



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

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Item 2 (h) of the provisional agenda

Explosives and related matters:
miscellaneous

Sub-Committee of Experts on the Globally Harmonized
System of Classification and Labelling of Chemicals

Forty-fourth session

Geneva, 10-12 July 2023

Item 2 (k) of the provisional agenda

Work on the Globally Harmonized System of
Classification and Labelling of Chemicals: other matters

Consideration of amendments to Chapter 2.17 (Desensitized explosives) of the Globally Harmonized System and section 51 of the Manual of Tests and Criteria

Transmitted by the Australasian Explosives Industry Safety Group Inc.
(AEISG)*

Background

1. At its forty-third session, the Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) adopted changes to Chapter 2.17 (Desensitized explosives) of the GHS and to section 51 of the Manual of Tests and Criteria (MTC) as proposed in document ST/SG/AC.10/C.4/2022/10 from Germany and the United States of America with amendments as outlined in informal document INF.35 (forty-third session) from Germany, the United States of America and the United Kingdom. The GHS Sub-Committee adopted some additional consequential editorial corrections as outlined in annex I to the report on its forty-third session (ST/SG/AC.10/C.4/86).

2. While AEISG supported the proposed changes, it raised a number of issues of potential confusion or unintended consequences related to the changes (see informal document INF.12, forty-third session). The Sub-Committee took note of the relevant discussions by the Sub-Committee of Experts on the Transport of Dangerous Goods (TDG Sub-Committee) including the invitation by the Chairman of the Explosives Working Group for AEISG to address issues raised in its submission in the next biennium.

* A/77/6 (Sect. 20), table 20.6

Issues and discussion

Inconsistent classification of explosives

3. Chapter 2.17 of the GHS and the associated section 51 of the MTC seek to classify products as desensitized explosives for GHS purposes and then to use the burning rate test (external fire) to place such products into one of four categories.
4. However, both chapter 2.17 of the GHS (see Note to 2.17.2.2) and section 51 of the MTC (see 51.4.4.3 and 51.4.4.5) also declare products to be in the class of explosives despite the relevant criteria (including the burning rate test) not being included or even referenced in part 1 of the MTC which classifies explosives.
5. AEISG believes this creates confusion as to the correct classification process for explosives and creates inconsistencies between chapters 2.1 and 2.17 of the GHS, and between section 51 and part 1 of the MTC.
6. This perceived inconsistency could be overcome by slight rewording of the note to section 2.17.2 of Chapter 2.17 and to sections 51.4.4.3 and 51.4.4.5 of the MTC as later proposed.

Exclusion of nitrocellulose mixtures from sensitivity testing

7. A significant reason for the recent review of chapter 2.17 of the GHS was to ensure that products were not included in this class of desensitized explosives if they were overly sensitive to initiation or ignition.
8. To address this requirement a new criterion was included as subparagraph 2.17.2.2 (b)(ii) requiring products to be not too sensitive according to test series 3. However, a note has been added to paragraph 2.17.2.3 which appears to exempt nitrocellulose mixtures from this criterion.
9. Test series 3 of the MTC includes mechanical sensitivity testing (impact, shock, friction) and thermal stability testing. Nitrocellulose mixtures are subjected to stability testing in accordance with appendix 10 of the MTC and could reasonably be exempted from the thermal stability testing of test series 3. This issue is addressed in the footnote 2 to decision logic 2.17.1 in chapter 2.17 of the GHS and in section 51, subparagraph 51.3.2 (c) of the MTC. However, it is unclear why such products would not need to be subjected to the other mechanical sensitivity tests.
10. Without further clarification as to the appropriateness of the current wording of the note to paragraph 2.17.2.3 in the GHS, it is proposed to delete the note to remove this apparent anomaly to ensure all products are appropriately sensitivity tested.

Application of the burning rate test

11. As previously indicated, section 51 of the MTC uses the burning rate test to categorize desensitized explosives. Section 51.4.1.2 applies the test to all types of packages unless “the substance or mixture, as packaged for supply and use, is assigned to the hazard class “Explosives”, Division 1.1.”.
12. AEISG is of the view that the burning rate test is not applicable to any substances or mixtures assigned to the hazard class “Explosives” regardless of the division (1.1 through to 1.6) and hence believes that the term “Division 1.1” should be deleted.

Proposals

13. Proposals addressing the inconsistent classification of explosives:
 - (a) Amendments to chapter 2.17 of the GHS:

Amend current note to 2.17.2.2 as follows (*inserted text is shown in bold, underlined, deleted text is crossed out*):

*“NOTE: Phlegmatized explosives which do not meet the criteria of 2.17.2.2 should be **considered for classification** as explosives (see chapter 2.1).”*

- (b) Amendments to section 51 of the MTC

Amend paragraph 51.4.4.3 as follows (*inserted text is shown in bold, underlined, deleted text is crossed out*):

“51.4.4.3 If a mass explosion or individual explosions or metallic projections (fragments) occur the substance or mixture is **not included in the class of desensitized explosives and should be considered for classification** ~~classified~~ in the hazard class “explosives” **(see chapter 2.1).**”

Amend the last sentence of 51.4.4.5 as follows (*inserted text is shown in bold, underlined, deleted text is crossed out*):

“Any substance or mixture with a corrected burning rate greater than 1200 kg/min is **not included in the class of desensitized explosives and should be considered for classification** ~~classified~~ as an explosive (see chapter 2.1 of the GHS).”

14. Proposal addressing the exclusion of nitrocellulose mixtures from sensitivity testing:

Chapter 2.17 of the GHS, delete the note to paragraph 2.17.2.3, as follows:

“NOTE: Nitrocellulose mixtures containing no explosives other than nitrocellulose, do not need to meet the criterion of 2.17.2.2(b)(ii).”

15. Proposal addressing the application of the burning rate test:

In section 51, subparagraph 51.4.1.2 (b) of the MTC, delete “Division 1.1” as follows:

“(b) The substance or mixture, as packed for supply and use, is assigned to the hazard class “Explosives”, ~~Division 1.1.~~”
