



LP Bulletin

Friday 04 December 2009

Bulletin 667 - 12/09 - Nickel Metal Hydride Batteries - Worldwide

In recent years there have been a number of fires and explosions that have originated in packages of nickel metal hydride (NiMH) batteries transported in standard container units. NiMH batteries, otherwise known as portable accumulators, are rechargeable type AA, AAA and P9 batteries that leave the factory partly charged.

The mechanism, or mechanisms, by means of which these batteries can cause a fire are the subject of some debate and of further investigation. Different factors such as manufacturing defects, methods of packing and damage to packaging after manufacture are believed to facilitate short circuits that generate heat. The resulting increase in temperature can cause further damage, a greater number of short circuits and a self-worsening situation resulting in fire, and the possible release of explosive concentrations of hydrogen gas. This mechanism has parallels with those of self-heating reactions in unstable materials that lead to spontaneous combustion and a fire.

As a result of investigations that concluded the cause of a fire was a CTU of rechargeable batteries being stowed close to a heated settling tank, Germany submitted a proposal to the IMO on 13 July 2007 concerning amendments to the IMDG Code and supplements. The essence of the proposal was that NiMH batteries, other than button batteries, should be stored at a cool place not exceeding 60°C. This is a sensible precaution because increases in ambient temperature increase the risk of a runaway reaction, as happens with unstable materials that are susceptible to self-heating and spontaneous combustion. However, we are aware of incidents of fire originating in packages of NiMH batteries in containers stowed away from sources of heat, supporting the proposition that manufacturing and packaging defects are important causative factors and that stowage away from sources of heat may not remove the risk of fire in those consignments in which a defect exists.

Although investigations have shown that, under certain circumstances, factory packaged NiMH batteries have the potential to cause a fire, the carriage of these batteries is not subject to the provisions of the IMDG Code. Carriers are, therefore, advised to require shippers to specifically declare all consignments of NiMH batteries, whereupon the carrier will be in a position to exercise prudence in deciding where to stow the container. One option would be to stow the container above deck in an accessible location, but shielded from the sun.

Source of information: Carefully to Carry Committee
With thanks to Dr Chris Foster of Dr J H Burgoyne and Partner LLP