



---

## **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-first session**

Geneva, 28 November–6 December 2022

Item 10 (b) of the provisional agenda

**Issues relating to the Globally Harmonized System:  
Simultaneous classification in physical hazards and  
precedence of hazards;**

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

#### **Forty-third session**

Geneva, 7–9 December 2022

Item 3 (b) of the provisional agenda

**Work on the Globally Harmonized System of  
Classification and Labelling of Chemicals: simultaneous  
classification in physical hazard classes and precedence of  
hazards**

## **Some issues arising from the GHS work on combinations of physical hazards**

**Transmitted by the expert from Germany on behalf of the informal  
working group on combinations of physical hazards\***

### **Introduction**

1. In December 2018 the Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS Sub-Committee) adopted a new item for its program of work dealing with combinations of physical hazards. The terms of reference for this work are laid down in document ST/SG/AC.10/C.4/2018/21, as amended in the report of the GHS Sub-Committee on its thirty-sixth session, see ST/SG/AC.10/C.4/72, paragraph 74.

### **Issues and questions arising from the work of the informal working group**

2. In the course of its work, the group identified some information (mainly in notes) in the GHS (and partly in the Manual of Tests and Criteria) which are unclear (or even contradictory) and due to that prevent a clear decision whether a combination of physical hazard classes according to the GHS is possible or not.

3. The group considers specific proposals to amend the according text to be beyond its scope (the group is supposed to decide whether combinations of physical hazards according to the GHS are possible based on the existing criteria and text and not to amend these). Therefore, the group compiles these issues to bring them to the sub-committees' attention.

---

\* A/75/6 (Sect.20), para. 20.51

4. Some of these issues were already discussed such that the group thinks they are ready to be forwarded to the sub-committees. They are outlined below in sections I to IV. The informal working group (IWG) on combinations of physical hazards invites the sub-committees to consider the issues and questions as appropriate. Where necessary, the group would also appreciate advice as to whether they deem amendments of the respective text necessary and if so, how that should be processed.

## **I. Aerosols: Note 1 to Table 2.3.1 of the GHS**

5. The text of the Note reads:

*“NOTE 1: Flammable components do not cover pyrophoric, self-heating or water-reactive substances and mixtures because such components are never used as aerosol contents.”*

6. The Note was introduced (in the first version of the GHS) based on corresponding text in special provision 63 of the Model Regulations and apparently aims at clarifying what components are not “flammable components” in aerosols in the sense of section 2.3.1.2.1 in the GHS.

7. On combinations of the GHS physical hazard class “aerosols” with other physical hazard classes, the group has the following questions:

- (a) What does “do not cover” is supposed to mean? Is it simply stating that this is never done in practice? Or is it supposed to be a prohibition?
- (b) If it is not a prohibition, how should such components (should they happen to be in an aerosol dispenser) be treated with regard to classification of the aerosol?
- (c) Why are certain hazards named (pyrophoric, self-heating, water-reactive) and others not (specifically explosives, self-reactives, organic peroxides)? Is that supposed to mean that these other hazard classes can be contained in aerosols? And if so, how would they be considered with regard to classification of the aerosol?
- (d) Is it justified that the wording of Note 1 to Table 2.3.1 for aerosols is different from the Note for chemicals under pressure (see paragraph 8 below)?
- (e) The TDG Sub-Committee is especially invited to explain how this is to be interpreted for transport. Specifically, the group would like to point to the prohibition for chemicals under pressure according to paragraph (d) in special provision 362 (see also below in Section II.). The IWG especially wonders whether the absence of such a prohibition in special provision 63 for aerosols is supposed to mean that substances with such classifications may be contained in aerosols for transport and that they are different from chemicals under pressure in that regard. If so, the group would like to understand what the reasoning for this difference between aerosols and chemicals under pressure is.

## **II. Chemicals under pressure: Note 1 to Table 2.3.3 of the GHS**

8. The text of the Note reads:

*“NOTE 1: The flammable components in a chemical under pressure do not include pyrophoric, self-heating or water-reactive, substances and mixtures because such components are not allowed in chemicals under pressure in accordance with the UN Model Regulations.”*

9. For the purposes of transport, special provision 362 applies. In paragraph (d) it contains the following requirements:

“(d) In addition, chemicals under pressure with components meeting the properties of: Class 1, explosives; Class 3, liquid desensitized explosives; Division 4.1, self-reactive substances and solid desensitized explosives; Division 4.2, substances liable to spontaneous combustion; Division 4.3, substances which, in contact with water, emit flammable gases; Division 5.1 oxidizing substances; Division 5.2, organic peroxides; Division 6.2, Infectious substances or Class 7, Radioactive material, shall not be used for transport under this proper shipping name;”

10. The IWG has the following questions:

- (a) Is it justified that the wording of Note 1 to Table 2.3.3 is different from the Note for aerosols (see paragraph 5 above)?
- (b) Furthermore, the questions in paragraph 7 above apply equivalently.
- (c) The TDG Sub-Committee is specifically invited to elaborate on the differences between special provision 63 for aerosols and special provision 362 for chemicals under pressure (see question (e) in paragraph 7 above).

### III. Test C.1 for corrosive to metals

11. The group has some fundamental questions that came up while discussing combinations with the hazard class corrosive to metals. Although not directly related to the question of combinations of physical hazards, the group would like to understand these, before assessing combinations. Specifically, the group wondered about the purpose of test C.1 for corrosive to metals in the context of “classification”.

- (a) Test C.1 does not seem to aim at determining compatibility with the packaging material because (i) it uses only two specific alloys and (ii) the criterion is not suitable to determine material compatibility to be used as packaging material (too large corrosion rates). Is it perhaps suitable only for one mode of transport (air)?
- (b) It can also be questioned why material compatibility should be established by way of classification and if so, why it is done for metals only (what about e.g. plastics?).
- (c) The group therefore would like to ask the sub-committees for what purpose that test was introduced?

12. Furthermore, the group wonders whether and how gases would be classified as corrosive to metals. The following should be considered:

- (a) The definition in the GHS does not exclude gases; it just mentions substances and mixtures – as opposed to e.g. self-reactives where specifically liquids and solids are mentioned.
- (b) But test C.1 for corrosive to metals would normally be carried out with liquids and can be used for solids with adaptations (e.g. by dissolving the solid) but it cannot be carried out with gases.
- (c) Additionally, it is important to note that there are gases that are corrosive to metals, specifically halogen acid forming gases.

### IV. Self-reactives and organic peroxides: Note 1 to the classification criteria

13. Note 1 in 2.8.2.2 and 2.15.2.2 of the GHS for self-reactives and organic peroxides respectively, reads as follows:

*“NOTE 1: Type G has no hazard communication elements assigned but should be considered for properties belonging to other hazard classes.”*

14. To decide correctly which combinations of self-reactives and organic peroxides with other physical hazard classes are possible, the group would like to clarify the following questions:

- (a) Shouldn't the Note rather refer more specifically to other physical hazard classes?
- (b) Why is this Note only referring to Type G? Is that supposed to mean that the other types are not supposed to be considered for other (physical) hazard classes?

15. Based on discussions in the IWG, the group thinks that the Note specifically aims at Type G because the other types already have hazard communication elements assigned that warn for a flammability hazard. A flammability hazard from a Type G self-reactive or organic peroxide would be a "normal" flammability, often relating to the solvent or diluent used. Taking this into account, the group would like to facilitate the discussions by suggesting an amended wording for the note which hopefully is clearer and more specific:

*"NOTE 1: Self-reactive substances and mixtures type G have no hazard communication elements assigned according to this hazard class. They may, however, have flammable properties and be classified as flammable liquids (Chapter 2.6) or flammable solids (Chapter 2.7), and hence assigned the hazard communication elements associated with these hazard classes."*

16. The equivalent note for organic peroxides should consequently be amended in the same way to read:

*"NOTE 1: Organic peroxides type G have no hazard communication elements assigned according to this hazard class. They may, however, have flammable properties and be classified as flammable liquids (Chapter 2.6) or flammable solids (Chapter 2.7), and hence assigned the hazard communication elements associated with these hazard classes."*

---