



---

**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****Fifty-fifth session**

Geneva, 1-5 July 2019

Item 4 (a) of the provisional agenda

**Electric storage systems: testing of lithium batteries****Amendment to 38.3.3 (d) and (g) of the Manual of Tests and  
Criteria****Transmitted by the European Association for Advanced Rechargeable  
Batteries (RECHARGE) and The Rechargeable Battery Association  
(PRBA)\*****Introduction**

1. This working document reflects first the discussion and comments made in response to the proposed changes in ST/SG/AC.10/C.3/2018/84 and informal document INF.53/Rev.1 (fifty-fourth session). The purpose of the proposal discussed is to clarify the usage of paragraph 38.3.3 (g) of the Manual of Tests and Criteria, which addresses requirements for an “assembled battery” (i.e., batteries that have passed all applicable 38.3 tests and electrically connected to form a larger battery). It is applicable particularly in the case of the assembly and maintenance of large assembled batteries used for electric vehicles or energy storage requiring the transport of parts of these large batteries. Although these parts of batteries can be large, they may not be equipped with battery overcharge protection, as these safety components are now often provided for in the hosting vehicle, equipment, or battery. The primary concern expressed during the initial proposal was the need to clarify how the risk of overcharge would be controlled, in the case of the assembled batteries transported without overcharge protection.
2. Paragraph 38.3.3 (g) of the Manual of Tests and Criteria mandates verification of overcharge protection. It may imply, according to the text, that overcharge protection be part of the battery.
3. It is clear that the risk of transporting a battery or an assembled battery in an overcharged state is linked to the charging of the batteries prior to transport. During the manufacturing process, batteries are protected from overcharge by the equipment employed.

---

\* In accordance with the programme of work of the Sub-Committee for 2019-2020 approved by the Committee at its ninth session (see ST/SG/AC.10/C.3/108, paragraph 141 and ST/SG/AC.10/46, paragraph 14).

And during transport batteries and assembled batteries, which are protected against short circuit and over discharge between the assembled batteries, cannot be overcharged because they are never connected to an active charging system.

4. In order to clarify the specific risk control of the overcharge, without requiring the assembled battery to be necessarily equipped with overcharge protection during transport, the addition of a new note is proposed at the end of 38.3.3 (g).
5. Related to this issue is the overcharge testing requirement found in 38.3.3 (d) and the relief provided from this testing under the following conditions: “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.” We believe it was an oversight by the Lithium Battery Working Group to not account for “vehicles” in this provision recognizing that they now afford such overcharge protection as more fully described above. We therefore propose to add “vehicle” to the last paragraph in 38.3.3(d).
6. The following proposals are submitted for approval by the Sub Committee.

## Proposal

7. Add a note at the end of the existing text of 38.3.3 (g) as follows (new text is underlined):

“(g) When batteries that have passed all applicable tests are electrically connected to form a battery in which the aggregate lithium content of all anodes, when fully charged, is more than 500g, or in the case of lithium ion battery, with a Watt-hour rating of more than 6200 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.

*Note: For an assembled battery not equipped with overcharge protection that is designed for use only as a component in another battery, in equipment, or in a vehicle, which affords such protection, the overcharge protection may be verified at the battery, equipment or vehicle level, as appropriate.*”
8. Add “vehicle” in the last paragraph in 38.3.3 (d):

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

---