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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****Fifty-seventh session**

Geneva, 30 November–8 December 2020

Item 11 (a) of the provisional agenda

**Issues relating to the Globally Harmonized System  
of Classification and Labelling of Chemicals:  
review of Chapter 2.1****Sub-Committee of Experts on the Globally Harmonized  
System of Classification and Labelling of Chemicals****Thirty-ninth session**

Geneva, 9–11 December 2020

Item 3 (b) of the provisional agenda

**Classification criteria and related hazard communication:  
review of Chapter 2.1****A new Chapter 2.1 for the GHS – some amendments to  
ST/SG/AC.10/C.3/2020/20–ST/SG/AC.10/C.4/2020/5****Transmitted by the expert from Sweden on behalf of the Informal  
Correspondence Group on the review of Chapter 2.1\*****Introduction**

1. In Annex I to document ST/SG/AC.10/C.3/2020/20–ST/SG/AC.10/C.4/2020/5, a new Chapter 2.1 (explosives) for the GHS is proposed. This document proposes a few amendments to the Chapter 2.1 presented in that document, intended to take into account some of the comments made by some experts.

**Proposed amendments****On the exclusion of non-Class 1 articles**

2. As pointed out in UN/SCETDG/57/INF.16–UN/SCEGHS/39/INF.13, the issue of excluding those explosive articles that are transported in classes other than Class 1 had not yet been resolved. The item was discussed during the informal online session of the Sub-Committee in July 2020, on basis of ideas presented in document UN/SCETDG/57/INF.15–UN/SCEGHS/39/INF.10. While some seeds for potential solutions to the problem were sown then, the issue will not be resolved in time for the deadline for submission of official documents to the December 2020 sessions of the sub-committees.

3. Noting that attempts are still being made to resolve the matter, at this point in time it is therefore proposed to strike out provision 2.1.1.2.2 (d) in Chapter 2.1 as presented in document ST/SG/AC.10/C.3/2020/20 –ST/SG/AC.10/C.4/2020/5. Removing this provision retains the status quo, as a corresponding provision does not exist in the current GHS Chapter

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\* 2020 (A/74/6 (Sect.20)) and Supplementary, Subprogramme 2.

2.1. Consequentially, also the second paragraph of the Note in section 2.1.3 of the chapter needs to be deleted, as it refers to articles excluded by provision 2.1.1.2.2 (d).

### **On classification by analogy**

4. It may appear that test results are always needed to classify an explosive in sub-category 2B or 2C, and such data will not be available for explosives classified on basis of analogy to tested explosives. In guidance section 2.1.4 of the new GHS Chapter 2.1 as presented in document ST/SG/AC.10/C.3/2020/20–ST/SG/AC.10/C.4/2020/5, a sentence was already worded to clarify that classification based on analogy is allowed, under certain conditions. In order to make this clear also in the “regulatory part” of the chapter, that sentence has been carried over into section 2.1.3 as well.

### **On classification of explosives in unfinished stages**

5. Some rewording of paragraphs 2.1.4.3.4 and 2.1.4.3.5 has been made in order to not limit the guidance to “manufacturing and processing” only, as there may also be other situations to which this guidance applies. In addition, some clarifications of the wording in these paragraphs are also proposed.

### **On merging of the criteria tables**

6. A very visible but “cosmetic” change is to merge the classification criteria for the Sub-categories in sections 2.1.2.1 and 2.1.2.3 of the chapter. This has been the wish of a clear majority of the informal correspondence group for some time. There are no changes to the actual wordings (i.e. the criteria) though. Consequentially, all of section 2.1.2.3 of the chapter as presented in ST/SG/AC.10/C.3/2020/20 –ST/SG/AC.10/C.4/2020/5 should be removed.

### **On the order of definitions, enhanced readability and typos**

7. In addition, the definition of “Division” has been placed before the definition of “Primary packaging” in section 2.1.1.1, because the latter uses the division in the description. Furthermore, section 2.1.4.3.1 has been divided into two paragraphs for enhanced readability. Two minor typographical errors have been corrected in paragraphs 2.1.1.3.4 and 2.1.4.3.2.

## **Proposals**

8. Annex I to this document lists the above described amendments to Chapter 2.1 as presented in Annex I to ST/SG/AC.10/C.3/2020/20–ST/SG/AC.10/C.4/2020/5. The sub-committees are invited to adopt the new Chapter 2.1, as amended by this document. Informal document UN/SCETDG/57/INF.17-UN/SCEGHS/39/INF.14 shows the entire proposed text of the chapter, as amended.

9. The consequential proposals made in annexes II and III of ST/SG/AC.10/C.3/2020/20–ST/SG/AC.10/C.4/2020/5 remain intact. The decision logics for section 2.1.4.1 are being developed and will be submitted as a supplemental document.

## Annex I

### List of amendments to GHS Chapter 2.1 as presented in Annex I to document ST/SG/AC.10/C.3/2020/20–ST/SG/AC.10/C.4/2020/5

- Change the order of the definitions so that the definition of “Division” comes before the definition of “Primary packaging”.
- In section 2.1.1.2.2, delete provision 2.1.1.2.2 (d) as a whole. Consequently, delete also the last paragraph of the note in section 2.1.3.
- In section 2.1.1.3.1, insert the following text as a new third sentence:

“Where appropriate, analogy to tested explosives may be used, taking into consideration whether changes to the configuration may affect the hazard posed compared to the tested configuration, and being narrowly limited according to the quantity, packaging and design of the explosive.”

- Amend the first sentence in section 2.1.2.1 to read (text to be added in **bold underlined** font):

“Explosive substances, mixtures and articles of this class are classified into one of two categories, **and for Category 2 into one of three sub-categories**, according to the following table:”

- Merge the criteria tables of sections 2.1.2.1 and 2.1.2.3 into a single table as shown in Annex II to this document, place it in section 2.1.2.1 and consequently delete section 2.1.2.3 as a whole.
- Break section 2.1.4.3.1 into two paragraphs after the sentence “The configuration is further controlled by design and packaging requirements specified in the *UN Model Regulations*.” and number them 2.1.4.3.1.1 and 2.1.4.3.1.2, respectively.
- Amend sections 2.1.4.3.4 and 2.1.4.3.5 as follows (*Text to be added in **bold underlined** font, text to be removed in ~~**bold strikethrough**~~ font)*

2.1.4.3.4 Classification during explosives manufacturing and processing of explosives in situations where they cannot be assigned to a division

2.1.4.3.4.1 Explosives in manufacturing, ~~and~~ processing **and otherwise unfinished stages** cannot be assigned to a division until configured for transport, and hence are assigned to Category 1. Similarly, explosives assigned to Category 2 when taken out of their primary packaging for purposes other than use, are re-assigned to Category 1 (unless their primary packaging can be discarded, see 2.1.4.3.3).

2.1.4.3.4.2 The sensitivity and hazard severity of unpackaged explosives ~~in manufacturing and processing~~ is dependent on non-intrinsic parameters related to the methods used, including quantity, depth, confinement, initiation stimulus, composition, physical state such as particle size, etc. The hazards posed by explosives in Category 1 thus vary extensively and may also vary dynamically as they flow through a process. For these reasons, the hazard communication for Category 1 cannot provide any details regarding the explosive behaviour. Process hazards analysis and risk management principles should be applied in these cases to identify and manage the risk of processes in accordance with best practices and applicable regulations.

2.1.4.3.5 Safety during explosives manufacturing and processing related to explosives failing Test series 3 or 4

Category 1 also includes explosives that fail Test series 3 or **Test series** 4 as configured, having an unacceptable level of sensitivity to stimuli encountered during transport. ~~These~~

~~tests and their~~ The thresholds of these tests may not be representative of the energy levels encountered during explosives processing and manufacturing, ~~and~~ **Furthermore, these tests** do not include all types of stimuli that may be encountered, such as electrostatic discharge. ~~Therefore, further~~ **Additional** investigations of the properties of the explosive at hand ~~and appropriate risk management are~~ **may thus be** needed for safe processing and handling.”

- In the title of section 2.1.4.3.2, amend the text to read (text to be added in **bold underlined** font): “*Assigning explosives to divisions based on analogy*”
- In the next-to-last sentence in section 2.1.1.3.4, amend the text to read (text to be deleted in **~~bold strikethrough~~** font):

“If assigned to another division in the new configuration, it may need to be classified in another sub-category within Category 2, and if not assigned a to division it should be classified in ~~to~~ Category 1.”.

## Annex II

### New criteria table of section 2.1.2.1 of the new GHS Chapter 2.1

Category	Sub-category	Criteria
1		Explosive substances, mixtures and articles which (a) have not been assigned a division and which (i) are manufactured with the view of producing an explosive or pyrotechnic effect; or (ii) are substances or mixtures which show positive effects when tested in Test series 2 of the <i>Manual of Tests and Criteria</i> or (b) are out of the primary packaging of the configuration to which a division was assigned <sup>a</sup> , unless they are explosive articles assigned to a division: (i) without a primary packaging; or (ii) in a primary packaging that does not attenuate the explosive effect, taking into account also intervening packaging material, spacing or critical orientation.
2	2A	Explosive substances, mixtures and articles which have been assigned (a) Division 1.1, 1.2, 1.3, 1.5 or 1.6; or (b) Division 1.4 and are not meeting the criteria for sub-category 2B or 2C. <sup>b</sup>
	2B	Explosive substances, mixtures and articles which have been assigned to Division 1.4 and a compatibility group other than S, and which: (a) do not detonate and disintegrate when functioned as intended; and (b) exhibit no high hazard event <sup>c</sup> in test 6(a) or 6(b) of the <i>Manual of Tests and Criteria</i> ; and (c) do not require attenuating features, other than that which may be provided by a primary packaging, to mitigate a high hazard event <sup>c</sup> .
	2C	Explosive substances, mixtures and articles which have been assigned to Division 1.4 compatibility group S, and which: (a) do not detonate and disintegrate when functioned as intended; and (b) exhibit no high hazard event <sup>c</sup> in test 6(a) or 6(b), or in the absence of these test results, similar results in test 6(d) of the <i>Manual of Tests and Criteria</i> ; and (c) do not require attenuating features, other than that which may be provided by a primary packaging, to mitigate a high hazard event <sup>c</sup> .

<sup>a</sup> Explosives in Category 2 that are removed from their primary packaging for use remain classified in Category 2, see 2.1.1.3.4.

<sup>b</sup> The manufacturer, supplier or competent authority may classify an explosive of Division 1.4 as sub-category 2A on basis of data or other considerations even if it meets the technical criteria for sub-category 2B or 2C.

<sup>c</sup> A high hazard event is exhibited when performing test 6(a) or 6(b), according to the *Manual of Tests and Criteria*, by:

- (a) a significant change in the witness plate shape, such as perforation, gouge, substantial dent or bowing; or
- (b) instantaneous scattering of most of the confining material.”.