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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 **17 June 2011**

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Explosives and related matters: miscellaneous

Possible Use of the 5(a) Cap Sensitivity Test as an Alternative to UN Test Series 6 for Certain Substances

Transmitted by the expert from the United States of America

1. Section 16.3.1(a) of the UN Manual of Tests and Criteria provides discretion to the competent authority to waive the UN Series 6 Tests "…on the basis of other tests or available information", however no specific examples of "other tests" which might be used are offered.

2. The expert from the United States believes that unconsolidated propellant explosive substances (e.g., loose powders, grains, granules, tablets, etc.) which cannot be made to detonate with a standard detonator, will not deflagrate to detonation, either when internally ignited or from an external fire. While this conclusion may not always be true for consolidated solid propellants such as composite molded sections or large extruded cylinders, it still may provide the basis for an alternative test procedure for unconsolidated propellants.

3. In light of the foregoing, it is considered possible to use the UN Test 5(a) Cap Sensitivity Test (see Section 15.4 of the UN Manual of Tests and Criteria) using a 250 gram sample in a fiberboard container and the alternate lead cylinder as witness (see UN Manual of Tests and Criteria, Figure 15.4.1.2) as a reliable alternate method to determine whether or not an unconsolidated propellant substance exhibits Division 1.1behavior. If the compression length measured on the lead witness cylinder is greater than or equal to 3.2mm (0.125 in.) on any one of the three trials, then the propellant explosive may be classed as Division 1.1 without being subjected to UN Test Series 6. Alternatively, if the compression of the lead block is less than 3.2 mm (0.125 in.) for all three trials, the UN 6(a,b) Tests may be waived in the subsequent UN Test Series 6 and the unconsolidated propellant explosive may be classed based upon the UN 6(c) External Fire (Bonfire) Test results.. However, articles containing these unconsolidated propellant explosives should not be classed by this alternate method without further examination.

Conclusion

4. The expert from the United States is seeking data or the opinion of other experts concerning the possibility of using the UN Test Series 5 (a) Cap Sensitivity Test with the lead cylinder witness as a recognized alternative to the UN Test 6(a,b) for unconsolidated propellant substances.