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

Thirty-third session
Geneva, 30 June-9 July (a.m) 2008
Item 2 of the provisional agenda

EXPLOSIVES AND RELATED MATTERS

Comments on ST/SG/AC.10/C.3/2008/55

Transmitted by the expert from Canada

Introduction

At the twenty-ninth session of the Sub-Committee, the expert from Canada made a proposal for an additional test for determining 1.4S classification (ST/SG/AC.10/C.3/2006/62). The Working Group on Explosives reviewed and supported the proposal. It was requested that the expert from Canada prepare a new proposal, including additional text to be inserted in the Manual of Tests and Criteria (UN/SCETDG/29/INF.65). At the thirty-first session of the Sub Committee, the expert from Canada submitted (a) an information paper containing a detailed example of the application of the proposed test to perforating charges (UN/SCETDG/31/INF.43) and (b) a working paper containing new text for Section 16 (ST/SG/AC.10/C.3/2007/29). The working paper stated that, if the new test were accepted, there would need to be modifications made to Section 10 of the Manual of Tests and Criteria "Introduction to Part I". The majority of the Working Group was in favour of provisional acceptance of the proposal from Canada, while waiting for further results or proposals from other countries. If no new results or proposals are submitted, the square brackets around the Canadian text are to be removed (UN/SCETDG/31/INF.45). The document ST/SG/AC.10/C.3/2008/11 represents the new proposal for the additional text in Section 10, as well as slight modifications to Section 16 to address some of the comments received from the members of the Working Group. In addition, examples of test results on a variety of articles are provided.

Document ST/SG/AC.10/C.3/2008/55 from the USA opposes introduction of this test for a number of reasons. We wish to comment on their reasoning. The USA text is reproduced in italics in the following section, with our comments following.

Comments

1. *At its thirty-first session, the Sub-Committee considered a revised proposal for an additional test to determine 1.4S classification for all explosive articles (see ST/SG/AC.10/C.3/2007/29). This proposal was made on the basis of several experiments on one specific article, namely a 23 gram shaped charge (see informal document UN/SCETDG/31/INF.43). The expert from the United States has questioned the need for adopting a proposal with such broad implications when no data on other 1.4S articles have been presented…*

   Response: Ample examples are provided in ST/SG/AC.10/C.3/2008/11 of test results for articles which are candidates for a 1.4S classification. Some meet the proposed criteria; some do not. The results provided by the USA in their paper provide valuable additional data, which also reinforce the need for the proposed 6(d) test.

2. *In addition, further tests have been conducted which show that the methodology for the proposed UN 6d test is flawed and its four pass/fail criteria (witness plate damage or jet flame longer than 1 meters or disruption of the packaging contents or metallic projections more than 8 joules) are unnecessarily restrictive, even for shaped charges.*

   Response: The proposed pass/fail criteria were generally accepted at the last meeting of the Working Group on Explosives. The July meeting will present an opportunity for the Working Group to introduce modifications to the criteria, if they are felt to be necessary.

8. *As suggested in informal document UN/SCETDG/31/INF.34, the expert from the United States believes the proposed UN 6d single unconfined packaging test is unnecessary for 1.4S articles. But if the concerns of the expert of the Working Group on explosives experts are specifically focused upon shaped charges, then, instead of burdening an entire Division of explosives with a new and unproven UN test method, it is proposed that a new test method be applied only to UN 0441, Charges, shaped…*

   Response: The concerns are not limited only to shaped charges. The larger issue is that the current test scheme does not permit assessing whether or not an article meets the criteria for assignment to a 1.4S classification. The definition of a 1.4S article is:

   "**Division 1.4 Substances and articles which present no significant hazard**

This division comprises substances and articles which present only a small hazard in the event of ignition or initiation during transport. The effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire shall not cause virtually instantaneous explosion of almost the entire contents of the package.

NOTE: ***Substances and articles of this division are in Compatibility Group S if they are so packaged 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 and projection effects are limited to the extent that they do not significantly hinder fire-fighting or other emergency response efforts in the immediate vicinity of the package."***

The Series 6 tests define acceptability into 1.1, 1.2, 1.3, 1.4 or 1.4 S.

The 6(a) and 6(b) tests look at accidental functioning. However, the criteria of mass explosion and communication leading to mass explosion are set for classification into 1.1. No criteria are given for the other divisions.

The 6(c) test classifies into 1.1, 1.2, 1.3, 1.4, and 1.4 S. However it does so by virtue of behaviour in a fire. That is, the test looks at behaviour of the substance or articles after the package has been degraded by fire.

The portion of the definition for 1.4S, "any hazardous effects arising from accidental functioning are confined within the package", is not addressed by this test. The substance or the article is not initiated or ignited in a manner that could determine effects outside the package if the substance or article functioned as intended. There is a possibility that products classified as 1.4S based on behaviour in a fire may produce a hazardous effect when functioned. Examples are small amounts of detonating explosive which will burn in a fire but would detonate if initiated and would possibly produce hazardous effects outside the package. The 6(d) test is proposed specifically to address hazardous effects outside the package following accidental functioning.

Conclusion

The arguments put forward by the USA do not raise any valid objections to the adoption of this proposed test. The majority of the Working Group has agreed that the status quo is unsatisfactory, and after several discussions and modifications to the proposal, the expanded test series should now represent an adequate means to properly classify articles meeting the 1.4S criteria. The July meeting of the Working Group will provide an opportunity to finalize the proposal. The USA should be encouraged to submit some of their results as examples for the 6(d) test.

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