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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****Forty-fourth session**

Geneva,

Item 10 (b) of the provisional agenda

**Issues relating to the Globally Harmonized  
System of Classification and Labelling of Chemicals:  
screening procedure for potential explosives****Sub-Committee of Experts on the Globally Harmonized  
System of Classification and Labelling of Chemicals****Twenty-sixth session**

Geneva,

Item 2 (a) of the provisional agenda

**Classification criteria and hazard communication  
Work of the Sub-Committee of Experts on the Transport  
of Dangerous Goods on physical hazards****Further amendments to the editorial clarification of the  
screening procedures for potential explosives in the GHS****Transmitted by the expert from Sweden<sup>1</sup>****Introduction**

1. Appendix 6 of the Manual of Tests and Criteria lists a number of screening procedures for various Classes for transport of dangerous goods (TDG). With the same test methods being applied also in the GHS for physical hazards, these screening methods also are used in the classification for supply and use according to GHS criteria.
2. The screening procedures for substances (and mixtures) which may have explosive properties are described in section 3 of Appendix 6 of the Manual of Tests and Criteria. If, based on these procedures, it can be inferred that a substance (or mixture) does not have explosive properties, it may be exempted from application of the acceptance procedure of Class 1. Exemption from classification in the hazard class “Explosives” of the GHS may be granted on the same grounds (see paragraph 2.1.4.2.2 in Chapter 2.1 of the GHS).
3. As the testing according to the procedures for Class 1 (TDG) or Explosives (GHS) is rather time-consuming and expensive, it is valuable for industry if a product can be excluded from it through screening. Since both the Model Regulations and the GHS are

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<sup>1</sup> In accordance with the programme of work of the Sub-Committee for 2013–2014 approved by the Committee at its sixth session (see ST/SG/AC.10/C.3/84, para. 86 and ST/SG/AC.10/40, para. 14).

transposed into legally binding documents such as the ADR/RID and the European Union classification, packaging and labelling (CLP) Regulation<sup>2</sup>, the screening procedures also become part of the legal instruments for classification. It is therefore important that they are correct and unambiguous in order to minimise costs for industry and differing interpretations on their applicability.

4. Sweden submitted a formal paper to the forty-third session of the Sub-Committee of Experts on the Transport of Dangerous Goods (ST/SG/AC.10/C.3/2013/8) and, in parallel to the twenty-fifth session of the Sub-Committee of Experts on the Globally Harmonised System (ST/SG/AC.10/C.4/2013/2) on this matter. After discussions within the Sub-Committee of Experts on the Transport of Dangerous Goods (SCETDG), a revised wording was accepted for inclusion in the UN Manual of Tests and Criteria and revised wording was proposed also for inclusion in the GHS. However, subsequent discussions at the 25:th session of the Sub-Committee of Experts on the Globally Harmonised System (SCEGHS), revealed that the revised wording proposed by the SCETDG was not totally adequate for GHS purposes.

5. Since a suitable wording for GHS could not be found during the 25:th session of the SCEGHS, Sweden was invited to submit a new proposal for the December 2013 sessions of the SCEGHS and the SCETDG. This document contains that proposal.

## Current status

6. The initial reasons for clarifying the current wording in sub-paragraph 3.3 (c) in the screening procedures for explosive properties in Appendix 6 of the Manual of Tests and Criteria have been presented in the working documents to the previous (summer 2013) sessions of both Sub-Committees (see SCETDG-document ST/SG/AC.10/C.3/2013/8 and SCEGHS-document ST/SG/AC.10/C.4/2013/2, respectively).

7. After discussion within the Working Group on Explosives, the following text was agreed by the SCETDG for replacement of current 3.3(c) of Appendix 6 in the UN Manual of Tests and Criteria (see the report from the forty-third session of the SCETDG, document ST/SG/AC.10/C.3/86/Add.1):

“(c) For the organic substance or a homogenous mixture of organic substances containing chemical group (or groups) associated with explosive properties:

- When the exothermic decomposition energy is less than 500 J/g, or
- When the onset of exothermic decomposition is 500 °C or above

as indicated by Table A6.2.

Table A6.2 DECISION TO APPLY THE ACCEPTANCE PROCEDURE FOR CLASS 1 FOR AN ORGANIC SUBSTANCE OR A HOMOGENOUS MIXTURE OF ORGANIC SUBSTANCES

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<sup>2</sup> Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Decomposition energy (J/g)	Decomposition onset temperature (°C)	Apply acceptance procedure for Class 1? (Yes/No)
< 500	< 500	No
< 500	≥ 500	No
≥ 500	< 500	Yes
≥ 500	≥ 500	No

The exothermic decomposition energy may be determined using a suitable calorimetric technique (see 20.3.3.3); or”.

8. A similar wording was suggested by the SCETDG for inclusion in the GHS, namely (see document ST/SG/AC.10/C.3/86/Add.1):

“(c) For the organic substance or a homogenous mixture of organic substances containing chemical group (or groups) associated with explosive properties:

- When the exothermic decomposition energy is less than 500 J/g, or
- When the onset of exothermic decomposition is 500 °C or above

as indicated by Table 2.1.3.

Table 2.1.3 DECISION TO APPLY THE ACCEPTANCE PROCEDURE FOR CLASS 1 FOR AN ORGANIC SUBSTANCE OR A HOMOGENOUS MIXTURE OF ORGANIC SUBSTANCES

Decomposition energy (J/g)	Decomposition onset temperature (°C)	Apply acceptance procedure for Class 1? (Yes/No)
< 500	< 500	No
< 500	≥ 500	No
≥ 500	< 500	Yes
≥ 500	≥ 500	No

The exothermic decomposition energy may be determined using a suitable calorimetric technique; or”.

## Problem

9. Firstly, the suggested text by the SCETDG for inclusion in the GHS needs to be corrected because no reference to “Class 1” can be made since such a class does not exist in the GHS.

10. Secondly, in the suggested Table heading as well as within the Table itself, reference is made to the “acceptance procedure”. However, the GHS states in 2.1.4.2.2 of Chapter 2.1 that “A substance or mixture is not classified as an explosive if:” and then follows the screening procedures (a) – (d). It therefore becomes illogical to, in the suggested new point (c), make reference to the acceptance procedure. The corresponding text in Annex 6

of the Manual of Tests and Criteria is, however, “The acceptance procedure for Class 1 explosives need not be applied:” and then follow the same screening procedures.

11. The acceptance procedure also occurs in the GHS, see Figure 2.1.1 in Chapter 2.1 of the GHS. The point of the acceptance procedure is to test whether a substance or mixture is (i) an explosive at all, (ii) an unstable explosive or (iii) provisionally accepted as an explosive in one of the Divisions 1.1 – 1.6. This is clear from Figure 2.1.2 in Chapter 2.1 of the GHS.

12. For harmonisation purposes and ease of understanding, it is important that the GHS and the UN Model Regulations use the same wording as far as that is possible.

## Proposal

13. Change the initial sentence in paragraph 2.1.4.2.2 of Chapter 2.1 in the GHS from:

“A substance or mixture is not classified as an explosive if:”

to

“The acceptance procedure for the hazard class Explosives need not be applied if:”

14. In order to harmonise with current GHS-text and for grammatical correctness and improved clarity, amend the proposal from the SCETDG as made in ST/SG/AC.10/C.3/86/Add.1 as follows (text to be deleted is bold strike-through, text to be added in bold underline):

“(c) For ~~the~~ an organic substance<sub>2</sub> or a homogenous mixture of organic substances<sub>2</sub> containing a chemical group (or groups) associated with explosive properties:

- ~~when~~ the exothermic decomposition energy is less than 500 J/g, or
- ~~when~~ the onset of exothermic decomposition is 500 °C or above

as indicated by Table 2.1.3.

Table 2.1.3 DECISION TO APPLY THE ACCEPTANCE PROCEDURE FOR ~~CLASS 1~~ **THE HAZARD CLASS EXPLOSIVES** FOR AN ORGANIC SUBSTANCE OR A HOMOGENOUS MIXTURE OF ORGANIC SUBSTANCES

Decomposition energy (J/g)	Decomposition onset temperature (°C)	Apply acceptance procedure <del>for Class 1?</del> (Yes/No)
< 500	< 500	No
< 500	≥ 500	No
≥ 500	< 500	Yes
≥ 500	≥ 500	No

The exothermic decomposition energy may be determined using a suitable calorimetric technique (see section 20.3.3.3 of the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria); or”.

15. The proposed text for paragraph 2.1.4.2.2 GHS thus becomes:

“2.1.4.2.2 The acceptance procedure for the hazard class Explosives need not be applied if:”

[Points (a) and (b) left intact.]

“(c) For an organic substance, or a homogenous mixture of organic substances, containing a chemical group (or groups) associated with explosive properties:

- The exothermic decomposition energy is less than 500 J/g, or
- The onset of exothermic decomposition is 500 °C or above

as indicated by Table 2.1.3.

Table 2.1.3 DECISION TO APPLY THE ACCEPTANCE PROCEDURE FOR THE HAZARD CLASS EXPLOSIVES FOR AN ORGANIC SUBSTANCE OR A HOMOGENOUS MIXTURE OF ORGANIC SUBSTANCES

Decomposition energy (J/g)	Decomposition onset temperature (°C)	Apply acceptance procedure? (Yes/No)
< 500	< 500	No
< 500	≥ 500	No
≥ 500	< 500	Yes
≥ 500	≥ 500	No

The exothermic decomposition energy may be determined using a suitable calorimetric technique (see section 20.3.3.3 of the *UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria*); or”.

[Point (d) left intact.]

## Consequences

16. There appear to be no consequences as regards the actual classification of substances and mixtures in practice, since not applying the acceptance procedure means that the substance or mixture cannot be classified as an Explosive. There also seem to be no consequential amendments necessary to other parts of the GHS text.

17. It has not escaped the author’s notice that some of the grammatical corrections and clarifying commas could also be introduced in the corresponding text in Appendix 6 of the UN Manual of Test and Criteria. However, at this point only a proposal of changing text in the GHS is being made in order to facilitate the decision of the SCEGHS.