

Internal explosion within 12V forklift battery

Safety Flash Published on 1 September 2003 Generated on 21 January 2025 IMCA SF 11/03

A forklift battery was found to be flat and it was changed out with a replacement that was held onboard and tested per procedures, the forklift was also function tested and all were working satisfactorily.

What happened?

The following morning the pre-start up checks on the forklift were carried out, and no problems were identified. The forklift operator then attempted to start the engine. As he did this he heard a loud noise from behind him, he immediately switched off the engine, and turned to see vapour and electrolyte spilling from the battery compartment. The spill was contained, and the electrician was called to make the area safe by disconnecting the battery. The battery was found to have a ruptured cell and was returned to the supplier to determine the cause of the failure. The battery was a 12 volt, sealed, lead acid type.

On inspection it was found that the cell plates within the battery had sulphated and dried, the mud space was also found to be full, which is a natural process with age and this combination had led to an internal explosion. The failure occurred inside the battery enclosure, which protected personnel from flying battery case particles and electrolyte. The electrolyte that spilled had drained from two holes in the base of the battery compartment.

The company involved has made the following recommendations:

- Change out all batteries of sealed lead acid type annually.
- Future permits to work (PTW) and maintenance procedures should take this incident into consideration, if jump starting or fault diagnosis is carried out with the battery exposed.

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