



**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****Sixtieth 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, including the use of recycled plastics material****Revision of packing instructions in 5.5.3.3.1 and 5.5.3.3.2****Transmitted by the expert from Spain*****Introduction**

1. In the last meeting of the Sub-Committee Spain presented document ST/SG/AC.10/C.3/2021/43 to review the cross references in between 5.5.3 and the different packing instruction referring to refrigerating substances. This proposal was adopted with some modifications.
2. Nevertheless, prior to the last meeting of the Sub-Committee, comments were received asking for an additional review of the packing instructions listed under 5.5.3.3.1. This revision was agreed to be made separately from the previous document, as the subjects were related, but independent.

Background

3. Chapter 5.5.3 of the Model Regulations was introduced in the seventeenth edition in 2012. It is dedicated to “Special provisions applicable to packages and cargo transport units containing substances presenting a risk of asphyxiation when used for cooling or conditioning purposes (such as dry ice (UN 1845) or nitrogen, refrigerated liquid (UN 1977) or argon, refrigerated liquid (UN 1951) or nitrogen)”.
4. When introducing 5.5.3, paragraphs 5.5.3.3.1 and 5.5.3.3.2 were introduced, and have remained without modifications until today:

“5.5.3.3.1 Packaged dangerous goods requiring cooling or conditioning assigned to packing instructions P203, P620, P650, P800, P901 or P904 of 4.1.4.1 shall meet the appropriate requirements of that packing instruction.

5.5.3.3.2 For packaged dangerous goods requiring cooling or conditioning assigned to other packing instructions, the packages shall be capable of withstanding very low

* A/75/6 (Sect.20), para. 20.51

temperatures and shall not be affected or significantly weakened by the coolant or conditioner. Packages shall be designed and constructed to permit the release of gas to prevent a build-up of pressure that could rupture the packaging. The dangerous goods shall be packed in such a way as to prevent movement after the dissipation of any coolant or conditioner.”

5. The initial intention of these paragraphs was explained in document ST/SG/AC.10/C.3/2010/12 presented by Germany, the Netherlands and the United Kingdom, specifically in paragraph 6 (the numbering of the paragraphs is different because amendments were still introduced into other parts of the new 5.5.3):

“The packing instructions P620, P650, P800, P904 and P901 contain requirements for packages containing UN 1845 or 1977 for cooling purposes. But it is also possible that dangerous goods assigned to other packing instructions are cooled or conditioned by addition of such substances. Equivalent requirements are needed for these other packages, too, in particular to ensure that the package is capable of withstanding the low temperatures and is not weakened by the coolant or conditioner and that measures are taken to prevent a build-up of pressure. Furthermore the dangerous goods should be packed in such a way to prevent movement after the dissipation of any coolant or conditioner. Appropriate text can be found in the proposed new subsection 5.5.3.2.2 [present 5.5.3.3.2].”

6. Even if it is not mentioned in this paragraph, P203 was already included into paragraph 5.5.3.3.2.

Analysis

7. Before 5.5.3 was introduced, packing instructions P203, P620, P650, P800, P904 and P901 already contained requirements for the packages containing refrigerating.

8. 5.5.3.3.2 was created to include equivalent requirements for the rest of the packages. This would mean that those packing instructions mentioned under 5.5.3.3.1 have already requirements in place that are equivalent to those mentioned under 5.5.3.3.2, specifically the following criteria:

- (a) The packages shall be capable of withstanding very low temperatures;
- (b) The packages shall not be affected or significantly weakened by the coolant or conditioner;
- (c) Packages shall be designed and constructed to permit the release of gas to prevent a build-up of pressure that could rupture the packaging. Alternatively, they should resist the pressure build-up;
- (d) The dangerous goods shall be packed in such a way as to prevent movement after the dissipation of any coolant or conditioner.

9. Packages not prepared following a packing instruction under 5.5.3.3.1 will need to check one by one these criteria; for packages following a packing instruction under 5.5.3.3.1 this is not necessary, because these packing instructions are supposedly already fulfilling the criteria of 5.5.3.3.2, and it is not necessary to check this each time.

10. Nevertheless, when checking the packing instructions under 5.5.3.3.1 against the criteria mentioned in 5.5.3.3.2, the following is observed:

Packing instruction	Low temperature (A)	Not affected by coolant (B)	Permit gas release/resist pressure (C)	Prevent movement after dissipation (D)
P203	Included	Included	Included	Not relevant
P620	Included	Not mentioned	Included	Included
P650	Included	Not mentioned	Included	Included
P800	Included	Included	Included	Not mentioned
P901	Not mentioned	Not mentioned	Not mentioned	Not mentioned
P904	Not mentioned	Not mentioned	Not mentioned	Included

11. Criteria (B) does not seem so relevant as the others; while it is helpful, it is in fact redundant, as it is an application of the general principle that the dangerous good shall not react in any way with its packaging or other dangerous goods (see paragraph 4.1.1.6).

12. Packing instructions P901 and P904 do not seem to fulfil the criteria specified under 5.5.3.3.2 and, therefore, it would seem prudent to take these packing instructions out of the list of 5.5.3.3.1. Also, P800 does not fulfil all of these criteria, but at least considers most of them; the presence in the list of 5.5.3.3.1 should also be reviewed.

13. The consequence of taking these packing instructions out of 5.5.3.3.1 would be that the criteria of 5.5.3.3.2 would need to be checked when preparing the packages.

14. On the contrary, there are nowadays other packing instructions also considering refrigeration, namely P520, P911 and LP906. For those, it could be interesting to make a similar review, to check if they could be included into 5.5.3.3.1. All three packing instructions have the same text related to these criteria, and their analysis provides the following result:

Packing instruction	Low temperature (A)	Not affected by coolant (B)	Permit gas release/resist pressure (C)	Prevent movement after dissipation (D)
P520	Included	Not mentioned	Included	Included
P911	Included	Not mentioned	Included	Included
LP906	Included	Not mentioned	Included	Included

15. The consequence of including these packing instruction into 5.5.3.3.1 would be that the criteria of 5.5.3.3.2 would not need to be checked when preparing the packages any more.

Proposals

16. Taking into consideration the previous analysis, Spain considers it necessary to modify 5.5.3.3.1 as follows (new text is underlined, deleted text ~~stricken through~~):

“5.5.3.3.1 Packaged dangerous goods requiring cooling or conditioning assigned to packing instructions P203, P520, P620, P650, P911 and LP906 ~~P800, P901 or P904~~ of 4.1.4.1 shall meet the appropriate requirements of that packing instruction.”