

**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 10 (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, 8-10 July 2020

Item 2 (b) of the provisional agenda

**Classification criteria and related hazard  
communication: review of Chapter 2.1**

**GHS Chapter 2.1: Revised exclusion and exemption criteria  
for explosive - containing articles not assigned to Class 1**

**Transmitted by the expert from the United States of America, the  
Institute of Makers of Explosives (IME) and Sporting Arms &  
Ammunition Manufacturers' Institute (SAAMI)**

**Introduction**

1. Document ST/SG/AC.10/C.3/2020/20–ST/SG/AC.10/C.4/2020/5 noted that some members of the Informal Correspondence group (ICG) expressed a need to confirm if the proposed exclusion in paragraph 2.1.1.2.2 (d) would function as intended for explosive-containing articles excluded from Class 1 for transport (see paragraph 32 in formal paper 5). While the underlying issue was validated with examples which would be beneficial to address, authorities may take different approaches. Consensus was not achieved, and some members have considered a compromise to convert the paragraph into a note. This paper from the United States of America Task Force (USTF) provides our thoughts on this issue and proposes a modified approach.

**Discussion**

2. The USTF notes that the proposed exclusion for certain articles containing explosives that exit Class 1, under specified conditions, is useful in order to align the GHS class of Explosives with Class 1 of the Model Regulations. Not only is that alignment one of the fundamental principles stipulated for the work on the Chapter 2.1 – it also avoids conflicting classifications and labeling requirements from the two sets of rules. The goal of the GHS is to promote the harmonization of hazard communication on a global basis and as such it is imperative that the Sub-committee reach agreement on a modification of the current proposed 2.1.1.2.2(d) to ensure appropriate application of GHS principles in regulations that are aligned with the GHS.

3. The USTF believe the exemption as proposed may have been too broad. Still, it would be a significant missed opportunity to simply move this criterion into a note or to make this a competent authority decision. A subset of explosives exiting Class 1 should still be completely excluded from the class of explosives, as we believe is the current practice

globally, e.g., for matches. Others, on a case by case basis, may be exempted by a competent authority on the basis of equivalency to the exclusion criteria in GHS 2.1.1.2.1(b) (hereafter, “exclusion criteria”). Finally, the remaining explosives outside of Class 1 may still enjoy consensus for an exemption from labelling, and would benefit from a harmonized approach in this regard.

## **Explosive articles designed for initiation in equipment**

4. Some explosive articles exit Class 1 once they are installed in larger complex devices that exhibit no explosive reaction when the explosive article is actuated. However, before or after the useful service life, e.g., before installation or after decommissioning, these explosive articles may exhibit properties exceeding the exclusion criteria in GHS 2.1.1.2.1(b). Handling or storing as if they are not explosives could be dangerous.

5. The USTF desire a way to oversee explosives safety when the explosives are taken out of use (i.e., “use” in the context of proposed section 2.1.1.3.4), for example de-installation, unless they are promptly put back into the transport configuration. In this scenario it is unhelpful for the classification, explosive or otherwise, to be ambiguous. The text in 2.1.1.2.2(d) was developed with the specific intent to address a concern of the US regarding the number of categories that would be needed in the chapter. In our opinion, provisions replacing 2.1.1.2.2(d) are essential to reaching consensus on the revised Chapter 2.1 in this biennium.

6. Here are some examples of goods in classes 2, 3 and 9 that were considered:

(a) UN 1044, FIRE EXTINGUISHERS, (Division 2.2 Gas) which utilize SP 225 to have a 3.2g net explosive mass power device cartridge installed. When not installed, the cartridge is transported as 1.4C or 1.4S, and classified as Sub-Category 2B or 2C in the proposed system. Once installed on a fire extinguisher, for transport the entire assembly of explosive and gas is classified only as a gas on the basis of the special provision and is not evaluated using the exclusion criteria. When the fire extinguisher is later decommissioned and disassembled, and if the cartridge is then transported alone, it would no longer meet the requirement of SP225 and must be transported as 1.4C or 1.4S in Class 1. In terms of GHS, when cartridges are taken out of “use” and removed from the fire extinguisher, authorities may then wish to control the explosive properties in storage. It is normal for storage controls to vary with the classification. The uninstalled power device cartridges should be in a configuration for storage that is not Category 1 unless they are in an explosives-permitted facility. According to the proposed system, if the cartridges are not repacked in the transport configuration, then they are a Cat 1 explosive, unless they are packaging independent or placed in a primary packaging, in which case they are a Category 2 explosive. This incentivises keeping the cartridge safely packaged to accurately reflect the classification originally assigned.

(b) UN 3268, SAFETY DEVICES (Class 9). When in their transport configuration, all articles in this category must meet criteria in a special provision, equivalent to those for Subcategory 2C. When removed from the transport configuration they may present an array of hazards, such as metal projectiles. Once installed in an automobile or component (e.g., doors or steering columns) they are fully deregulated. Safety data sheets will be created at the time of manufacture for the explosive components. Upon configuration as Class 9, the intention of the proposed exemption in (d) was to remove them from GHS as long as they were in the transport packaging or in “use” per 2.1.1.3.4. Upon arrival at an automotive manufacturer the air bags or pyro-mechanical safety devices are placed into storage, usually in its

transport packaging. In what we call “use”, the safety devices are later unpackaged and placed into manufacturing and installed into automobiles or components before they leave the automotive manufacturer. Once in the automobile or component, the air bag is considered to be installed and in use. At that point, a transport special provision then exempts it from TDG requirements, and GHS would exempt it per paragraph (d) as drafted. Then, after a period of years or decades, the automobile is decommissioned. Dangerous goods are removed, e.g., oil or safety devices, by a facility that may not be licensed/permitted for explosives work. Like fire extinguisher actuators, the uninstalled air bags should be repacked in transport packaging, e.g., for storage or shipment to a recycling or disposal facility licensed/permitted to work with explosives. If they are not repacked, then they are either a Category 1 explosive, or if they are packaging independent or in a primary packaging, they are a Category 2 explosive. Workplace safety authorities need clear jurisdiction in the workplace for disassembly of safety devices from automobiles. Our understanding is that unambiguously addressing this issue may actually provide some relief from designation as an explosive in related regulations, while providing for increased safety.

(c) UN 2990 - LIFE SAVING APPLIANCES, SELF-INFLATING (Class 9). The explosive component is installed in the larger device and the complex is Class 9 for transport. As long as the explosive stays installed in the overall device it does not need to be packaged. If the overall device is decommissioned and the explosive components removed, the explosive components should be treated as having explosive hazards, similar to UN 1044 and UN 3268.

(d) UN 3072 LIFE SAVING APPLIANCES NOT SELF-INFLATING (Class 9). This includes explosive signal flares. The intent of the proposed exemption in (d) applies as long as they are packaged or the amounts necessary for use are unpackaged and installed in the device (see paragraph 2.1.1.3.4).

(e) UN 1863 FUEL, AVIATION, TURBINE ENGINE (Class 3). This classification has been assigned to a complex device classified by a competent authority to the most appropriate UN number. This explosive article contains over a dozen individual explosive elements, the largest of which is an engine start cartridge that produces gases to start the turbine blade(s) of a jet engine spinning. Approximately 40 gallons (approx. 270 pounds) of jet fuel is also contained in this explosive article. The explosives are deemed to have low hazard reactions equivalent to 1.4S, and to be of a lower magnitude compared to the hazard presented by at least one of the other dangerous goods components.

(f) UN1956, COMPRESSED GAS, N.O.S. (Division 2.2). This classification has been assigned to a complex device classified by a competent authority to the most appropriate UN number. This explosive article contains two gas bottles. Each gas bottle has an explosive actuator on it. This item also contains a thermal battery with a protective feature. The explosives are deemed to have low hazard reactions equivalent to 1.4S, and to be of a lower magnitude compared to the hazard presented by at least one of the other dangerous goods components.

7. In lieu of the proposed 2.1.1.2.2(d), an SDS would be helpful to alert workers to these hazards. On the other hand, all explosive articles exiting Class 1 should be exempted from labeling for explosive hazards. We propose to create an exemption from such labeling in a new 2.1.1.2.3 to control these explosives at an appropriate level:

“2.1.1.2.3 Labeling for explosive hazards is not required for explosive articles which are allowed for transport but excluded from Class 1 by assignment to specific UN-numbers with or without associated special provisions according to the Dangerous Goods List of the UN Model Regulations, and which are:

- (a) in the transport configuration, or primary packaging or unpackaged where packaging was determined unnecessary (see 2.1.2.1(b)(iii) and (iv)); or
- (b) in use (see 2.1.1.3.4).”

## **Articles containing explosives excluded based on experience**

8. Some explosives have been removed from Class 1 on the basis of their wide and safe use and storage. Examples of these goods include:

- (a) UN 2254 MATCHES, FUSEE (Division 4.1). These are specifically described as pyrotechnics in SP 293, which by definition are explosives. The special provision is only informational and does not trigger classification outside of the class; it is triggered by self-classification by industry into the most appropriate UN entry. This is an example of UN numbers and not just special provisions were included in the exemption.
- (b) UN 1331 MATCHES, 'STRIKE ANYWHERE' (Division 4.1).
- (c) UN 1944 MATCHES, SAFETY and UN 1945 MATCHES, WAX 'VESTA'(Division 4.1) – also further note that all transport controls other than marking are waived by Special Provision 294 based on the extrinsic properties of a transport configuration consisting of a 25kg per package limit and compliance with the packaging specifications in Packing Instruction P407.

9. Given the examples above and in consideration of the concern expressed by some members of the ICG towards the draft 2.1.1.2.2(d), the USTF proposes to retain but reduce the exemption to a lower threshold. Eligibility would be based on a globally predominating classification outside of Class 1 not dependent on packaging or incorporation into a larger device. We propose to fully exempt these products based on a short list of UN numbers. Note that the requirement to be in the transport configuration has been removed. The proposed text is:

“2.1.1.2.2(d) Articles containing explosives which are allowed for transport but excluded from Class 1 by the *UN Model Regulations*, limited to the following UN numbers: UN numbers 2254, 1331, 1944 and 1945.”

## **Articles containing explosives, excluded by equivalence to the exclusion criteria in 2.1.1.2.1(b).**

10. Some articles containing explosives have been deemed by a competent authority to be equivalent to explosive articles passing the criteria in 2.1.1.2.1(b). While posing a low transport risk, they may not meet the full criteria, e.g., the surface temperature during initiation may be hot enough to causes burns. An example is a thermal battery. Such determinations of equivalency cannot be fully predicted. The USTF recommends that explosives articles be fully exempted whenever this rationale is used by a competent authority.

11. An exclusion in a new 2.1.1.2.2(e) could be added as follows:

“(e) Articles containing explosives excluded from the class of explosives by a competent authority on the basis of equivalency to the criteria in 2.1.1.2.1(b).”

### **Consequential amendment to section 2.1.3**

12. A consequential amendment would be necessary to the second paragraph of the note under 2.1.3:

“Similarly, explosive articles exempted from labeling by 2.1.1.2.3 still pose an explosion hazard which should be conveyed in sub-section 2.3 of the Safety Data Sheet, and in other sections as appropriate.”

### **Proposal**

13. The USTF invite the Sub-Committee to consider the texts proposed in paragraphs 7, 9, 11 and 12.

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