



rehabilitation, hospital & home care equipment

BATTERIES AND CHARGERS – technical information

(The information below is more advanced than the information in our brochure "Care of Batteries and Chargers", also on this website).

Lead acid batteries, commonly used in electric wheelchairs, scooters and patient lifters, degrade naturally over 3 to 5 years due to the acid slowly corroding the lead plates. This process occurs whether they are being used or not.

What happens when batteries are not fully and regularly charged?

Lead acid batteries fail prematurely due to a process known as Sulphation. This is where the active material on the battery plate changes into lead sulphate crystals which cannot be converted back into the active material which makes a battery work. This can occur if the battery is left **fully or partially discharged** for a period of time or are not fully charged regularly. Sulphate crystals gradually coat the surface of the battery plates resulting in the battery having less and less energy storage capacity and eventually the battery fails. Many batteries **fail early** because of the Sulphation process.

(As this is not a manufacturing defect but rather a handling and charging problem it is not a cause for a warranty claim).

Some of the common causes of Sulphation are:

1. Insufficient charger size for the batteries.
2. User discontinues charging before batteries are fully charged. (Most "charge complete" lights on chargers only indicate when batteries are about 80% to 95% charged).
3. User **turns off charger but leaves it connected** to the device or vehicle. (Most chargers will actually discharge a battery if they are turned off).
4. User does not regularly charge the batteries. (Lead acid batteries, unlike Ni-Cad batteries, **do not** need to be fully discharged regularly to maintain their capacity).
5. User may not use the device or wheelchair for an extended period of time and the battery is left in a discharged state.

The simplest and easiest way to explain to end users is that **batteries should be charged at all times when the device or vehicle is not in use**. Continuous charging will not harm the battery with the modern switch-mode battery chargers on most new equipment supplied and those serviced by HenryCare).