

**Committee of Experts on the Transport of Dangerous Goods  
and on the Globally Harmonized System of Classification  
and Labelling of Chemicals**

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Dangerous Goods**

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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**

**Diameter of cylindrical steel rod during puncture test  
according to 6.3.5.4**

**Transmitted by the expert from Germany**

**Introduction**

1. Currently paragraphs 6.3.5.4.1 and 6.3.5.4.2 read as follows (relevant parts underlined):

“Packagings with a gross mass of 7 kg or less

Samples shall be placed on a level hard surface. A cylindrical steel rod with a mass of at least 7 kg, a diameter of 38 mm and whose impact end edges have a radius not exceeding 6 mm (see Figure 6.3.5.4.2), shall be dropped in a vertical free fall from a height of 1 m, measured from the impact end to the impact surface of the sample. One sample shall be placed on its base. A second sample shall be placed in an orientation perpendicular to that used for the first. In each instance the steel rod shall be aimed to impact the primary receptacle. Following each impact, penetration of the secondary packaging is acceptable, provided that there is no leakage from the primary receptacle(s).” and

“Packagings with a gross mass exceeding 7 kg

Samples shall be dropped on to the end of a cylindrical steel rod. The rod shall be set vertically in a level hard surface. It shall have a diameter of 38 mm and the edges of the upper end a radius not exceeding 6 mm (see Figure 6.3.5.4.2). The rod shall protrude from the surface a distance at least equal to that between the centre of the primary receptacle(s) and the outer surface of the outer packaging with a minimum of 200 mm. One sample shall be dropped with its top face lowermost in a vertical free fall from a height of 1 m, measured from the top of the steel rod. A second sample shall be dropped from the same height in an orientation perpendicular to that used for the first. In each instance, the packaging shall be so orientated that the steel rod would be capable of penetrating the primary receptacle(s). Following each impact, penetration of the secondary packaging is acceptable provided that there is no leakage from the primary receptacle(s).”.

2. In both regulations the diameter is a fixed value without any tolerances defined. This leads to the situation that a cylindrical steel rod with a slightly different diameter should not be accepted for puncture testing.

3. Contrary to the definition of the diameter, the mass of the steel rod is defined as a minimum value in 6.3.5.4.1 and the radius of the edges of the upper end is defined as a maximum value in 6.3.5.4.1 and 6.3.5.4.2.

4. Therefore, it is proposed to amend paragraphs 6.3.5.4.1 and 6.3.5.4.2 of the Regulations and to define the diameter as a maximum value, bearing in mind that the pressure during impact is greater if the diameter is smaller.

## Proposal

5. Amend 6.3.5.4.1 to read as follows (new text underlined):

“Packagings with a gross mass of 7 kg or less

Samples shall be placed on a level hard surface. A cylindrical steel rod with a mass of at least 7 kg, a diameter not exceeding 38 mm and whose impact end edges have a radius not exceeding 6 mm (see Figure 6.3.5.4.2), shall be dropped in a vertical free fall from a height of 1 m, measured from the impact end to the impact surface of the sample. One sample shall be placed on its base. A second sample shall be placed in an orientation perpendicular to that used for the first. In each instance the steel rod shall be aimed to impact the primary receptacle. Following each impact, penetration of the secondary packaging is acceptable, provided that there is no leakage from the primary receptacle(s).”

6. Amend 6.3.5.4.2 to read as follows (new text underlined):

“Packagings with a gross mass exceeding 7 kg

Samples shall be dropped on to the end of a cylindrical steel rod. The rod shall be set vertically in a level hard surface. It shall have a diameter not exceeding 38 mm and the edges of the upper end a radius not exceeding 6 mm (see Figure 6.3.5.4.2). The rod shall protrude from the surface a distance at least equal to that between the centre of the primary receptacle(s) and the outer surface of the outer packaging with a minimum of 200 mm. One sample shall be dropped with its top face lowermost in a vertical free fall from a height of 1 m, measured from the top of the steel rod. A second sample shall be dropped from the same height in an orientation perpendicular to that used for the first. In each instance, the packaging shall be so orientated that the steel rod would be capable of penetrating the primary receptacle(s). Following each impact, penetration of the secondary packaging is acceptable provided that there is no leakage from the primary receptacle(s).”

7. Amend Figure 6.3.1 to read as follows (modified text within rectangular shapes: add ≤ before 38; delete mm behind 6, because “Dimensions in millimetres” is already stated in the figure):



