

**Committee of Experts on the Transport of Dangerous Goods  
and on the Globally Harmonized System of Classification  
and Labelling of Chemicals**

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**Sub-Committee of Experts on the  
Transport of Dangerous Goods**

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Item 9 of the provisional agenda

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

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

**Twenty-second session**

Geneva, 7 – 9 December 2011

Item 2 (a) of the provisional agenda

**Updating of the Globally Harmonized System of  
Classification and Labelling of Chemicals (GHS):  
physical hazards**

**Substances and mixtures with explosive properties which are  
exempted from classification as explosives**

**Transmitted by the experts from Germany, the United States of  
America and Canada**

**Introduction**

1. During the last meeting the proposal to introduce a note in the GHS for substances with explosive properties which are exempted from classification as explosives was discussed (see UN/SCEGHS/21/INF.11). There was general agreement on the need to address the issue raised in the informal paper and on the fact that the note in the informal paper, with some additional amendments, could provide a short-term solution to the problem. However, some experts felt that given that this is the beginning of its biennium of work, the Sub-Committee still had time to work on a long-term solution before adopting a final solution.
2. There was also discussion on whether this issue belonged with the TDG Sub-Committee, as the focal point for all physical hazards. To further the discussion, this paper is being sent to both the TDG and GHS sub-committees for their consideration.
3. This document contains background information and the corresponding formal proposal for a short-term solution, taking into account the feedback for improvement of the note.

**Background**

4. According to the classification procedure for explosives, substances and mixtures (in the following referred to as "substances" only) can be exempted from classification as explosives based on their packaging and the according results in test series 6. In this case their explosive properties as determined by test series 2 are not communicated at all.

5. Some examples for substances that have explosive properties but that are generally not classified as explosives according to the GHS are listed in the annex to this document. The respective test results providing evidence that explosive properties exist are indicated as well (as far as available).

6. Classification criteria which are dependent upon packaging can create substantial challenges for substances in the workplace. For example, an employer who (newly) produces a substance that might have explosive properties (based on section 2.1.4.2.2 of the GHS) should appropriately communicate the associated hazards (after manufacture and before packaging and preparation for shipping). He, however, is not able to do so based on the complete classification procedure for explosives, which in the end is based on testing of packaged substances (through test series 6). This could lead to compliance problems for competent authorities that require employers to classify substances manufactured and used in their workplaces. The absence of proper guidance in this situation may also lead to inappropriate hazard communication elements being associated with the substance.

7. Further, an employer that purchases a substance and removes it from the packaging for use in the workplace may not be provided with the appropriate guidance to properly communicate the hazards of the unpackaged substance to their workers. This is especially relevant when the unpackaged substance presents a hazard that was mitigated by the packaging. Such a substance is more dangerous in the unpackaged form, but this information may not have been communicated to the employer, and therefore may not be communicated to the workers who are handling the unpackaged substance.

8. Therefore, it would be appropriate to require communication of intrinsic explosive properties as determined by test series 2, for example, because it is important that existing explosive properties are communicated to users of substances, regardless of the impact of packaging on the classification process.

9. Although the issue of classification of explosive properties is included in the program of work, reaching consensus may take some time and according amendments of the classification system will probably be implemented in the long-term only. Therefore, it was decided to pursue a short-term, as well as a long-term solution.

10. In the long-term, we do not believe the Note proposed below is sufficient because a substance that is exempted from classification as an explosive may not be classified at all. In that case, a Safety Data Sheet may not be required and therefore this warning will not be communicated.

11. Therefore, we continue to aim at an according amendment of the classification procedure and invite other experts to indicate whether they also see a need to allow for adequate hazard communication based on intrinsic (explosive) properties for the supply and use sector.

12. The proposal below presents the short-term solution, with according amendments.

## **Proposal**

13. In section 2.1.3 re-number the NOTE after Table 2.1.2 to NOTE 1.

14. In section 2.1.3 add a new Note under Table 2.1.2 with the following text:

*NOTE 2: Substances and mixtures with a positive result in test series 2 which are exempted from classification as explosives (based on their packaging and the according results in test series 6) still have explosive properties. The user may not be aware of these potential explosive properties once the substance or mixture is removed from the transport*

*packaging or is repackaged. To communicate the potential hazards in accordance with Table 1.5.2, the explosive properties of the substance or mixture should be communicated in Section 2 (Hazard Identification) and Section 9 (Physical and Chemical Properties) of the Safety Data Sheet, and other sections of the Safety Data Sheet, as appropriate.*

## Annex

The following table lists a few substances/mixtures that have explosive properties, and which are not (consistently) classified as such according to the GHS:

Substance or mixture	Explosive properties based on test series 2	GHS classification	TDG classification
Ammonium dichromate CAS-No.: 7789-09-5	Effect of heating under confinement: - Koenen test 2 (b): Limiting diameter 3,5 mm	Probably: Oxidizing solid, category 2	5.1 (UN 1439) = Oxidizing solid, packing group II or III
Ammonium perchlorate CAS-No. 7790-98-9	Effect of heating under confinement: - Koenen test 2 (b): Limiting diameter 3 mm (BAM, Germany: 8 mm) Deflagration properties: - Time/pressure test 2 (c) (i): 15 ms from 690 kPa to 2070 kPa (particle size 30 µm) - Internal ignition test 2(b) (ii): +	Explosive, division 1.1 or Oxidizing solid, category 1 but most likely no review of classification if delivered as UN 1442	1.1 (UN 0402) = Explosive, division 1.1 5.1 (UN 1442) = Oxidizing solid, packing group II
Musk xylene CAS-No. 81-15-2	Effect of heating under confinement: - Koenen test 2 (b): Limiting diameter 5 mm (BAM, Germany: 12 mm)	"exempted" from class of explosives based on the results of test series 6 if tested in appropriate transport packaging	4.1 (UN 2956) = Related to self-reactive
Bis(hydroxylammonium) sulphate CAS-No. 10039-54-0	Effect of heating under confinement: - Koenen test 2 (b): Limiting diameter $\geq 2$ mm	Corrosive to metals, category 1 "exempted" from class of explosives based on the results of test series 6 if tested in appropriate transport packaging	8 (UN 2865) = Corrosive
Hydroxylammonium chloride CAS-No. 5470-11-1	Effect of heating under confinement: - Koenen test 2 (b): Limiting diameter $\geq 2$ mm	Corrosive to metals, category 1 "exempted" from class of explosives based on the results of test series 6 if tested in appropriate transport packaging	9 (UN 3077) = Environmentally hazardous substance
Dichloroisocyanuric acid salts Trosclosene potassium CAS-No. 2244-21-5 Trosclosene sodium CAS-No. 2893-78-9	Effect of heating under confinement: - Koenen test 2 (b): Limiting diameter $\geq 2$ mm	Oxidizing solid, category 2 "exempted" from class of explosives based on the results of test series 6 if tested in appropriate transport packaging	5.1 (UN 2465) = Oxidizing solid
Isosorbide-5-monohydrate CAS-No.16051-77-7	Effect of heating under confinement: - Koenen test 2 (b): Limiting diameter $\geq 2$ mm	"exempted" from class of explosives based on the results of test series 6 if tested in appropriate transport packaging	4.1 (UN 3251) = Related to self-reactive

Substance or mixture	Explosive properties based on test series 2	GHS classification	TDG classification
2,4-Dinitrophenyl-hydrazine, wetted with water CAS-No. 119-26-6	Effect of heating under confinement: - Koenen test 2 (b): Limiting diameter 2 mm	Explosive or not (depending on amount of water)	1 or 4.1 (depending on amount of water)
Nitrocellulose wetted with water (not less than 25 % water by mass)	Effect of heating under confinement: - Koenen test 2 (b): Limiting diameter 10 mm Deflagration properties: - Time/pressure test 2 (c) (i): 6 ms from 690 kPa to 2070 kPa	"exempted" from class of explosives based on the results of test series 6 if tested in appropriate transport packaging transport package: fibre drums	4.1 UN 2555 = desensitized explosive