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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

Fifty-sixth session
Geneva, 2-11 December 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 ST/SG/AC.10/C.3/2019/33 followed by informal documents INF.53 (fifty-fourth session) and INF.53 (fifty-fifth 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 tests of the UN Manual of Tests and Criteria chapitre 38.3 and are 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 for the automotive or railways industryor for energy storage systems 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 in item a). It may imply, according to the text, that overcharge protection be part of the battery.

* 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)

3. The comments made during the fifty-fourth and fifty-fifth sessions indicate a general approval of the benefit to add a text at the end of the paragraph 38.3.3 (g) of the Manual of Tests and Criteria, with the text in the reference working document.

4. Nevertheless, some concerns were expressed that overcharge protection of the large battery may not be always ensured, if the large battery was not charged in the adequate charging equipment. Suggestions were made that a process should be implemented to avoid potential risk of using non adequate charging systems prior to transport.

5. The authors of the document are proposing an additive sentence to clarify that this risk can be prevented either by physical systems (today, the connection interface enabling the connection of a part of battery to a larger battery, equipment or vehicle, or to another charging system is not standardized, making the connection by error in most cases impossible) or by measures taken in the quality management system (including documents such as technical instructions or procedures, warnings, usage manuals, etc).

6. 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 some text is proposed at the end of 38.3.3 (g).

7. 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.” RECHARGE and PRBA believe that 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). As number of members of the Sub-Committee also expressed support to the addition of the term “vehicle” in the last paragraph in 38.3.3(d) during the discussion of ST/SG/AC.10/C.3/2019/33, this proposal is repeated here-below.

8. The following proposals are submitted for approval by the Sub-Committee.

Proposals

9. Add text 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 al anodes, when fully charged, is more than 500 g, 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.

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 shall be verified at the battery, equipment or vehicle level, as appropriate, and

- a physical system or process controls that include relevant activities to prevent usage of charging systems without overcharge protection shall be implemented."

10. Add "vehicle" in to 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.".