

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

2 December 2010

Thirty-eighth session

Geneva, 29 November – 7 December 2010

Item 5 of the provisional agenda

Electric storage systems

Lithium Battery Testing Requirements and Definition of Large Cell and Small Cell in 38.3 of UN Manual of Tests and Criteria

Transmitted by PRBA – The Rechargeable Battery Association

1. In INF. 30, PRBA proposed to amend the definitions for *Small cell* and *Large cell* in the UN Manual of Tests and Criteria and requested the Subcommittee consider 150 g as the basis for differentiating between a large and small cell.
2. Currently, a *Small cell* means a lithium metal cell in which the lithium content of the anode, when fully charged, is not more than 12 g, or in the case of a lithium ion cell, means a cell with a Watt-hour rating of not more than 150 Wh. Any cell containing more than 12 g / 150 Wh is defined as a *Large cell*.
3. The UN working group on lithium batteries did not reach a final decision on new definitions for *Large cell* and *Small cell* but did agree to put 500 g in brackets as the basis for differentiating between large and small cells.
4. The Subcommittee requested more information on the Watt-hour rating, grams of lithium, and gross mass of cells in the marketplace and whether the proposed changes of 150 g or 500 g equate to the current 12 g / 150 Watt-hour limits.
5. The following page contains the information requested by the Subcommittee. It shows that by changing the definition to 150 g or 500 g several cells currently defined as small cells will be defined as large cells.
6. In light of this information, PRBA would prefer to leave the current definitions for *Small cell* and *Large cell* in place using 12 g and 150 Wh until further consultation with industry and participants in the working group. PRBA also would like to determine whether it may be appropriate to have different mass limits for lithium metal cells and lithium ion cells.

LITHIUM ION CELLS				
Cell Size	Watt-hours	Mass	150 g Will it change classification?	500 g Will it change classification?
17500	< 15 Wh	< 50 g	No	No
17650	< 15 Wh	< 50 g	No	No
18650	< 15 Wh	< 50 g	No	No
26650	< 15 Wh	< 70 g	No	No
20 Ah Prismatic	65 - 75 Wh	> 500 g	Yes	Yes
40 Ah Prismatic	130 - 155 Wh	> 1.45 kg	Yes	Yes
60 Ah Prismatic	190 - 215 Wh	> 2.20 kg	No	No
160 Ah Prismatic	510 - 575 Wh	> 5.40 kg	No	No

LITHIUM METAL CELLS				
Cell Size	Lithium content	Mass	150 g Will it change classification?	500 g Will it change classification?
AAA	< 1 g	< 8 g	No	No
AA	< 1 g	< 15 g	No	No
CR123A	< 1 g	< 17 g	No	No
C	1.5 - 2 g	< 50 g	No	No
D	4 - 5 g	< 100 g	No	No
Double D	10 - 12 g	~ 300 g	Yes	No

NOTES:

(Current Definition) *Small cell* means a lithium metal cell in which the lithium content of the anode, when fully charged, is not more than 12 g, or in the case of a lithium ion cell, means a cell with a Watt-hour rating of not more than 150 Wh.

T2 Thermal – The duration of exposure to the test temperature extremes must be at least 12 hours for large cells and batteries and 6 hours for small cells and batteries.

T4 Shock – Small cells and battery must be subjected to a half- sine shock of peak acceleration of 150 gn and pulse duration of 6 milliseconds. Large cells and large batteries must be subjected to a half-sine shock of peak acceleration of 50 gn and pulse duration of 11 milliseconds