



**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****Thirty-ninth session**

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Item 4(d) of the provisional agenda

Electric storage systems: packagings for large batteries**Special Provision 310: Packagings for large prototype and
low production lithium batteries****Transmitted by The Rechargeable Battery Association (PRBA)¹****Introduction**

1. During the previous biennium, PRBA proposed certain amendments to Special Provision 310, which applies to the transport of non-UN-tested low production and prototype lithium ion and lithium metal cells and batteries. Although no final decision was taken, there was support for certain aspects of the proposal, including:

- (a) Authorization to offer for transport prototype and low production lithium ion and lithium metal cells and batteries contained in equipment.
- (b) Authorization to offer for transport “large” prototype and low production lithium ion and lithium metal batteries, battery assemblies and equipment containing such batteries or battery assemblies in strong outer packagings not required to meet Packing Group I packaging standards as prescribed in Chapter 6.1 of the Model Regulations.

2. In this document, PRBA offers revised proposals concerning these points which take account of comments offered by the Sub-Committee in its prior discussions. Also proposed are several editorial changes to Special Provision 310 to improve clarity.

¹ In accordance with the programme of work of the Sub-Committee for 2011-2012 approved by the Committee at its fifth session (refer to ST/SG/AC.10/C.3/76, para. 116 and ST/SG/AC.10/38, para. 16).

3. With regard to the proposed use of strong outer packagings not meeting Packing Group I performance standards, PRBA notes that for large prototype and low production batteries, use of packagings tested to Packing Group I standards is highly problematic and often impracticable – not only because of the large size, high mass, and irregular shape of these batteries, but also because of the number and expense of sample packagings required to complete the applicable design qualification tests. It is important to recognize that in the case of a prototype, only one battery of a particular design may be initially built, and that, depending on the application (e.g., in satellites or specialized equipment), often only one or two “low production” batteries may be constructed to a particular design. Thus, in many cases the number of packaging test samples required to perform the UN packaging qualification tests exceeds the number of “production” packagings actually required for the transport of the prototype or low production batteries. Moreover, since packagings must be tested “prepared as for transport” while containing either the article to be transported or one with similar physical characteristics (so as not to invalidate the results of the tests), the widely differing geometries, sizes and masses of prototype and low production batteries makes it impossible to rationalize under the Model Regulations the use of a packaging tested for one particular battery design for the transport of batteries of other designs (i.e., differing geometries, sizes and masses).

4. While not required to be qualified according to the test standards in Chapter 6.1, packagings conforming to the standard proposed in this document for use in the transport of large prototype and low production batteries will afford a high degree of safety in transport – even recognizing that the batteries will not have undergone the tests prescribed in Section 38.3 of the Manual of Tests and Criteria. Batteries would be required to be packaged in a rigid inner packaging placed in a rigid outer packaging. To preclude any potential incident arising from shocks or vibration that may be encountered in normal transport, the inner and outer packaging would be required to be separated from one another by shock and vibration absorbing devices. To prevent the possible leakage of electrolyte from the package, the battery would be required to be placed in a sealed, leak-resistant bag, and cushioning and absorbent material provided within the packaging. Indeed, the basic concepts of the packaging standard proposed herein are based on the provisions of existing ADR Multilateral Agreement M 228, which authorizes the use of non-UN-tested packagings for the transport of large prototype lithium metal and lithium ion batteries. For these reasons, PRBA believes that the proposed large battery packaging standard will provide an appropriate level of safety in transport by all modes of transport.

5. PRBA also is proposing to clarify the phrase “when these prototypes are transported for testing” to take account of the different nature of “testing” for which prototype batteries may be transported. Apart from transport for purposes of performing the Section 38.3 design qualification tests, prototype batteries are often transported for other purposes, including analysis and product evaluation. This is necessary to assess the suitability of the battery for its intended application, and such evaluation and analysis must be performed before the battery design can be “fixed” and the full regime of UN tests performed.

Proposal

6. Amend Special Provision 310 as shown below:

310 The testing requirements in Chapter 38.3 of the *Manual of Tests and Criteria* do not apply to production runs consisting of not more than 100 lithium ion or lithium metal cells and batteries, or to preproduction prototype cells and batteries when these prototypes are transported for testing or analysis ~~or analysis~~ including for product evaluation purposes. Prototype and low production cells and batteries, and equipment containing such cells and batteries, shall be packed as follows:

- (a) Except as provided in paragraph (c), the cells, ~~and~~ batteries or equipment shall ~~are~~ be transported in an outer packaging that is a metal, plastics or plywood drum or a metal, plastics or wooden box and that meets the criteria for packing group I packagings; and
- (b) Except as provided in paragraph (c), each cell, ~~and~~ battery, or item of equipment is shall be individually packed in an inner packaging inside an outer packaging. Cells, batteries and equipment shall be ~~and is~~ surrounded by cushioning material that is non-combustible, and non-conductive and protected from short circuits.
- (c) Prototype or low production batteries with a mass of 35 kg or greater, or equipment containing such batteries, may be packed in the following manner in packagings not meeting the requirements of Part 6 of these Regulations:
- (i) The battery or equipment containing such battery shall be placed in a rigid metal, plastics, wood (natural or reconstituted) or plywood inner packaging of adequate thickness and strength in relation to its capacity and intended use, and in which the battery or equipment containing such battery is secured so as to prevent movement that could lead to damage of the battery or equipment;
 - (ii) The inner packaging shall be placed in a rigid metal, plastics, wood (natural or reconstituted) or plywood outer packaging of adequate thickness and strength in relation to its capacity and intended use, and isolated from the outer packaging by shock absorber blocks;
 - (iii) Non-flammable, absorbent cushioning material shall be placed between the inner and outer packaging, or in the inner packaging, in a quantity sufficient to prevent any accidental leakage from the outer packaging; and
 - (iv) No more than one battery or item of equipment shall be placed in each outer packaging.

The battery or equipment shall be protected against short circuits.
