Safety Data Sheet

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SDS No. 076D-180915

Product Name: (Chemicals Name or Merchandise Name) : Lead-Acid Battery

Identification of substance

	Parts	Materials	Mass Proportion	CAS No.
	Plate	Lead	45~65%	7439-92-1
		Lead Compound		-
	Electrolyte	Sulfuric acid of 35～37% density ($H_2SO_4 + H_2O$)	30~45%	7664-93-9
	Container and lid	Synthetic resin(PP)	4~8%	-

Classification of Hazardousness and Poisonous materials

	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.

Emergency Measures

	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.

Action at the Time of Fire			
	Fire fighting method	Extinguish a fire using a fire extinguisher of dry powder agent, foam agent or non-combustible gas.	
Action at The Time of Electrolyte Leak or Outflow			
		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.)	
Handling and Storing Precautions			
	Handling:	• Do not put a fire close to the battery. Do not short it between the terminals. • Charge the battery in a well ventilated room.	
	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.	
Exposure Inhibiting Device **Keep the handling and storing precautions especially during charging when Hydrogen gas and sulfuric acid mist are generated.** **Keep the regulations for export since electrolyte (dilute sulfuric acid) may leak in case the battery is turned, fallen or given a strong impact.**			
Physical/ Chemical Properties			
	Not applicable to batteries.		
	Materials	Dilute sulfuric acid	Lead
	• Outer appearance	Transparent liquid	Silver white solid
	• Specific gravity	1.26～1.28 (at 20℃)	11.3
	• Boiling point	Approx.112℃	1,740℃
	• Melting point	-40℃ or lower	327℃
	• Freezing point	Approx. -60℃	-
	Materials	Synthetic resin(PP)	
	• Outer appearance	Half transparent milky white Solid	
	• Specific gravity	Approx. 0.9	
	• Boiling point	-	
	• Melting point	Approx. 165℃	
	• Freezing point	-	
	• Vapor pressure	-	
Hazardousness information			
As per “Classification of Hazardousness and Poisonous materials” above.			
Poisonous materials information			
As per “Classification of Hazardousness and Poisonous materials” above.			

Environmental information

As per “Classification of Hazardousness and Poisonous materials” above.

Disposing precautions

Used batteries shall be recycled for reuse in accordance with relative national law and regulations.

Transporting precautions

Try to avoid mingling batteries with other substances. Handle with care so that no electrolyte leak occurs by overturning or dropping a battery.

Applicable laws and regulations

• Poison and Deleterious Substance Control Law : Lead Compound and Sulfuric acid

• Pollutant Release and Transfer Register Law : Lead and Lead Compound

• Labor Safety and Hygiene Law : Lead and Sulfuric acid

• Hazardous Materials Storage and Ship Transportation Regulations

	UN Number	2794	
	Dangerous Goods	8	
	Packing Group	-	
	Special Provision	A51	

Electorochemical equation

Positive electrode : $PbO_2 + 4H^+ + SO_4^{2-} + 2e^- \Leftrightarrow PbSO_4 + 2H_2O$

Negative electrode : $Pb + SO_4^{2-} \Leftrightarrow PbSO_4 + 2e^-$

Overall reaction : $PbO_2 + 2H_2SO_4 + Pb \Leftrightarrow 2PbSO_4 + 2H_2O$