



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 10 (c) of the provisional agenda

**Issues relating to the Globally Harmonized System
of Classification and Labelling of Chemicals:**

Miscellaneous

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

Forty-sixth session

Geneva, 3-5 July 2024

Item 2 (j) of the provisional agenda

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

Other matters

Consideration of nitrocellulose mixtures in chapter 2.17 (Desensitized explosives) of the Globally Harmonized System, Section 51 of the Manual of Tests and Criteria and special provision 393 of the Model Regulations

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

I. Background

1. At its forty-third session, the Sub-Committee of Experts on the Globally Harmonised System of Classification and Labelling of Chemicals (GHS Sub-Committee) adopted changes to chapter 2.17 (Desensitized explosives) of the GHS 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 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 of the report on its forty-third session (ST/SG/AC.10/C.4/86). The GHS Sub-Committee also took note of the relevant discussions by the Sub-Committee of Experts on the Transport of Dangerous Goods (TDG Sub-Committee) on this topic, including the adoption of the amendments to section 51 of the Manual of Tests and Criteria (see the report of the TDG Sub-Committee on its sixty-first session, ST/SG/AC.10/C.3/122, paragraph 70 and annex II).

2. While AEISG supported the proposed changes, it raised a number of issues of potential confusion or unintended consequences, as detailed in informal document INF.12 (GHS Sub-Committee, forty-third session) - INF.20 (TDG Sub-Committee, sixty-first session). AEISG took note of the invitation by the Chairperson of the Explosives Working

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

Group to address them in the following (current) biennium (see ST/SG/AC.10/C.4/86, paragraphs 28 and 29).

3. At the sixty-second session of the TDG Sub-Committee and the forty-fourth session of the GHS Sub-Committee, AEISG addressed these issues in document ST/SG/AC.10/C.3/2023/17–ST/SG/AC.10/C.4/2023/3 which offered three proposals for consideration by the sub-committees.

4. The AEISG proposals were discussed by the Explosives Working Group (EWG) during the sixty-second session of the TDG Sub-Committee. As noted in its report, the EWG recommended acceptance of the AEISG proposal to delete the note to paragraph 2.17.2.3 of chapter 2.17 of the GHS on the exemption of nitrocellulose mixtures from sensitivity testing (see informal document INF.47 from that session, section 11 and amendment 3 in Annex 2 to that document).

5. The EWG recommendation was subsequently referred to the GHS Sub-Committee at its forty-fourth session for its consideration (see informal document INF.22, item 3). The issue was discussed by the GHS Sub-Committee but left unresolved. AEISG indicated that it would revise its proposal for a following session of the GHS taking into accounts comments made (see report of the GHS Sub-Committee on its forty-fourth session, ST/SG/AC.10/C.4/88, paragraphs 10 and 11).

II. Exemption of nitrocellulose mixtures from sensitivity testing

6. A significant reason for the recent review of chapter 2.17 of the GHS led by the expert from Germany was to ensure that products were not included in the class of desensitized explosives if they were overly sensitive or thermally unstable.

7. To address this requirement a new criterion was included as paragraph 2.17.2.2 (b) (ii) of the GHS requiring substances and mixtures to be "... not too sensitive or thermally unstable in accordance with test series 3 of the Manual of Tests and Criteria;". However, a note was also added to paragraph 2.17.2.3 of the GHS which exempts nitrocellulose mixtures, containing no explosives other than nitrocellulose, from this criterion.

8. Further, a note 2 to decision logic 2.17.1 contained within paragraph 2.17.4.1 of the GHS also indicates that test series 3 is not applicable to nitrocellulose mixtures containing no explosives other than nitrocellulose. This exemption is also reflected in section 51 of the Manual of Tests and Criteria (refer to sub-paragraphs 51.3.2 (a) and (c)).

9. Special provision 393 contained in chapter 3.3 of the Model Regulations is applied to nitrocellulose entries of Class 1 in chapter 3.2 of the Model Regulations (i.e., UN Nos. 0340, 0341, 0342, 0343). This provision exempts these entries from the thermal stability test 3(c).

10. Test series 3 of the Manual of Tests and Criteria includes mechanical sensitivity testing (impact, shock, friction) and thermal stability testing. The nitrocellulose contained within nitrocellulose mixtures is subjected to stability testing in accordance with appendix 10 of the Manual of Tests and Criteria (refer to paragraph 2.17.2.3 of the GHS) and hence could reasonably be exempted from the thermal stability testing of test series 3. However, it is unclear why nitrocellulose mixtures (i.e., nitrocellulose with any other plasticiser/phlegmatizer) would not need to be subjected to both mechanical sensitivity and thermal stability tests.

11. It would appear that the addition of any potentially incompatible plasticizer/phlegmatizer to nitrocellulose could adversely impact its mechanical sensitivity and/or its thermal stability. Hence, while the nitrocellulose contained within the nitrocellulose mixture could reasonably be exempted from the thermal stability test 3 (c), the resultant nitrocellulose mixture should be subjected to test series 3 (including 3 (c)) to ensure safety in the classification process.

12. Without further clarification as to the appropriateness of the current wording of the note to paragraph 2.17.2.3 of the GHS; note 2 to decision logic 2.17.1 of the GHS; section 51, sub-paragraphs 51.3.2 (a) and (c) of the Manual of Tests and Criteria; and special provision 393 of the Model Regulations, it is proposed to delete or amend these exemptions to remove

this apparent anomaly to ensure all products are appropriately subjected to relevant sensitivity testing.

13. Given that special provision 393 of the Model Regulations is applied to nitrocellulose mixtures of Class 1 to ensure stability of the nitrocellulose in those mixtures, AEISG questions whether it should also be applied to UN Nos. 0160, 0161 and 0509 for POWDER, SMOKELESS in chapter 3.2 of the Model Regulations to ensure stability of the nitrocellulose contained therein.

III. Proposals

14. Proposed amendments to chapter 2.17 of the GHS:

2.17.2.3 Delete the note 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).”~~

2.17.4.1, decision logic 2.17.1: delete footnote 2, as follows:

~~“² Test series 3 is not applicable to nitrocellulose mixtures containing no explosives other than nitrocellulose.”~~

15. Proposed amendments to section 51, paragraph 51.3.2 of the Manual of Tests and Criteria:

Delete sub-paragraphs 51.3.2 (a) and (c), as follows, and renumber remaining sub-paragraphs accordingly:

~~“(a) Test series 3 may be waived if the explosive itself (i.e. before being phlegmatized) is not too sensitive or thermally unstable in accordance with test series 3;”~~

~~“(c) Test series 3 is not applicable to nitrocellulose mixtures containing no explosives other than nitrocellulose, for which the stability of the nitrocellulose has been established in accordance with appendix 10;”~~

16. Proposed amendments to chapters 3.2 and 3.3 of the Model Regulations:

Chapter 3.3, amend special provision 393 as follows (new text is underlined):

“393 The nitrocellulose shall meet the criteria of the Bergmann-Junk test or methyl violet paper test in the *Manual of Tests and Criteria*, appendix 10. Tests of type 3 (c) need not be applied to the nitrocellulose. However nitrocellulose mixtures containing plasticisers, pigments, etc. should still undergo type 3(c) testing.”

Chapter 3.2

In the List of Dangerous Goods, assign special provision 393 in column (6) to UN Nos. 0160, 0161 and 0509 for POWDER, SMOKELESS.
