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PAS 7055:2025

Button and coin batteries – Safety requirements – Specification



Office for Product Safety & Standards

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Foreword

This PAS was sponsored by the Office for Product Safety and Standards (OPSS). Its development was facilitated by BSI Standards Limited and it was published under licence from The British Standards Institution. It came into effect on 30 April 2025.

Acknowledgement is given to Geraldine Cosh MSc, as the technical author, and the following organizations that were involved in the development of this PAS as members of the steering group:

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Information about this document

This is a full revision of the document, and introduces the following principal changes:

a) Clause **0**: revised and restructured the Introduction to clarify the narrative of the PAS and reflect changes in industry;

b) Clause **1**: addition of zinc-air batteries to the out-of-scope section;

c) Clause **2**: revised reference (BS EN ISO 28862) for child resistant packaging;

d) Clause **3**: addition of a new definition for harm (**3.1.8**) and revised definitions for consumer product (**3.1.6**), distributor (**3.1.7**), importer (**3.1.10**) and manufacturer (**3.1.11**) to align with PAS 7100;

e) Clause **4** and Clause **5**: revised battery warning to one type, regardless of battery composition;

f) **4.2.1:** safety pictograms added as equivalent markings for battery packaging;

g) **4.2.2**: safety pictograms are specified for batteries with a ≥16 mm diameter;

h) **6.1**: updated point of sale information;

i) **6.3**: amended subclause title, and remove the use of opaque containers;

j) Annex A and Annex B: removed existing warnings/definitions for batteries for simplicity;

k) Annex C: revised to Annex A;

l) Annex D: revised to Annex B, updated the fatality data and CPSC references;

m) Annex C: addition of new examples of consumer information and awareness; and

n) Bibliography: removed references to ACCC documents listed in other publications.

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Presentational conventions

The provisions of this PAS are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the *Shorter Oxford English Dictionary* is used (e.g. "organization" rather than "organisation").

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0 Introduction

0.1 General

Button and coin batteries can cause death if ingested. The batteries are available in a wide range of consumer products which can be aimed at or could possibly appeal to vulnerable groups, such as children. These batteries are available in a wide range of products including decorations, jewellery, clothing, pet toys and greeting cards. These items are available through a number of sources such as online, direct from manufacturers, or through retailers. The wide availability of batteries results in a variety of supply chain routes with a variety of economic operators involved in the production of batteries, or products that contain batteries.

According to the National Capital Poison Centre (2024) [1], there have been at least 71 reported fatal button battery[1)] ingestions globally and this is known to be an under reported number. Lithium batteries accounted for 66%, unknown chemistry accounted for 29% and the remainder (5%) were associated with other chemistries.

Fatal accidents in the UK in the last few years were a key influence in developing this PAS. For most of the fatalities, the source of the batteries is unknown. Where details are available, 62% of batteries were accessed from the product compartment and 8% were accessed directly from the battery packaging [2]. This highlights the need for safety requirements for both products and batteries themselves.

There have been numerous initiatives in the UK on this issue including awareness campaigns by the Office for Product Safety and Standards (OPSS), the Child Accident Prevention Trust (CAPT), and the Royal Society for the Prevention of Accidents (RoSPA). In particular, a UK Ministerial consumer education working group was formed, chaired by CAPT, containing expert stakeholders from industry, national/local Government and retailers. In 2024, the working group produced five top tips that coordinated guidance to consumers on the risks and actions to take. European standards have also been amended to adopt requirements for coin batteries, such as EN 62115.

Outside of the UK, the Australian Government set mandatory requirements for the use of button and coin batteries.[2)] Most recently (enacted in 2022), the United States Government enacted Reese's Law (Public Law: 117-171).[3)]

The aforementioned information from the awareness campaigns and safety legislation were considered in the development of PAS 7055.

There are four key themes that are associated with button and coin battery safety issues. These are summarized into:

- applicable legislation and relevant standards;
- packaging/warnings;
- battery types (chemistry, voltage, and size); and
- hazard and injury data.

1) The term in this research includes button and coin batteries.
2) Available at https://www.productsafety.gov.au/product-safety-laws/safety-standards-bans/mandatory-standards/button-and-coin-batteries.
3) Available at https://www.congress.gov/bill/117th-congress/house-bill/5313.

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0.2 Applicable legislation and relevant standards

One key piece of legislation that was considered in the development of this PAS is The General Product Safety Regulations 2005 (GPSR) [3], which requires that new and used consumer products placed on the market are safe. PAS 7055 provides requirements that assist and support this goal.

There are specific product safety requirements for batteries present in toys, electrical accessories, and medical devices. The challenge faced is that the existing requirements are inconsistent with each other, specifically the definitions, warnings and test methods. There are also various ISO (International), IEC (International Electrotechnical), EN (European) and other global standards which are inconsistent. For example, Annex A highlights the differences in test requirements for button and coin batteries.

0.3 Packaging and warnings

The packaging and warnings used for button and coin batteries and products containing these batteries varies; however, the publication of PAS 7055:2021 improved the consistency of packaging and warnings. That said, there is still alignment required globally and this revision of PAS 7055 aims to work towards this.

0.4 Battery types

The requirements in this PAS do not differentiate between coin and button batteries. Even though coin batteries are considered to pose a higher risk if ingested, both coin and button have been associated with fatalities, therefore this PAS does not generally differentiate between the two.

Unless otherwise specified, this PAS uses three main terms for these batteries:

- where the term **battery** is used, it relates to button and coin;
- where the term **button** is used it relates to non-lithium; and
- where the term **coin** is used it relates to lithium.

Button batteries are often powered by alkaline, silver oxide or zinc air and have a lower rated voltage (<1.5 volts). Coin batteries are powered by lithium (3 volts) and tend to be larger in diameter than button batteries. As they are considered more dangerous (due to voltage and size), the hazard associated with coin batteries has been emphasized by existing standards and different warnings were used.

Zinc air batteries are typically the smallest of these batteries; they are commonly found in hearing aids and require access to air (oxygen) to produce a current [4]. As these are often used in medical devices which are covered by other standards these are excluded from the scope of this PAS. However, where possible, it is advised that the requirements noted in this PAS are taken into consideration for all consumer products that use button or coin batteries.

0.5 Hazard and injury data

This PAS outlines safety requirements for button and coin batteries up to 32 mm in diameter to reduce the risk of ingestion. The 32 mm limit is based on battery size.

Although the larger the battery the more hazardous it potentially is (see Annex B for further information), the smaller button batteries (<16 mm) can still cause harm, whether it is unused or depleted. These small batteries can be inserted into body orifices such as ears and noses, causing serious injuries if undetected. An electrical charge, as little as 1.23 volts, is enough to cause a dangerous reaction. It's important to note that even if a battery doesn't have enough electrical charge to power a product, it still can retain a charge that causes harm.

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Both types of battery can present a choking, ingestion or insertion hazard. The warnings in this PAS focus on the "keep away from children" message and aim to align (as much as possible) with existing global standards. The intention is that this message mitigates the likelihood of any hazard occurring from these batteries.

The key hazard associated with these batteries is the chemical burn that occurs due to ingestion or insertion. When the battery becomes lodged and in contact with bodily fluid, a chemical reaction occurs (electrolysis), resulting in chemical burns to the body tissues that it is in close contact with.

The most severe injuries and fatalities occur as a combination of:

a) battery diameter (the larger the more hazardous);

b) voltage: >1.23 volts are considered hazardous;

c) ingestion (versus insertion), which has the potential to lead to the more severe injuries (versus insertion); and

d) the vulnerability of the individual (where younger children are more at risk).

The significant difference between the hazards associated with the size, rated voltage and power is the time it takes for the hazardous reaction to occur; this is quicker with the larger coin batteries.

Other variables to take into consideration include:

1) the fact that larger batteries are more likely to become lodged in the oesophagus, posing a serious risk if it remains while the chemical reaction (electrolysis) takes place; and

2) the time it can take for help to be sought. Therefore, the message of "seek immediate medical attention" is emphasized in the warnings.

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1 Scope

This PAS specifies safety requirements for button and coin batteries up to 32 mm in diameter to mitigate the risk of ingestion.

This PAS defines the safety requirements for manufacturers and producers of button and coin batteries, including the consumer products that use them, and the retailers and distributors of these products (including in-store and online retailing) regarding:

- labelling, instructions and packaging (including warnings);
- alignment of safety and health warnings;
- merchandising, e.g. displays and locations;
- encouragement and facilitation of safe disposal and/or recycling; and
- product safety of typical consumer products using button and coin batteries, e.g. inclusion of warning text and requirements for secured battery compartments.

This PAS does not cover:

- disposal and recycling from an environmental perspective;
- batteries for professional and industrial use;
- zinc-air batteries;
- safety requirements in the manufacturing of batteries; and
- safety requirements for toys, audio-visual equipment and medical devices, e.g. thermometers, hearing aids.

This PAS is relevant to manufacturers and producers of button and coin batteries (see Clause **4**), including the manufacturers and producers of consumer products that use them (see Clause **5**). This PAS is also relevant for retailers and distributors of these products (see Clause **6**).

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