

**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

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Explosives and related matters: miscellaneous

**Implementation of the Definition of Division 1.4
Compatibility Group S**

**Transmitted by the Sporting Arms & Ammunition Manufacturers'
Institute (SAAMI)**

I. Introduction

1. Explosives experts held meetings in Salt Lake City, USA on May 2-11th 2011 for the International Group of Experts on the Explosion Risks of Unstable Substances (IGUS) working group on Explosives, Propellants and Pyrotechnics (EPP) in conjunction with the Chief Inspectors of Explosives (CIE) Conference. A variety of topics regarding the classification of goods Class 1 were discussed, resulting in informal papers submitted to the Sub-Committee.

2. SAAMI discussed the underlying concepts of Division 1.4 Compatibility Group S, including the test implementation of the 1.4S definition and its practical relation to other classes of dangerous goods. There may be opportunities to improve the classification process to better relate to the definition. The definition of Compatibility Group S in Section 2.1.2.1.1 is:

“Substance or article so packed or designed that any hazardous effects arising from accidental functioning are confined within the package unless the package has been degraded by fire, in which case all blast or projection effects are limited to the extent that they do not significantly hinder or prohibit fire fighting or other emergency response efforts in the immediate vicinity of the package.”

II. Discussion

3. There is a perception issue among some sectors that all goods of Class 1 are more dangerous than all goods of other classes, however this is not true and the classification system has been designed and developed to logically classify these goods according to their hazard. Care must be taken to ensure that substances and articles of Class 1 can be transported under a regime comparable to dangerous goods of other classes. Otherwise a situation develops where the most relaxed classification of Class 1, which is 1.4S, is subject to test standards which often cannot be met by goods of other classes, or in some cases even non-dangerous goods, while conversely being subjected to tighter requirements and more practical difficulties than other dangerous goods.

Hazardous Effects

4. The Compatibility Group “S” definition states “any hazardous effects arising from accidental functioning are confined within the package unless the package has been degraded by fire”. The Sub-Committee most recently added the Series 6(d) test to further examine packages which have not been degraded by fire. The criteria of the 6(d) test are:

“Evidence of a hazardous effect outside the package includes:

- (a) Denting or perforation of the witness plate beneath the package;
- (b) A flash or flame capable of igniting an adjacent material such as a sheet of 80 ± 3 g/m² paper at a distance of 25 cm from the package;
- (c) Disruption of the package causing projection of the explosives contents; or
- (d) A projection which passes completely through the packaging (a projection or fragment retained or stuck in the wall of the packaging is considered as non hazardous).

5. As experience is gained, experts may wish to consider whether the new projection criterion optimally reflects the definition, or whether a non-hazardous projection may leave a package. In other tests the mere presence of a projectile is not considered hazardous, but instead the energy is measured and assigned differing classifications based on degree of hazard. Discussion is invited as to the methodology which could be used to evaluate projectile hazard in the 6(d) test, e.g. witness plates.

Fire Fighters and Emergency Responders

6. The 1.4S definition states “all blast or projection effects are limited to the extent that they do not significantly hinder or prohibit fire fighting or other emergency response efforts in the immediate vicinity of the package.”

7. The “immediate vicinity” is normally understood as five meters. It should be understood that fire fighters must control a fire within the range of their fire hoses, e.g. fifteen meters, before approaching further to fully extinguish a fire at closer range. Even with helmet, face shield, breathing mask and apparatus, and protective clothing, a fire fighter is not invulnerable to the effects of dangerous goods in the immediate vicinity. These include the effects of pressure explosions of containments, such as flames and projectiles, burning liquids on fire sprayed on the clothing; toxic smoke and materials by skin or inhalation routes; and corrosives. Certain non-dangerous goods such as metal containers with liquid contents also represent hazards of liquids rupturing their canisters and spraying steam and boiling liquid over ten meters.

8. Emergency responders within five meters of a fire are subject to all these dangers, and typically responders are either fire fighters dressed appropriately or other responders acting after the fire has been initially controlled. Some experts have interpreted the phrase “emergency responder” to mean someone without personal protective equipment (PPE). However as noted above, even non-dangerous goods, and certainly dangerous goods of all classes are dangerous to persons without PPE at ranges greater than the immediate vicinity. The heat and smoke from a burning transport vehicle alone should preclude the presence of persons without PPE in the immediate vicinity.

9. SAAMI has encountered the rejection of classification requests for Division 1.4 Compatibility Group S for products which clearly met all test criteria. The rejection was based on subjective use of the “emergency responder” phrase in the definition with the intent that the 1.4S classification be given only to goods which are safe without PPE in the

immediate vicinity. Such a decision would indicate that goods of Division 1.4 Compatibility Group S must be safer than other classes of dangerous goods and in some cases non-dangerous goods. Discussion is invited as to the intent of the phrase “emergency responder” in the definition of compatibility group “S” and the viability of operations without personal protective equipment in the immediate vicinity of any transport vehicle on fire.

III. Proposal

10. SAAMI intends to develop proposals to formally address these topics at the 41st Session of the Sub-Committee and Explosives Working Group in June 2012. Experts are encouraged to contribute comments and suggestions in advance of the meeting for consideration.
