Safety notice

ELECTRICAL/ELECTRONIC DEVICES ENERGISED BY BUTTON CELLS IN HAZARDOUS AREAS (potentially explosive atmospheres)

WHAT ARE BUTTON CELLS?

This is what they look like:

Button cells are used to energise a wide range of commonly available, usually small, electrical/electronic devices carried or worn by people. They are sometimes called ‘coin cells’ and may also be referred to as ‘batteries’.

There are two groups of cells, **primary** and **secondary**.

PRIMARY BUTTON CELLS are **not** re-chargeable.

When the internal chemical action of a cell ceases and it is ‘dead’ it should be disposed of in a dead battery bank and be replaced by a new cell. **In no circumstances should an attempt be made to re-charge a primary button cell.** ‘Dead’ cells in a device should not be replaced within a hazardous area. The chemical make-up of primary button cells includes:

- Alkaline
- Silver oxide
- Zinc-air
- Lithium-manganese dioxide (not a Lithium-Ion re-chargeable type)

SECONDARY BUTTON CELLS are re-chargeable.

The chemical make-up of secondary button cells is usually referred to as Lithium-Ion type. Their chemical make-up combines Lithium with one of a variety of other active materials, producing specific electrical features. Their integrity depends on correctly matched current charge and discharge rates, correct voltage and other factors. Therefore, the correct cell must be used in a device and the correct charger used for recharging.

Incorrectly charged cells may overheat or explode.

DEVICES ENERGISED BY PRIMARY (not re-chargeable) BUTTON CELLS

Investigations carried out for the Energy Institute* have shown that ignitive sparks cannot be produced by one or a pair of primary button cells incorporated in a range of small electrical/electronic devices not certified for hazardous areas.

The presence and use of the following devices are therefore considered to be acceptable within a hazardous area:

- Basic electronic wrist watches (not incorporating other functions, e.g. digital display or information bank).
  A risk assessment may show that a metal-cased watch should not be worn, to avoid an impact spark, by a person working in, for example, a fill-point manhole.
- Hearing aids – behind the ear (BTE); in the ear (ITE); over the ear (OTE) or cochlear implants
- Drowse alarms worn behind the ear (BTE) or over the ear (OTE)
- Implanted medical devices, e.g. pace makers
- Remote control key fobs
- Bridge and road toll tags
- Simple pocket calculators (not incorporating other functions)

* See Energy Institute Research Report: *Investigation of the possible ignition risks arising from the presence and operation of button cell energised devices in potentially explosive atmospheres associated with transport fuels* ISBN 978 0 85293 686 3. Seek professional advice if in doubt.

Other devices may be acceptable in a hazardous area if, by examination, it can be shown that they contain not more than two primary (not re-chargeable) button cells. They include:

Digital electronic pressure gauges	Bleepers/pagers	Laser pens/pointers	Miniature torches
Personal digital assistant (PDA) devices	Pocket cameras (without a flash facility)		Portable gas analysers/monitors

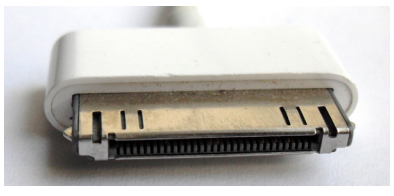
None of the devices fitted with one or a pair of primary button cells should have a socket/connector for connecting an external lead or wire.

DEVICES INCORPORATING SECONDARY (re-chargeable) BUTTON CELLS

These cells are generally of the Lithium-Ion type and are usually ‘wired in’ and not readily replaceable by the user. Because their integrity depends on correctly matched current charge and discharge rates, correct voltage and other factors, the correct cell must be used in a device and the correct charger used for recharging. **Incorrectly charged cells may overheat or explode.**

A device incorporating a re-chargeable cell or cells is not acceptable within a hazardous area without an individual risk assessment of its acceptability first being made by a competent person.

Devices incorporating rechargeable button cells necessarily have a USB port, ‘D’ connector or other form of socket to facilitate re-charging as well as any data transfer. These devices are therefore identifiable by the presence of a means of making external connection and will typically have provision for plugging in a connector similar to the following:



DEVICES INCORPORATING OTHER TYPES OF CELLS & BATTERIES

The information given in this poster applies only to button cells and not to other types of primary (not re-chargeable) and secondary (re-chargeable) cells and batteries. For devices (including mobile phones, ‘tablets’, etc.) fitted with other types of cells or batteries, individual risk assessments of acceptability for presence or use in hazardous areas should first be made.

This Safety Notice has been produced by the Energy Institute Distribution and Marketing Committee to help communicate key findings of the EI Research Report: *Investigation of the possible ignition risks arising from the presence and operation of button cell energised devices in potentially flammable atmospheres associated with transport fuels* 2014. The intent of the poster is to provide safety information to site operators who manage sites that contain hazardous areas and staff who work within hazardous areas.

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