

Safety Data Sheet

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SDS No. 082E-120619

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|--|--------------------------------------|--|-----------------|-----------|
| Product Name(Chemicals name or Merchandise Name) : Valve Regulated Lead-Acid Battery | | | | |
| <u>Identification of substance</u> | | | | |
| | Parts | Materials | Mass proportion | CAS No. |
| | Plate | Lead | 70~80% | 7439-92-1 |
| | | Lead Compound | | - |
| | Electrolyte | sulfuric acid of 41~45% density (H ₂ SO ₄ + H ₂ O) | 10~20% | 7664-93-9 |
| | Container and lid | Synthetic resin (PP,ABS) | 8~10% | - |
| | | | | |
| 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 (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. | | |

| 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: | <ul style="list-style-type: none"> • 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 | | | |
| Not applicable | | | |
| Physical/ Chemical Properties | | | |
| | Not applicable to batteries. | | |
| | Materials | <u>Dilute sulfuric acid</u> | <u>Lead</u> |
| | • Outer appearance | Transparent liquid | Silver white solid |
| | • Specific gravity | 1.31~1.35 (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, ABS)</u> | |
| | • Outer appearance | Half transparent milky white or Cream Solid | |
| | • Specific gravity | Approx. 1.0 | |
| | • Boiling point | - | |
| | • Melting point | 110~165°C | |
| | • 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. | | | |

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| 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 | | | |
| <ul style="list-style-type: none"> • Poison and Deleterious Substance Control Law : Lead Compound and Sulfuric acid • Labor Safety and Hygiene Law : Lead and Sulfuric acid • Hazardous Materials Storage and Ship Transportation Regulations | | | |
| | | Valve Regulated Lead-Acid Battery | |
| | | Without Electrolyte (Applicable to Electrolyte) | With Electrolyte |
| | UN Number | 2796 | 2800 |
| | Dangerous Goods | 8 | 8 |
| | Packing Group | II | — |
| | Special Provision | — | A48, A67 |
| Electrochemical equation | | | |
| 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 : $\text{PbO}_2 + 2\text{H}_2\text{SO}_4 + \text{Pb} \rightleftharpoons 2\text{PbSO}_4 + 2\text{H}_2\text{O}$ | | | |