



**Committee of Experts on the Transport of Dangerous Goods
and on the Globally Harmonized System of Classification
and Labelling of Chemicals****Sub-Committee of Experts on the Transport of Dangerous Goods****Forty-ninth session**

Geneva, 27 June – 6 July 2016

Item 4 (d) of the provisional agenda

Electric storage systems: miscellaneous**Provisions and exemptions for lithium metal button cells and
batteries****Transmitted by the Rechargeable Battery Association (PRBA)¹****Introduction**

1. In 38.3.2.3 of the *Manual of Tests and Criteria*, a “Button cell or battery” is defined as “a round small cell or battery when the overall height is less than the diameter.” As used in this introductory section, the term “button cell” includes also “button batteries.” Lithium button cells are manufactured and transported in very large numbers (estimates range from 6 – 7 billion annually) on the global level for use in countless applications – from pressure measuring transducers in the valves of automobile tires, to watches, calculators, medical devices, toys and other types of equipment and articles. The vast majority of these button cells contain not more than 0.3 grams of lithium metal.

2. PRBA believes that the unique safety features of button cells, the very limited quantity of lithium metal contained in the button cells, and the negligible risk in transport these cells present in transport warrant a separate entry in the Dangerous Goods Lists in the United Nations Model Regulations. The safety features of button cells have been shown during tests conducted on the cells packaged for transport demonstrate. For example, testing has shown that in the extremely rare event one cell undergoes thermal runaway (such as may occur from an internal short circuit), the effects are generally confined to only that cell and there is no propagation of the event from one button cell to the next. Further

¹ In accordance with the programme of work of the Sub-Committee for 2015–2016 approved by the Committee at its seventh session (see ST/SG/AC.10/C.3/92, paragraph 95 and ST/SG/AC.10/42, para. 15).

information concerning these tests will be transmitted by PRBA in a separate informal document. Based on a review of these test results, even ICAO's Second International Multi-Disciplinary Lithium Battery Transport Coordination Meeting, held in Cologne, Germany in September 2014, concluded and recommended: "*Lithium metal button cells, with a lithium content not exceeding 0.3 grams, may not present a significant hazard and should have a separate UN classification to facilitate shipments.*" While the word "classification" as used in this recommendation is probably not the best choice of words in the context of the United Nations dangerous goods transport system, PRBA agrees that it is appropriate to draw a regulatory distinction between lithium button cells and other lithium cells and batteries on the basis of this quite clear difference in the risk exhibited in transport. Therefore, and to that end, PRBA in this document proposes certain amendments to the Model Regulations for consideration by the Sub-Committee.

3. Recent amendments to the ICAO Technical Instructions have imposed considerable restrictions on the transport of lithium metal batteries under the so-called "Section II" provisions in the packing instruction for lithium metal batteries (UN3090). Section II provides regulatory exceptions for "small" lithium metal batteries with lithium metal content as prescribed in paragraphs (a) and (b) of Special Provision 188 in the Model Regulations. However, unlike UN SP188, the ICAO Section II exemptions are far more limiting. For example, each package may not contain more than eight cells or two batteries (except for cells/batteries with a lithium metal content of 0.3 g or less, for which the net weight of batteries in any package may not exceed 2.5 kg), and not more than one such package is permitted to be placed in an overpack. Further, and especially limiting, not more than one such "Section II" package may be offered for transport in any consignment. These very severe restrictions are primarily based on concern that if a single cell enters thermal runaway, the event will propagate uncontrolled through the complete contents of the package, as well as into any adjacent Section II packages. However, as previously stated, tests have demonstrated that this risk of propagation is not manifested in packages of button cells.

4. Therefore, to provide a mechanism to appropriately regulate lithium metal button cells by taking into account the differing risk they pose as compared to other lithium metal cells and batteries, PRBA proposes that a new entry with a distinct UN number be adopted by the Sub-Committee for incorporation into the Dangerous Goods List in the Model Regulations. In effect this new entry would constitute the "separate UN classification to facilitate shipment" of lithium metal button cells as recommended by the ICAO Multi-Disciplinary Meeting. PRBA notes that there is clear precedent for the adoption of new UN entries to accommodate the special needs and concerns of the modal regulations. Examples include the recent adoption of UN3496 ("Batteries, nickel-metal hydride") to take account of the special concerns for these batteries in maritime transport, and, indeed, the adoption based on concerns principally in the air mode of a separate entry for lithium ion cells and batteries (UN3480) in order to distinguish them from lithium metal batteries so that appropriate regulatory controls could be applied to take account of the varying risks.

5. In addition, the Sub-Committee previously agreed that very small capacitors (UN3499 and UN3508) with a Watt-hour rating of less than 0.3 Wh should be provided a complete exemption from the Model Regulations due to their very limited risk in transport. Button cells as defined in the Manual of Tests and Criteria that contain less than 0.3 grams of lithium metal fall into a very similar category. These relevant safety issues are explained in more detail in PRBA's informal document.

6. For purposes of the Model Regulations, the new entry would generally mirror the current entry UN3090 for lithium metal batteries in terms of classification, labelling, packing, the exemptions provided through Special Provision 188, and other requirements. However, once the new UN number is established, it can be employed by the ICAO

Dangerous Goods Panel to impose packing requirements, regulatory exemptions and operational controls on lithium metal button cells appropriate to the risk posed in air transport as compared to other types of lithium metal cells and batteries. It is not considered necessary to create a separate entry for lithium metal button cells contained in or packed with equipment, and such packages would continue to be covered by UN3091.

7. In consideration of the foregoing, the Sub-Committee is invited to consider the following proposals.

Proposals

8. Add a new entry to the Dangerous Goods List in Chapter 3.2 to read as follows:

UN No.	Name and description	Class or division	Subsidiary risk	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
								Packing instructions	Special packing provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
35CD	LITHIUM METAL BUTTON CELLS, including button cell batteries	9			188 230 310 376 377 384	E0	0	P903 P908 P909 P910 LP903			

Consequential amendments

[To be developed – to include slotting button cells under UN3091, adding new UN number to the various SPs and PIs as necessary, to 2.9.4, etc.]