

## ***Lead Sulfation***

Surface charge is the uneven mixture of sulfuric acid and water within the surface of the plates as a result of charging or discharging. It will make a weak battery appear good or a good battery appears bad.

To eliminate the surface charge, use one of the following methods:

- Allow the battery to sit for four to twelve hours to allow for the surface charge to dissipate.
- Apply a load that is 33% of the Ampere-Hour (AH) capacity for five minutes and wait five to ten minutes.
- With a battery load tester, apply a load of at least one half the battery's CCA rating for 15 seconds and wait five to ten minutes.

## ***How to Revive a Sulfated Battery?***

Lead sulfation occurs when a lead sulfate compound is deposited on the lead electrodes of a storage battery; this is a problem if the lead sulfate compound cannot be converted back into charged material and is created when discharged batteries stand for a long time.

When the state-of-charge (SOC) drops below 80%, the plates become coated with a hard and dense layer of lead sulfate, which fill up the pores. The positive plates will be light brown and the negative plates will be dull off-white. Over time, the battery loses capacity and cannot be recharged.

### **1 Light Sulfation**

Apply a constant current from one to two amps for 48 to 120 hours at 14.4 VDC, depending on the electrolyte temperature and capacity of the battery. Cycle (discharge to 50% and recharge) the battery a couple of times and test capacity.

You might have to increase the voltage in order to break down the hard lead sulfate crystals. If the battery gets above 110° F (43.3° C) then stop charging and allow the battery to cool down before continuing.

## **2. Heavy Sulfation**

Replace the electrolyte with distilled water, let stand for one hour, apply a constant current of four amps at 13.8 VDC until there is no additional rise in specific gravity.

Remove the old electrolyte, wash the sediment out, replace with fresh electrolyte, and recharge. If the specific gravity exceeds 1.300, then remove the old electrolyte, wash the sediment out, and start over with distilled water.

If the battery electrolyte rises above 110° F (43.3° C), then stop charging and allow the battery to cool down before continuing. Cycle (discharge to 50% and recharge) the battery a couple of times and test capacity.

The sulfate crystals are more soluble in distilled water than in electrolyte. As they are dissolved, the sulfate is converted back into sulfuric acid and the specific gravity rises. These techniques will only work with some batteries.