



**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**

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Item 6 (b) of the provisional agenda

Miscellaneous proposals for amendments**to the Model Regulations on the Transport of Dangerous Goods:
packagings****Applicability of packing instruction LP906, and clarification
of packing instruction P911****Transmitted by the European Association for Advanced Rechargeable
Batteries (RECHARGE), International Organisation of Motor Vehicle
Manufacturers (OICA), the Rechargeable Battery Association (PRBA),
and the Council on Safe Transportation of Hazardous Articles
(COSTHA)*****Introduction**

1. This document is a follow-up of the proposal introduced in ST/SG/AC.10/C.3/2019/23, and informal document INF.51 (55th session).
2. Packing instructions P911 and LP906 have been developed in order to provide a packaging solution for damaged and defective batteries of UN Nos. 3090, 3091, 3480 and 3481 liable to rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours under normal conditions of transport.

* 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 qualification process of this packaging has to be approved by the competent authority, based on a number of criteria identified in note “a” to LP906. These criteria are defined in a way to ensure that the qualification process demonstrates the efficiency of the packaging protection in the worst foreseeable case scenario.
4. The usage conditions of P911 and LP906 have to be described by the packaging supplier and provided to the packaging user, in order to verify that the packaging is used according to the conditions defined for the qualification process (type of batteries, quantities, configuration, etc...), as indicated in paragraph 2 of LP906. These conditions are specific to P911 and LP906 and prevent the concern that the usage of a large packaging for multiple batteries could be extended to other types of large packaging.
5. It is recognized in P911 that the packaging can be used for multiple batteries. For example, if the packaging qualification process is demonstrating that the hazards in case of reaction of several small batteries are not exceeding the hazards produced by the reaction of a larger battery, then this type of products can be transported in the qualified packaging (i.e. transport two batteries of 100 kg instead of one battery of 200 kg).
6. Packing instruction LP906 has been created for the transport of batteries having a total weight larger than 400 kg. Although the qualification process and the conditions of usage are exactly the same for LP906 and for P911, it is not possible to use the large packing instruction LP906 for more than one single battery, as it is explicitly specified in the text of the packing instruction. For example, a packaging qualified for the transport of a battery of 900 kg cannot be used for two batteries of 450 kg. Two large packaging would be needed. It is recognized that other large packing instructions for lithium batteries are also restricting the usage to a single battery (like LP903 and LP904). Nevertheless, the specific qualification process and the package properties (containing the hazards in the worst-case scenario) in the case of LP906 make this restriction superfluous. On the contrary, it may limit the usage of the existing packaging and require unjustified investment in multiple packaging solutions and multiple testing, thus reducing the application of this solution.
7. During the fifty-fourth session of the Sub-Committee several concerns were raised about the risk of misuse of this packaging, for example while having hundreds of small batteries loose in a large packaging and therefore having people misusing the packaging to transport small damaged batteries in vast amounts. To prevent this, it is suggested to introduce the need of an inner packaging per battery as soon as the packaging is intended to be used for more than one battery. This method would prevent the possibility to transport damaged batteries as bulk transport and make it very unpractical for multiple small batteries. In addition, the maximum number of batteries and their configuration inside the packaging should be taken into account during the packaging qualification.
8. In order to provide for the needed flexibility in the usage of the LP906 packaging, without reducing the control of the potential risk of transport of large damaged and defective lithium batteries, we propose to allow for the usage of the LP906 packaging for multiple batteries, provided that these batteries are individually packed in an inner packaging and the test method approved by the authority allows for multiple batteries configurations.
9. Whether the large packaging contains a single battery or multiple batteries, the performance requirements as specified in LP906 (2), shall be verified by a test as specified by a competent authority.
10. The note ^a in LP906 describes the criteria that are relevant to consider while assessing the performance of the large packaging. We propose to add in this note some guidance and criteria to be considered in the case of a test for qualification of a packaging for multiple batteries. This guidance takes into account the comments from the delegates, as well as some additional points.

11. The changes in LP906 are described in proposal 1.
12. Finally, a comment was provided underlining the benefits of the added paragraph in the note ^a for packaging of multiple batteries, as proposed in LP906, but also as already possible in P911. Therefore, it is proposed to also add the same paragraph at the end of the note ^a of P911.
13. The changes in P911 are described in proposal 2.

Proposal 1

14. Modify the third sentence of LP906:
“For ~~a single batteryies~~ and items of equipment containing batteries ~~contained in a single item of equipment...~~”
15. Modify the second paragraph of the point 2 of LP906:
“A verification report shall be made available on request. As minimum requirement, the batteries name, the batteries number, the mass, type, energy content, the maximum number of batteries that may be contained inside the packaging, the large packaging identification and the test data according to the verification method as specified by the competent authority shall be listed in the verification report.”
16. Modify the paragraph (d), (e) and (g) of the note ^a by replacing “battery” by “batteries”:

“(d) The test and any supporting calculations shall assess the result of a thermal runaway of the batteries inside the large packaging in the normal conditions of transport;

(e) In case the SOC of the batteries is not known, the assessment used, shall be done with the highest possible SOC corresponding to the batteries use conditions;

(g) The tests or the model calculation shall consider the worst case scenario for the thermal runaway triggering and propagation inside the batteries; this scenario includes the worst possible failure in the normal transport condition, the maximum heat and flame emissions for the possible propagation of the reaction;”
17. Add a paragraph (i) into the note ^a of LP906 as follows:
“^a The following criteria, as relevant, may be considered to assess the performance of the large packaging:
[(a) to (h)]
(i) In the case of multiple batteries, additional requirements such as the the maximum number of batteries, the total energy content, as well as the separation between the batteries, the inner packaging and the configuration inside the package shall be considered.”

Proposal 2

18. Add a paragraph (i) into the note ^a of P911, as follows:

^a The following criteria, as relevant, may be considered to assess the performance of the large packaging:

[(a) to (h)]

(i) In the case of multiple batteries, additional requirements such as the the maximum number of batteries, the total energy content, as well as the separation between the batteries, the inner packaging and the configuration inside the package shall be considered.
