

**Committee of Experts on the Transport of Dangerous Goods
and on the Globally Harmonized System of Classification
and Labelling of Chemicals**

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**Sub-Committee of Experts on the Transport of
Dangerous Goods**

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Item 4 (e) of the provisional agenda

**Miscellaneous proposals for amendments to the
Model Regulations on the Transport of Dangerous
Goods: other miscellaneous proposals**

**Comment on ST/SG/AC.10/C.3/2020/45/Rev.1 - editorial
improvements**

Transmitted by the expert from France

Introduction

1. Concerning the drafting of the proposal contained in ST/SG/AC.10/C.3/2020/45/Rev.1, in particular the amendments proposed to the text in the manual of test and criteria 38.3, the secretariat has rightly pointed out to us that, by adding a heading for 38.3.3 and introducing two sub paragraphs, one for lithium batteries and cells and one for the new sodium ions batteries the proposal would be more user friendly. Currently 38.3.3 has no title but it doesn't harm much because it only concerns lithium batteries.
2. We agree with the secretariat's proposal and therefore would like to propose an editorially modified text to replace the proposal concerning 38.3 of the Manual as proposed in point 29 of the initial proposal in ST/SG/AC.10/C.3/2020/45/Rev.1.
3. The new text introduces a new heading for 38.3.3: "**Number and condition of cells and batteries to be tested**" and adds two sub paragraphs to it for each type of batteries (lithium ion and sodium ion).
4. These amendments do not change the substance of the proposal but improve its user-friendliness.

New proposal for the amendment concerning 38.3:

"38.3 Lithium metal, ~~and~~ lithium ion and sodium ion batteries

38.3.1 Purpose

This section presents the procedures to be followed for the classification of lithium metal, ~~and~~ lithium ion and sodium ion cells and batteries (see UN Nos. 3090, 3091, 3480, ~~and~~ 3481, XXXX and XXXY, and the applicable special provisions of Chapter 3.3 of the Model Regulations).

NOTE: In this section the words 'sodium ion cells or batteries' refer to sodium ion using organic electrolyte cells or batteries.

"38.3.2 Scope

38.3.2.1 All lithium cell types shall be subjected to tests T.1 to T.6 and T.8. All non-rechargeable lithium battery types, including those composed of previously tested cells, shall be subjected to tests T.1 to T.5. All rechargeable lithium battery types, including those

composed of previously tested cells, shall be subjected to tests T.1 to T.5 and T.7. In addition, rechargeable single cell lithium batteries with overcharge protection shall be subjected to test T.7. A component lithium cell that is not transported separately from the battery it is part of needs only to be tested according to tests T.6 and T.8. A component lithium cell that is transported separately from the battery shall be subjected to tests T.1 to T.6 and T.8. A lithium cell or battery that is an integral part of the equipment it is intended to power that is transported only when installed in the equipment, may be tested in accordance with the applicable tests when installed in the equipment.”

“38.3.2.2 Sodium ion, ~~L~~lithium metal and lithium ion cells and batteries shall be subjected to the tests, as required by special provisions 188 and 230 of Chapter 3.3 of the Model Regulations prior to the transport of a particular cell or battery type. Cells or batteries which differ from a tested type by:”

“38.3.2.3 For the purposes of classification, the following definitions apply:

Large battery means a ~~lithium metal battery or lithium ion~~ battery with a gross mass of more than 12 kg.”

Introduce a new definition for Sodium ion cell or battery as follows:

“Sodium ion cell or battery means a rechargeable electrochemical cell or battery where the positive and negative electrode are both intercalation or insertion compounds (intercalated sodium exists in an ionic or quasi-atomic form in the lattice of the electrode material) constructed with no metallic sodium (or sodium alloy) in either electrode and using an organic non-aqueous compound as electrolyte.”

Small battery means a ~~lithium metal battery or lithium ion~~ battery with a gross mass of not more than 12 kg.”

Introduce a new heading for sub section 38.3.3 as follows:

“38.3.3 Number and condition of cells and batteries to be tested

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

renumber the current 38.3.3 as

“38.3.3.1 Testing of lithium cells and batteries”

Modify the heading of (a) (b) (c) (d) (e) of the new 38.3.3.1 as follows:

- “ (a) When testing primary lithium cells and batteries under tests T.1 to T.5 the following shall be tested in the quantity indicated:”
- “ (b) When testing rechargeable lithium cells and batteries under tests T.1 to T.5 the following shall be tested in the quantity indicated:”
- “ (c) When testing primary and rechargeable lithium cells under test T.6, the following shall be tested in the quantity indicated:”
- “ (d) When testing rechargeable lithium batteries or rechargeable single cell lithium batteries under test T.7, the following shall be tested in the quantity indicated:”
- “ (e) When testing primary and rechargeable lithium cells and component cells under test T.8, the following shall be tested in the quantity indicated:”

Insert the following new paragraph and sub-paragraphs:

“38.3.3.2 Testing of sodium ion cells and batteries:

(a) When testing rechargeable sodium ion cells and batteries under tests T.1 to T.5 the following shall be tested in the quantity indicated:

- (i) three cells at first cycle, in fully charged states;
- (ii) three cells after 25 cycles ending in fully charged states;
- (iii) three small batteries at first cycle, in fully charged states;

- (iv) three small batteries after 25 cycles ending in fully charged states;
- (v) two large batteries at first cycle, in fully charged states; and
- (vi) two large batteries after 25 cycles ending in fully charged states.
- (b) When testing for component cells of rechargeable sodium ion batteries under test T.5, three cells at first cycle at 50 % of the design rated capacity and [three] cells after 25 cycles ending at 50 % of the design rated capacity.
- (c) When testing rechargeable sodium ion cells or rechargeable single cell sodium ion batteries under test T.6, the following shall be tested in the quantity indicated:
- (i) three cells or single cell batteries at first cycle, in fully charged states;
- (ii) three cells or single cell batteries after 25 cycles ending in fully charged states; and
- (iii) for component cells of rechargeable batteries, three cells at first cycle at 50 % of the design rated capacity and three cells after 25 cycles ending at 50 % of the design rated capacity.
- (d) When testing rechargeable sodium ion batteries or rechargeable single cell sodium ion batteries under test T.7, the following shall be tested in the quantity indicated:
- (i) three single cell batteries at first cycle, in fully charged states;
- (ii) three small batteries at first cycle, in fully charged states;
- (iii) three small batteries after 25 cycles ending in fully charged states;
- (iv) two large batteries at first cycle, in fully charged states;
- (v) two large batteries after 25 cycles ending in fully charged states; and
- (vi) batteries or single cell batteries not equipped with battery overcharge protection that are designed for use only as a component in another battery or in equipment, which affords such protection, are not subject to the requirements of this test.
- (e) When testing a fully charged sodium ion battery assembly, with a Watt-hour rating of not more than 6 200 Wh, that is assembled from batteries that have passed all applicable tests, one assembled battery in a fully charged state shall be tested under tests T.3, T.4 and T.5, and, in addition, test T.7 in the case of a rechargeable battery.
- (f) When sodium ion batteries that have passed all applicable tests are electrically connected to form a fully charged battery, with a Watt-hour rating of more than 6 200 Wh, the assembled battery does not need to be tested if the assembled battery is of a type that has been verified as preventing:
- (i) Overcharge;
- (ii) Short circuits; and
- (iii) Over discharge between the batteries.”

Renumber existing 38.3.3.1 as 38.3.3.3:

“38.3.3.43 Provisions 38.3.2.1, and 38.3.3.1 and 38.3.3.2 are summarized in the following tables.

“**Table 38.3.2: Summary table of required tests for lithium primary cells and batteries”**

“**Table 38.3.3: Summary table of required tests for lithium rechargeable cells and batteries”**

Insert a new table in 38.3.3.2 as follows:

“Table 38.3.4: Summary table of required tests for sodium ion rechargeable cells and batteries

| Rechargeable cells and batteries | | | | | | | | | | |
|---|----------------------------------|-----|-----|-----|-----|-----|-----|------------------|-----|------------------|
| | | T.1 | T.2 | T.3 | T.4 | T.5 | T.6 | T.7 ^a | T.8 | Sum ^d |
| Cells not transported separately from a battery | first cycle, 50 % charged state | | | | | 3 | | | | 6 |
| | 25th cycle, 50 % charged state | | | | | 3 | | | | |
| Cells | first cycle, fully charged state | 3 | | | | | 3 | | | 12 |
| | 25th cycle, fully charged state | 3 | | | | | 3 | | | |
| Single cell batteries ^b | first cycle, fully charged state | 3 | | | | | 3 | 3 | | 15 |
| | 25th cycle, fully charged state | 3 | | | | | 3 | | | |
| Small batteries | first cycle, fully charged state | 3 | | | | | | 3 | | 12 |
| | 25th cycle, fully charged state | 3 | | | | | | 3 | | |
| Large batteries | first cycle, fully charged state | 2 | | | | | | 2 | | 8 |
| | 25th cycle, fully charged state | 2 | | | | | | 2 | | |
| Batteries assembled with tested batteries ≤ 6 200 Wh | fully charged state | | | 1 | | | | 1 | | 2 |
| Batteries assembled with tested batteries > 6 200 Wh ^c | | | | | | | | | | 0 |

^a Batteries or single cell batteries not equipped with battery overcharge protection that are designed for use only as a component in another battery or in equipment, which affords such protection, are not subject to the requirements of this test;

^b Except for the T.7 Overcharge test, a single cell battery containing one tested cell does not require testing unless a change in cell design could result in the failure of any test;

^c If the assembled battery is of a type that has been verified as preventing:

(i) Overcharge;

(ii) Short circuits; and

(iii) Over discharge between the batteries.

^d The sum represents the number of tests required, not the number of cells or batteries tested.”

Amend section 38.3.5 as follows:

“38.3.5 ~~Lithium~~ Cell and battery test summary

The following test summary shall be made available:

| |
|--|
| Lithium Cell or battery test summary in accordance with sub-section 38.3 of Manual of Tests and Criteria |
|--|

(f) Description of cell or battery to include at a minimum:

(i) **Sodium ion, lithium ion or lithium metal cell or battery;**”