

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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Item 2 of the provisional agenda

Explosives and related matters

Comments on ST/SG/AC.10/C.3/2010/31 (United States of America), a proposed new DDT Test and Criteria for Flash Compositions

Transmitted by the expert from the United Kingdom

Introduction

1. The expert from the United States of America has proposed an alternative to the HSL Flash Composition Test for determining flash composition in fireworks involving a modified DDT test.

Discussion

2. The expert from the United Kingdom welcomes this paper from the expert from the United States of America and makes the following comments as a further contribution to the discussions on the test methods for determining whether pyrotechnic compositions exhibit the behaviour of flash compositions or present an enhanced hazard when used as a bursting or lifting charge in fireworks.

3. The expert from the United Kingdom recognises that whilst there are initial set up costs for the HSL Flash Composition Test, the ongoing running costs of this test are minimal and there is no requirement for any associated specialised infrastructure or safety trace for testing.

4. The expert from the United Kingdom notes the comments regarding the standard deviation of the HSL Flash Composition Test, which were apparent in early work on developing the test. However significant improvements were made during that work and incorporated into the test as adopted in Appendix 7 of the Manual of Tests and Criteria. The expert from the UK also points out that the test determination relies on the fastest recorded time from three tests.

5. The expert from the United States of America describes flash compositions as they have traditionally been understood. The description in Note 2 to 2.1.3.5.5 of the Model Regulations is intended to take account of a wider range of compositions, specifically those used to produce an aural effect or used as bursting or lifting charges. The HSL test is used to identify such compositions that have an enhanced hazard and produce an effect similar to traditional flash compositions, as described by the expert from the USA.

6. Flash composition content is used not only to determine whether fireworks fall by default into HD1.1 but also whether they fall in HD1.3 or HD1.4. Identification of whether

a composition is capable of undergoing the deflagration to detonation transition may not allow these discriminations to be made.

7. The United Kingdom would welcome further data from the modified DDT test on a wider range of compositions. In particular how the test results obtained for compositions tested in this way compare with the same compositions tested using the HSL Flash Composition Test.

8. The expert from the United Kingdom believes that alternative tests should give comparable results particularly in terms of ranking of compositions and suggests that further work needs to be done to demonstrate comparability of the modified DDT test with the HSL Flash Composition Test. To this end the United Kingdom would support inter and intra laboratory testing, of compositions, particularly those used in firework burst charges, to compare results from the two tests. This is seen as a mechanism for generating the data necessary to demonstrate the comparability of the two test methods.

9. There has been some discussion amongst experts as to the value of pressure rise time used to determine flash composition (currently 8 ms). The United Kingdom would support further work to review this rise time criterion. The expert from the United Kingdom hopes to bring further information on this to the meeting.
