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| **UN/SCETDG/49/INF.36** |
| **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 16 June 2016**  **Forty-ninth session**  Geneva, 27 June – 6 July 2016  Item 2 (c) of the provisional agenda  **Explosives and related matters:  review of tests in parts I and II of the Manual of Tests and Criteria** |

Design proposal for the standard detonator in the Manual of Tests and Criteria

Transmitted by the Institute of Makers of Explosives (IME)

Introduction

1. At the 47th Session, in informal document INF.10 (47th session), IME reviewed long term issues that had been previously identified[[1]](#footnote-2) regarding improvement of Test Series 6. One of the issues identified was that of the specification for a Standard Detonator found in Appendix 1 of the Manual of Tests and Criteria (Manual). IME noted[[2]](#footnote-3):

*Germany has reviewed the European version of the standard detonator and proposes some changes in ST/SG/AC.10/C.3/2015/26. Additionally, IME has begun an internal study of the USA version of the standard detonator and expects to report its recommendations at the 48th session.*

2. In ST/SG/AC.10/C.3/2015/26, Germany presented a proposal to update the design specification for the European version of the standard detonator and in ST/SG/AC.10/C.3/2016/10, Germany has presented some test data supporting that proposal.

3. IME welcomes the work done by Germany and hopes to take it one step further resulting in a single specification for the standard detonator that would replace both the current European and the USA versions currently found in Appendix 1 of the Manual. IME believes that this could be accomplished by making some adjustments to the proposal by Germany that is contained in ST/SG/AC.10/C.3/2015/26 and referred to in ST/SG/AC.10/C.3/2016/10. These adjustments, with some additional comments from IME are shown in the Annex 1 to this paper. For clarity in review, Annex 2 provides a clean copy of the proposed text.

4. IME invites the Sub-Committee and its working group on explosives to consider whether the modifications to the German proposal suggested by IME could serve as a way forward to formalizing a single specification for the Standard Detonator described in Appendix 1 of the Manual.

Annex 1

Proposed Amendments to Proposed Text in ST/SG/AC.10/C.3/2015/26

Specifications of standard detonators

Description of the standard detonator

According to the elements of the standard detonator the following specifications apply:

*A) Detonator*

The detonator shell shall be hollow-drawn from either copper (with not more than 5% zinc, where an alloy is used) or aluminium. The cap shall have an outer diameter of 7.0 mm to 7.6 mm. The thickness at the bottom of the cap shall be 0.42 mm ± 0.05 mm.

*B) Secondary charge*

The secondary charge shall be PETN and with a mass of 0.450 to 0.475 g and pressed at a minimum of 26 MPa. The secondary charge is pressed into the bottom of the detonator and shall have no gaps or air spaces.

*C) Primary charge*

The primary charge shall be of a primary explosive (preferably lead-free). It needs to be in direct contact to the secondary charge.

The following information shall serve to understand the permissible variations in design beyond the above specifications:

1. The detonator may in principle have a hollow, indented, or stamped bottom.
2. In order to exclude shaped-charge effects it is preferred to use only flat bottom caps.
3. The overall length of the detonator is not defined. Since it has to contain all elements it will commonly be not shorter than 45 mm.

The detonator shall be initiated by a safe, reliable, and internationally recognized means. Some examples are electric detonators, shock tube detonators, or electronic detonators.



Annex 2

Amended Appendix 1 to the Manual of Tests and Criteria

Specifications of standard detonator

According to the elements of the standard detonator the following specifications apply:

*A) Detonator*

The detonator shell shall be hollow-drawn from either copper (with not more than 5% zinc, where an alloy is used) or aluminium. The cap shall have an outer diameter of 7.0 mm to 7.6 mm. The thickness at the bottom of the cap shall be 0.42 mm ± 0.05 mm.

*B) Secondary charge*

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*C) Primary charge*

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The detonator shall be initiated by a safe, reliable, and internationally recognized means. Some examples are electric detonators, shock tube detonators, or electronic detonators.

1. ST/SG/AC.10/C.3/2014/4 [↑](#footnote-ref-2)
2. UN/SCETDG/47/INF.10, para. 7 [↑](#footnote-ref-3)