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## 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-fifth session

Geneva, 25 November-3 December 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-seventh session

Geneva, 4-6 December 2024

Item 2 (b) of the provisional agenda

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

##### Work of the Sub-Committee of Experts on the Transport of Dangerous Goods on matters of interest to the Sub- Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals

## Use of expert judgment related to explosives testing in GHS chapter 2.17

Transmitted by the Sporting Arms & Ammunition Manufacturers'  
Institute (SAAMI)\*

### I. Introduction

1. The development of GHS chapter 2.17 was finalized in 2014 after six years of work. In recent years a series of changes have been approved or proposed that range from adding clarity to requiring new testing.
2. This document relates to chapter 2.17 explosives testing requirements<sup>1</sup> for desensitized explosive mixtures which have been well-defined using specific UN entries.<sup>2</sup> These entries should not require explosives testing or competent authority approval to exit the GHS class of explosives, and the *Model Regulations* do not require explosives testing of these chemicals.
3. As such, eligible nitrocellulose products conforming to the above should not be subject to the explosives testing requirements of chapter 2.17. Similarly, non-nitrocellulose products meeting the same eligibility requirements should also not be subject to the explosives testing requirements in chapter 2.17.

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

<sup>1</sup> The phrase “explosives testing” is used to refer to tests in the *Manual of Tests and Criteria* in Part I: Classification Procedures, Test methods and criteria relating to explosives.

<sup>2</sup> For a discussion of the four types of proper shipping names, and their preferential ranking, see the International Air Transport Association’s (IATA) *Dangerous Goods Regulations* (DGR), Section 4.1.0.2.



## II. Background

4. Nitrocellulose is an explosive material when insufficiently phlegmatized, as exemplified by the division 1.1 and 1.3 entries applying to it, i.e., UN Nos. 0340, 0341, 0342 and 0343. Note that the degree of nitration and nitrogen content is not a factor except for UN 0342.
5. When properly phlegmatized or diluted, many desensitized explosive entries apply to nitrocellulose, including:
  - (a) UN Nos. 2555, 2556 and 2557 for nitrocellulose for precursors to manufacturing with only a phlegmatizer added, such as water or alcohol, or plasticizer; and
  - (b) UN Nos. 1210, 1263, 1266, 3066, 3469 and 3470 for final products with up to 20 per cent nitrocellulose in more complex mixtures, such as paint, perfumery products or printing ink<sup>3</sup>. Many of these products may be completely excluded from the flammable liquids or solids classifications based on testing<sup>4</sup>, but explosives testing is not required for classification as a flammable liquid or solid.
6. Our review also indicates that other chemicals are affected, i.e., non-nitrocellulose desensitized explosives in well-defined entries which should not require explosives testing. Examples include UN Nos. 1204, 1310, 1320, 1321, 1322, 1324, 1336, 1337, 1344, 1347, 1348, 1349, 1354, 1355, 1356, 1357, 1517, 2852, 2907, 3064, 3317, 3343, 3364, 3365, 3366, 3367, 3368, 3369, 3370, 3376, 3474 and 3555.
7. Therefore, it appears that well-defined desensitized explosive mixtures with a specific UN entry would be potentially subject to explosives testing requirements in the current text of GHS chapter 2.17, but not in the *Model Regulations*.
8. In transport, UN entries for desensitized explosives which apply to well-defined mixtures frequently do not require explosives testing. They may be classified by stakeholders without a competent authority approval. On the other hand, desensitized explosives which have not been well-defined are relegated to UN Nos. 3379 and 3380 which do require explosives testing.<sup>5</sup> Accordingly, the established system in the *Model Regulations* correctly assesses all desensitized explosive mixtures and assures accurate outcomes, and only requires testing when necessary.
9. In summary, GHS chapter 2.17 is already harmonized with the approach for UN Nos. 3379 and 3380 to require explosives testing. To avoid dis-harmonization for other entries, GHS chapter 2.17 should allow for explosives testing to be waived using expert judgment for well-defined mixtures assigned to UN entries which do not require explosives testing.

## III. Suggested changes to GHS chapter 2.17

10. The classification eligibility rules in GHS section 2.17.2.2 require explosives tests of the *Manual of Tests and Criteria* (MTC). Specifically, a phlegmatized explosive must: have no mass explosion hazard in accordance with test 6 (a) or 6 (b); not be too sensitive or thermally unstable in accordance with test series 3 (TS3) of the MTC; or be too insensitive for inclusion in the class of explosives in accordance with test series 2.
11. There is currently an exception from TS3 for nitrocellulose mixtures not containing explosives other than nitrocellulose in a note to GHS 2.17.2.2. This note was proposed for deletion in a proposal considered by the GHS Sub-Committee at its forty-sixth session<sup>6</sup>. One position voiced in the debate is that nitrocellulose with only a phlegmatizer would not be

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<sup>3</sup> See ST/SG/AC.10/C.3/2024/24–ST/SG/AC.10/C.4/2024/5, para. 16 for new proposed explosives testing requirements for nitrocellulose with pigments or plasticizers, and see UN 2557 which allows pigments.

<sup>4</sup> See special provisions 198, 223 and 241 of the *Model Regulations*.

<sup>5</sup> See special provision 311 of the *Model Regulations*.

<sup>6</sup> See ST/SG/AC.10/C.3/2024/24–ST/SG/AC.10/C.4/2024/5, paras. 14 and 15.

impacted, however we think they will be impacted. Desensitized explosives are "GHS mixtures", even if the only additive is a phlegmatizer, and deletion of the note would subject desensitized nitrocellulose to TS3.

12. Even with the note, well-defined desensitized explosives with specific UN numbers are still currently subject to the GHS 2.17.2.2 requirements for explosives tests 6 (a) or 6 (b).

13. SAAMI proposes that a new note be inserted that allows the use of expert judgment to waive explosives testing requirements in GHS 2.17.2.2. This relates only to desensitized explosive mixtures which have been well-defined and assigned to a specific UN entry which does not require explosives testing.

14. On the condition of adoption of the above, SAAMI also proposes to delete the note exempting nitrocellulose mixtures from TS3. This is because nitrocellulose mixtures, which have not been well-defined and assigned to specific UN entries which do not require testing, should be subject to explosives testing and assigned to UN 3379 or UN 3380 when sufficiently phlegmatized. An example is nitrocellulose with an admixture of oxidizing substances.

#### IV. Consequential amendments to the MTC

15. As a practical matter for the GHS text, references to UN numbers will appear only in the MTC to avoid their inclusion in the GHS. A note in GHS chapter 2.17 referencing expert judgment and the relevant text in the MTC.

16. The MTC's section 51 mirrors and expands the explosives requirements in GHS chapter 2.17. A new paragraph can be added to address certain chemicals as discussed. A parallel exception from TS3 for nitrocellulose mixtures exists in subparagraph 51.3.2 (c) of the MTC which may need to be deleted if the proposals below are accepted.

#### V. Proposals

17. In chapter 2.17 of the GHS, add the following note 2 at the end of paragraph 2.17.2.2, after the current note addressing phlegmatized explosives, and change the existing note to note 1:

*"NOTE 2: Expert judgment may be used to waive the criteria of 2.17.2.2 (b). See Manual of Tests and Criteria, paragraph 51.3.5."*

18. In section 51 of the MTC, add the following new paragraph 51.3.5:

"51.3.5 Well-defined mixtures assigned to a specific UN entry which does not require explosives testing are not subject to tests of Part 1. Examples include UN Nos. 1204, 1210, 1263, 1266, 1310, 1320, 1321, 1322, 1324, 1336, 1337, 1344, 1347, 1348, 1349, 1353, 1354, 1355, 1356, 1357, 1517, 2006, 2059, 2555, 2556, 2557, 2852, 2907, 3064, 3066, 3270, 3317, 3343, 3364, 3365, 3366, 3367, 3368, 3369, 3370, 3376, 3469, 3470, 3474 and 3555."

19. Assuming that the above proposals are adopted:

(a) Delete the note in GHS 2.17.2.3 exempting nitrocellulose mixtures from test series 3.

(b) Delete subparagraph 51.3.2 (c) in section 51 of the *MTC* and renumber subsequent subparagraphs accordingly.