

BATTERIES

sulphating batteries

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What is sulphation and how can it be prevented?

The electrolyte inside a lead acid battery is usually in the form of a liquid sulphuric acid. When batteries are left in a discharged condition or are simply not used, the lead plates absorb the acid and a substance called lead sulphate is formed. The sulphate forms an insulating layer on the plates, which increases the internal resistance of the battery and prevents it from drawing or delivering current. It does not kill the battery completely though if it is discovered early enough.

Signs of sulphation

A typical example of a sulphated battery is a vehicle type, which struggles to turn the car over in winter but recharges quickly once the engine starts. The battery generally behaves for the rest of the day only to repeat the performance the following morning.

Performance will drop off from normal with the amount of power delivered, between charges, dropping markedly. In severe cases, after recharge the battery voltage will not recover to normal levels.

For partially sulphated cells, voltage will recover as normal but then will fall quickly as load is placed on it – this is an indication that only part of the plates in the battery are actually working.

How to measure sulphation

The best way to measure sulphation is by use of a hydrometer. This samples the specific gravity (density) of the electrolyte to test how much sulphate is in solution.

When the battery has been “fully charged”, disconnect all loads and chargers and test the specific gravity in each cell

Normal cell:

1.26-1.28 specific gravity depending on temp.

Partially sulphated cell:

Can be as low as 1.20-1.22 specific gravity.



Recovering a sulphated cell

If the battery is partially sulphated (as described above) then it is possible to drive the sulphate ions off the plates by doing a VERY long equalising charge. Please consult with Proven before doing this. Charging time needs to be 10-20 hours at reasonably high current.

Remember prevention is the best cure – regular equalise charges (approx 2 hours) will help to keep your battery in tiptop condition.

Unfortunately, sulphation is the biggest cause of premature cell failure in most applications.



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