

# Safety Data Sheet

## GS Yuasa Battery Ltd.

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SDS No. 080F-120619

Product Name(Chemicals name or Merchandise Name) : Valve Regulated Lead-Acid Battery				
<b><u>Identification of substance</u></b>				
	Parts	Materials	Mass proportion	CAS No.
	Plate	Lead	70~80%	7439-92-1
		Lead Compound		-
	Electrolyte	Sulfuric acid of 40~45% density (H <sub>2</sub> SO <sub>4</sub> + H <sub>2</sub> O)	10~20%	7664-93-9
	Container and lid	Synthetic resin(PP)	8~10%	-
<b>Classification of Hazardousness and Poisonous materials</b>				
	Classification name	Classification standard not applicable to batteries.		
	Hazardousness	Charging a battery generates hydrogen and oxygen gases. Exposure of fire to them may catch a fire, resulting in an explosion.		
	Poisonous materials	Exposure of electrolyte to skin or an eye may result in a burn or a loss of eyesight. Lead and lead compounds, chemicals known that there are probably carcinogenic to humans(Listed Group2 in IARC).		
	Effect on Environment	Highly concentrated electrolyte may adversely affect living things such as animals and plants.		
<b>Emergency Measures</b>				
	When electrolyte (mist)is inhaled	Remove from exposure, and have medical treatment.		
	When electrolyte contacts the eyes	Immediately flush the eye sufficiently with water, and have immediate medical treatment.		
	When electrolyte is attached to skin	Immediately wash it down with a large quantity of water, and thoroughly wash the skin with soap. If there is a fear of burn, have immediate medical treatment.		
	When electrolyte is swallowed	Immediately rinse the mouth with a large quantity of fresh water, and drink another large quantity of fresh water. Then, have immediate medical treatment. Do not disgorge the electrolyte or water that has been drunk. Do not try to neutralize.		

<b>Action at the Time of Fire</b>		
	Fire fighting method	Extinguish a fire using a fire extinguisher of dry powder agent, foam agent or non-combustible gas.
<b>Action at The Time of Electrolyte Leak or Outflow</b>		
		Neutralize the leaked electrolyte with soda bicarbonate or slaked lime, and then wash it down with massive amount of water. (At that time, be sure to wear protective goggles, gloves, and gum boots.)
<b>Handling and Storing Precautions</b>		
	Handling	<ul style="list-style-type: none"> <li>• Do not put a fire close to the battery. Do not short it between the terminals.</li> <li>• Charge the battery in a well-ventilated room.</li> </ul>
	Storing	Choose a place that is not exposed to high temperatures, high humidity, wind and rain, direct sunlight, fire, poisonous gasses, droplets, dust generation or ingress, or submersion.
<b>Exposure Inhibiting Device</b>		
Not applicable		
<b>Physical/ Chemical Properties</b>		
	Not applicable to batteries.	
	Materials	<u>Dilute sulfuric acid</u> <u>Lead</u>
	• Outer appearance	Transparent liquid                      Silver white solid
	• Specific gravity	1.30~1.35 (at 20°C)                      11.3
	• Boiling point	Approx. 112°C                      1,740°C
	• Melting point	-40°C or lower                      327°C
	• Freezing point	Approx. -60°C                      -
	Materials	<u>Synthetic resin (PP)</u>
	• Outer appearance	Half transparent milky white Solid
	• Specific gravity	Approx. 0.9
	• Boiling point	-
	• Melting point	Approx. 165°C
	• Freezing point	-
	• Vapor pressure	-
<b>Hazardousness information</b>		
As per "Classification of Hazardousness and Poisonous materials" above.		
<b>Poisonous materials information</b>		
As per "Classification of Hazardousness and Poisonous materials" above.		
<b>Environmental information</b>		
As per "Classification of Hazardousness and Poisonous materials" above.		

<b>Disposing precautions</b>									
Used batteries shall be recycled for reuse in accordance with relative national law and regulations.									
<b>Transporting precautions</b>									
Try to avoid mingling batteries with other substances. Handle with care so that no electrolyte leak occurs by overturning or dropping a battery.									
<b>Applicable laws and regulations</b>									
<ul style="list-style-type: none"> <li>• Poison and Deleterious Substance Control Law : Lead Compound and Sulfuric acid</li> <li>• Labor Safety and Hygiene Law : Lead and Sulfuric acid</li> <li>• Hazardous Materials Storage and Ship Transportation Regulations</li> </ul>									
	<table border="1"> <tr> <td>UN Number</td> <td>2800</td> </tr> <tr> <td>Dangerous Goods</td> <td>8</td> </tr> <tr> <td>Packing Group</td> <td>—</td> </tr> <tr> <td>Special Provision</td> <td>A48, A67, SP238</td> </tr> </table>	UN Number	2800	Dangerous Goods	8	Packing Group	—	Special Provision	A48, A67, SP238
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<b>Electrochemical equation</b>									
Positive electrode : $\text{PbO}_2 + 4\text{H}^+ + \text{SO}_4^{2-} + 2\text{e}^- \rightleftharpoons \text{PbSO}_4 + 2\text{H}_2\text{O}$									
Negative electrode : $\text{Pb} + \text{SO}_4^{2-} \rightleftharpoons \text{PbSO}_4 + 2\text{e}^-$									
Overall reaction : $\text{PbO}_2 + 2\text{H}_2\text{SO}_4 + \text{Pb} \rightleftharpoons 2\text{PbSO}_4 + 2\text{H}_2\text{O}$									