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**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-third session
Geneva, 30 June-9 July (a.m) 2008
Item 4 of the provisional agenda

LISTING, CLASSIFICATION AND PACKING

Testing of rechargeable cells and batteries

Transmitted by the Portable Rechargeable Battery Association (PRBA)*

Introduction

1. Since completion of the revised lithium battery testing requirements in section 38.3.3 of the 4th revised edition of the UN Manual of Tests and Criteria, PRBA members and others in the industry have acquired considerable experience in their use. Through this experience it has become apparent that subjecting rechargeable cells and batteries to Tests 1 to 6 (i.e., altitude, simulation, thermal, vibration, shock, external short circuit, and impact tests) “in fully discharged state” provides no useful information regarding the classification and safety of the cells and batteries when these tests already require testing at 50% of design rated capacity or in fully charged state. This requirement to test rechargeable lithium cells and batteries at fully discharged state appears to have been carried over from the testing requirements for primary (non-rechargeable) lithium batteries. Certain primary lithium battery chemistries do present unique characteristics when tested in fully discharged state, which is the reason they are subject

* In accordance with the programme of work of the Sub-Committee for 2007-2008 approved by the Committee at its third session (refer to ST/SG/AC.10/C.3/60 para. 100 and ST/SG/AC.10/C.3/34, para. 14).

to these testing requirements. On this basis, PRBA proposes that testing rechargeable lithium cells and batteries in the fully discharged state no longer be required when tests already require testing at 50% of design rated capacity or in fully charged state.

Proposal

2. PRBA proposes to revise requirements for the number and condition of rechargeable cells and batteries submitted for testing by amending paragraph 38.3.3(b) by deleting 38.3.3(ii) and (iv) and 38.3.3(vi) and renumbering the remaining items.

The effect of the changes would be as follows:

38.3.3 When a cell or battery type is to be tested under this sub-section, the number and condition of cells and batteries of each type to be tested are as follows:

- (a) ...
- (b) When testing rechargeable cells and batteries under tests 1 to 5 the following shall be tested:
 - (i) ten cells, at first cycle, in fully charged states,
 - ~~(ii) ten cells, at first cycle, in fully discharged states,~~
 - (ii) four batteries, at first cycle, in fully charged states,
 - ~~(iv) four batteries, at first cycle, in fully discharged states,~~
 - ~~(v)(iii) four batteries after fifty cycles ending in fully charged states, and~~
 - ~~(vi) four batteries after fifty cycles ending in fully discharged states.~~
- (c) When testing primary and rechargeable cells under test 6, the following shall be tested:
 - (i) ...
 - (ii) ...
 - (iii) for rechargeable cells, five cells at first cycle at 50% of the design rated capacity, and ~~five cells after 50 cycles ending in fully discharged states,~~
~~and~~
 - (iv) for component cells of rechargeable batteries, five cells at first cycle at 50% of the design rated capacity ~~and five cells after 50 cycles ending in fully discharged states.~~

For prismatic cells, ten test cells are required ~~for each of the states of charge being tested,~~ instead of the five described above, so that the procedure can be carried out on five cells along the longitudinal axes and, separately, five cells along the other axes. In every case, the test cell is only subjected to one impact.
