



---

## 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

Geneva, 27 June-6 July 2022

Item 4 (c) of the provisional agenda

**Electric storage systems: transport provisions**

## **Provisions of 2.9.4 for lithium batteries transported under special provision 310**

**Transmitted by the expert from Belgium\***

### **Introduction**

1. At the fifty-ninth session of the Sub-Committee, Belgium presented document [ST/SG/AC.10/C.3/2021/46](#) which described the difficulties in the interpretation of special provision 310 in relation with 2.9.4 of the Model Regulations. This document lists the relevant texts of the Model Regulations, the conclusions of the previous session and a proposal for clarification of special provision 310, which incorporates the comments that were received.

### **Discussion**

2. Cells and batteries, cells and batteries contained in equipment, or cells and batteries packed with equipment, containing lithium in any form shall be assigned to UN Nos. 3090, 3091, 3480 or 3481, as applicable. They may be transported under these entries if they meet the following provisions in 2.9.4 of the Model Regulations:

*"(a) Each cell or battery is of the type proved to meet the requirements of each test of the Manual of Tests and Criteria, Part III, sub-section 38.3;*

*(b) Each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under conditions normally incident to transport;*

*(c) Each cell and battery is equipped with an effective means of preventing external short circuits;*

*(d) Each battery containing cells or series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (e.g., diodes, fuses, etc.);*

---

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

(e) *Cells and batteries shall be manufactured under a quality management programme that includes:*

- (i) *A description of the organizational structure and responsibilities of personnel with regard to design and product quality;*
- (ii) *The relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;*
- (iii) *Process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;*
- (iv) *Quality records, such as inspection reports, test data, calibration data and certificates. Test data shall be kept and made available to the competent authority upon request;*
- (v) *Management reviews to ensure the effective operation of the quality management programme;*
- (vi) *A process for control of documents and their revision;*
- (vii) *A means for control of cells or batteries that are not conforming to the type tested as mentioned in (a) above;*
- (viii) *Training programmes and qualification procedures for relevant personnel; and*
- (ix) *Procedures to ensure that there is no damage to the final product.*

(f) *Lithium batteries, containing both primary lithium metal cells and rechargeable lithium ion cells, that are not designed to be externally charged (see special provision 387 of Chapter 3.3) shall meet the following conditions:*

- (i) *The rechargeable lithium ion cells can only be charged from the primary lithium metal cells;*
- (ii) *Overcharge of the rechargeable lithium ion cells is precluded by design;*
- (iii) *The battery has been tested as a lithium primary battery;*
- (iv) *Component cells of the battery shall be of a type proved to meet the respective testing requirements of the Manual of Tests and Criteria, Part III, sub-section 38.3.*

(g) *Manufacturers and subsequent distributors of cells or batteries manufactured after 30 June 2003 shall make available the test summary as specified in the Manual of Tests and Criteria, Part III, sub-section 38.3, paragraph 38.3.5."*

3. However, several special provisions are assigned to these UN numbers which indicate more precisely which of the provisions of 2.9.4 must be met under which conditions:

(a) Special provision 188 is assigned to UN Nos. 3090, 3091, 3480 and 3481. Sub-paragraph (c) of special provision 188 states the following:

*"(c) Each cell or battery meets the provisions of 2.9.4 (a), (e), (f) if applicable and (g);"*

(b) Special provision 230 is assigned to UN Nos. 3090, 3091, 3480 and 3481. It states the following:

*"230 Lithium cells and batteries may be transported under this entry if they meet the provisions of 2.9.4."*

(c) Special provision 310 is assigned to UN Nos. 3090, 3091, 3480 and 3481. The first paragraph of special provision 310 states the following:

*"310 The testing requirements in the Manual of Tests and Criteria, Part III sub-section 38.3 do not apply to production runs, consisting of not more than 100 cells or batteries, or to pre-production prototypes of cells or*

*batteries when these prototypes are transported for testing when packaged in accordance with packing instruction P910 of 4.1.4.1 or LP905 of 4.1.4.3, as applicable."*

4. For lithium cells or batteries offered for transport under special provision 310, it is not specifically indicated in this special provision which of the requirements of 2.9.4 need to be met and which do not have to be met. Only a general statement "The testing requirements in the Manual of Tests and Criteria, Part III sub-section 38.3 do not apply" is included.
5. The Sub-Committee agreed at its 59<sup>th</sup> session that when lithium cells or batteries are offered for transport, they must meet the provisions of 2.9.4. The Sub-Committee also agreed that when lithium cells or batteries are offered for transport under special provision 310 only the provisions of 2.9.4 related to the testing requirements in the Manual of Tests and Criteria, Part III, sub-section 38.3 need not be met.
6. Within 2.9.4 there are several provisions related to the 38.3 testing requirements as follows (see paragraph 2 of this document for the full text of these provisions):
  - 2.9.4 (a),
  - 2.9.4 (e) (vii),
  - 2.9.4 (f) (iii) if applicable,
  - 2.9.4 (f) (iv) if applicable, and
  - 2.9.4 (g).
7. At the 59<sup>th</sup> session only 2.9.4 (e) (vii) on the quality assurance provisions was questioned by some experts whether it should be included in this list. They stated that it was not the original intention to link this provision to untested batteries. As this aspect on the relevance of a quality management program for untested batteries was considered a separate issue, it would be discussed in a future separate proposal.
8. To clarify special provision 310 and to align the text with special provisions 188 and 230 Belgium proposes to specify in special provision 310 which requirements of 2.9.4 need to be applied when batteries are offered for transport under this special provision. The Sub-Committee is invited to consider one of the following proposals.

## Proposal 1

9. It is proposed to clarify special provision 310 as follows (new text is underlined):
 

"310 The testing requirements in the Manual of Tests and Criteria, Part III sub-section 38.3 do not apply to production runs, consisting of not more than 100 cells or batteries, or to pre-production prototypes of cells or batteries when these prototypes are transported for testing when packaged in accordance with packing instruction P910 of 4.1.4.1 or LP905 of 4.1.4.3, as applicable.

These cells and batteries shall meet the provisions of 2.9.4 with the exception of 2.9.4 (a), (e) (vii), (f) (iii) if applicable, f (iv) if applicable and (g).

The transport document shall include the following statement: "Transport in accordance with special provision 310"."

## Proposal 2

10. It is proposed to clarify special provision 310 as follows (new text is underlined):
 

"310 ~~The testing requirements in the Manual of Tests and Criteria, part III sub-section 38.3~~ Cells and batteries shall meet the provisions of 2.9.4 with the exception of 2.9.4 (a), (e) (vii), (f) (iii) if applicable, f (iv) if applicable and (g) ~~do not apply to~~ for production runs, consisting of not more than 100 cells or batteries, or ~~to~~ for pre-production prototypes of cells or batteries when these

prototypes are transported for testing when packaged in accordance with packing instruction P910 of 4.1.4.1 or LP905 of 4.1.4.3, as applicable.

The transport document shall include the following statement: "Transport in accordance with special provision 310".

### Proposal 3

11. It is proposed to clarify special provision 310 as follows (new text is underlined):

"310 ~~The testing requirements in the Manual of Tests and Criteria, part III sub-section 38.3 do not apply to~~ Cells and batteries from production runs, consisting of not more than 100 cells or batteries, or ~~to~~ pre-production prototypes of cells or batteries when these prototypes are transported for testing when packaged in accordance with packing instruction P910 of 4.1.4.1 or LP905 of 4.1.4.3, as applicable, shall meet the provisions of 2.9.4 with the exception of 2.9.4 (a), (e) (vii), (f) (iii) if applicable, f (iv) if applicable and (g).

The transport document shall include the following statement: "Transport in accordance with special provision 310".

---