. During battery formation (high-rate charge condition), lead powder can be generated which may cause respiratory irritation.

2. Eyes and Face:

Chemical splash goggles are preferred. Also acceptable are "visor-gogs" or a chemical face shield worn over safety glasses.

3. Hands, Arms, Body:

Vinyl coated, VC, gauntlet type gloves with rough finish are preferred.

4. Other Special Clothing and Equipment:

Safety shoes are recommended when handling batteries. All footwear must meet requirements of ANSI Z41.1 – Rev. 1972.

5. Electrical safety:

Due to the low internal resistance of power batteries and high power density, high voltages are developed across the battery terminals. Do not rest tools or cables on the battery use insulated tools only follow an diagrams when installing or maintaining battery systems

PRECAUTIONS FOR SAFE HANDLING AND USE:

1. Hygiene Practices:

Following contact with internal battery components, wash hand thoroughly before eating, drinking, or smoking.

2. Respiratory Protection:

Wear safety glasses. Do not permit flames or sparks in the vicinity of battery(s).

3. Protective Measures:

Remove combustible materials and all sources of ignition. Cover spills with soda ash (sodium carbonate) or quicklime (calcium oxide). Mix well. Make certain mixture is neutral then collect residue and place in a drum or other suitable container. Dispose of a hazardous waste.

4. Transportation :

1. Acceptable modes of transport Rail, Road and Water.
2. Batteries must be protected so as to prevent short circuit and must be securely packed .