



**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****Sixty-fourth session**

Geneva, 24 June-3 July 2024

Item 4 (a) of the provisional agenda

Electric storage systems:**Testing of lithium batteries****Size of the flat surfaces in the crush test procedure (test T.6)****Transmitted by the expert from China*****I. Introduction**

1. Battery products are developing rapidly and the size of some products is getting larger and larger (for instance, 960 mm for prismatic cell (blade battery) or 500 mm (pouch cell)).
2. According to the crush test in 38.3.4.6.3 of the *Manual of Tests and Criteria* (ST/SG/AC.10/11/Rev.8) applicable to prismatic and pouch cells, these cells shall be crushed by applying the force to the widest side. The cell is to be crushed between two flat surfaces.
3. The dimensions of the flat surfaces are not specified in the test procedure. In particular, the upper surface may be 400 mm × 400 mm, 300 mm × 300 mm, or even smaller. For safety reasons, there is a need to clarify that the dimensions of the flat surfaces that, according to cell size during crush test, should exceed the widest side of the cell.

II. Justification

4. During the packaging or installation process, the battery is typically subjected to extrusion pressure exerted by an object of equivalent dimensions.
5. If the dimensions of the flat surfaces are smaller than the widest side of the cell, the cell may experience shear damage at the edge of the surface or obtuse extrusion, resulting in an additional impact on the test and a deviation from the original intent of the crush test.

* A/78/6 (Sect. 20), table 20.5.



III. Proposal

6. China suggests adding a size requirement for the flat surfaces used in the crush test. Two options to amend paragraph 38.3.4.6.3 in the *Manual of Tests and Criteria* are proposed below.

Option 1

7. Amend the paragraph after the note in 38.3.4.6.3 to add emphasis on the specification of the surface size in the test description, as follows (new text is shown in **bold underlined**):

“38.3.4.6.3

A cell or component cell is to be crushed between two flat surfaces. **The dimensions of the flat surfaces should be greater than the widest side of the cell.** The crushing is to be gradual with a speed of approximately 1.5 cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached.

(a) ...”

[The rest of the paragraph remains unchanged].

Option 2

8. Add in 38.3.4.6.3 after sub-paragraph (c) and before the current sentence starting with “Once the maximum pressure...” the following new note to emphasize or specify the flat surface dimensions, as follows (new text is shown in **bold underlined**):

“38.3.4.6.3

A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5 cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached.

(a) ...

(b) ...

(c) The cell is deformed by 50 % or more of its original thickness.

NOTE: The dimensions of the flat surfaces should be greater than the widest side of the cell.”

[The rest of the paragraph remains unchanged].
