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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

Sub-Committee of Experts on the Globally  
Harmonized System of Classification  
and Labelling of Chemicals

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

Fifteenth session  
Geneva, 9 (p.m)-11 July 2008  
Item 2 (a) of the provisional agenda

**EXPLOSIVES AND RELATED MATTERS**

Report of the informal Working Group on Desensitised Explosives

Transmitted by the Chairman of Working Group (Netherlands)\*

1. The informal Working Group on desensitised explosives met twice to have technical discussions on the classification and hazard communication on desensitised explosives. The first meeting was held on the 17 December 2007 under the chairmanship of Mr. A. Johansen (Norway), the second meeting took place on 31 March 2008 under the chairmanship of Mr. E. de Jong (Netherlands).

2. Experts from France, Germany, the Netherlands, Norway (first meeting only) and the United States of America participated in the meetings.

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\* In accordance with the programme of work of the Sub-Committee for 2007-2008 approved by the Committee at its third session (refer to ST/SG/AC.10/C.3/60 para. 100 and ST/SG/AC.10/C.3/34, para. 14).

3. The Sub-Committee of experts on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS Sub-Committee) gave the Working Group the following mandate:

- (a) To develop a classification scheme suitable to classify desensitised explosives in Part 2 of the GHS.
- (b) To develop a proposal for suitable hazard communication elements for desensitised explosives (see ST/SG/AC.10/C.4/26, para. 16b)).

### **Presentations**

4. A number of experts gave or provided in advance short presentations, covering current regulations, test results and thought starters for a possible approach.

### **Discussion about desensitised explosives:**

5. The Group discussed the problem of desensitised explosives and the following approaches have been outlined:

- (a) Include desensitised explosives in Class 1, e.g. in Division 1.7 (could be incorporated in the current Chapter 2.1 of GHS)
- (b) Define a new group for both liquid and solid desensitised explosives, e. g. Division 4.4 for transport purposes. This would mean that a new Chapter in Part 2 of the GHS document would be needed.

6. The Group discussed the possibilities and came to the conclusion that the second option is favoured by all participants. It was concluded that a new chapter in GHS is needed.

7. The work of United Kingdom Health and Safety Laboratories (HSL), formerly presented in International Group Experts on Explosion Risks of unstable substances (IGUS), was taken as a basis and adapted to reflect the classification procedure for desensitised explosives. This resulted in the definition of three types of desensitised explosives: type C, E and F. These letters have been chosen to reflect comparable hazards as used for self-reactive substances and organic peroxides.

8. The need for an exemption from the class of desensitised explosives was discussed. The Group concluded that an exemption from this class is not favoured.

9. It was concluded that the basic principles for the classification of desensitised explosives are agreed within the working group.

10. The subject of hazard communication has not yet been discussed.

11. “Furthermore, there are numerous consequential amendments for the GHS, the UN Model Regulations on the Transport of Dangerous Goods and for the Manual of Tests and Criteria. An indication of where the changes are necessary in the various parts of the mentioned documents will be drafted before the July sessions.

12. A visualisation of the discussion in the Working Group are reflected in the annex to this document as a very first draft of new Chapter 2.17 of the GHS. Comments are encouraged but the annex was mainly included for information purposes. For this reason, the entire text is presented in square brackets. The text will certainly need further improvement and expansion. It is therefore anticipated that more sessions of the Working Group are necessary to finalise the work.

### **Proposal**

13. The Working Group invites the sub-committees on GHS and TDG to comment and, if possible, agree on the basic principles for the classification of desensitised explosive as reflected in this document. Especially on:

- (a) Having a separate category for desensitised explosives;
- (b) Creating three types of desensitised explosives; and
- (c) The basic hazard properties of these three types.

## Annex

### CHAPTER 2.17

#### DESENSITISED EXPLOSIVES

##### [2.17.1 Definition and general considerations

2.17.1.1. Desensitized explosive – means a solid or liquid explosive of Chapter 2.1 that has been diluted to the extent that it can be excluded from the class of explosives.

2.17.1.2. The minimum concentration of diluents which led to the exclusion from the class of explosives shall be known and communicated.

2.17.1.3. The diluent shall be homogeneously distributed and the concentration shall not fall below the minimum concentration that is stated at any time e.g. during transport and storage. The diluent shall be compatible with the explosive.

2.17.1.4. Solid desensitized explosives, which are desensitized with a diluent, shall be tested only after removal of any non-homogeneously distributed diluent.

2.17.1.5. Desensitized explosives in which the diluent concentration has fallen below the minimum concentration stated or desensitized explosives repacked in packagings other than the original or similar packaging shall be assigned to the class of explosives.

2.17.1.6. Any substance or mixture rejected as a desensitized explosive shall be classified as an explosive.

##### 2.17.2 Classification criteria

2.17.2.1 Desensitized explosives are classified in one of the three categories for this class, according to the following principles:

- (a) Any desensitized explosive which:
  - (i) Does not detonate in a package;
  - (ii) Does not deflagrate in a package; and
  - (iii) Does not show dangerous effects when the packaged substance is involved in a fire;

shall be defined as a **desensitized explosive, TYPE C**;

- (b) Any desensitized explosive which:
  - (i) Does not detonate;
  - (ii) Does not deflagrate rapidly;

- (iii) Does not show violent effect on heating under confinement; and
- (iv) Does not show dangerous effects when the packaged substance is involved in a fire;

shall be defined as **a desensitised explosive, TYPE E**;

- (c) Any desensitised explosive which:
  - (i) Does not detonate;
  - (ii) Does not deflagrate;
  - (iii) Does not show any effect on heating under confinement;
  - (iv) Does not show dangerous effects when the packaged substance is involved in a fire,

shall be defined as **a desensitised explosive, TYPE F**.

### 2.17.3 Hazard Communication

*NOT YET ADDRESSED*

### 2.17.4 Decision logic and guidance

The decision logic and guidance which follow are not part of the harmonized classification system, but have been provided here as additional guidance. It is strongly recommended that the person responsible for classification studies the criteria before and during use of the decision logic.

#### 2.17.4.1 Decision logic

To classify a desensitised explosive tests described in Part I of the, *Manual of Tests and Criteria* should be performed. Classification is according to decision logic 2.17.

The properties of desensitised explosives which are decisive for their classification should be determined experimentally. The following tests are used to answer the questions of the relevant boxes in decision logic 2.17:

- Box 1: Test 1(a) as described in section 11.4.1 of the *Manual of Tests and Criteria*;
- Box 2: Test 6(a) as described in section 16.4.1 of the *Manual of Tests and Criteria*, using a detonator to initiate the sample;
- Boxes 3 and 4: Test 2(c) as described in section 12.6.1 or 12.6.2 of the *Manual of Tests and Criteria*;

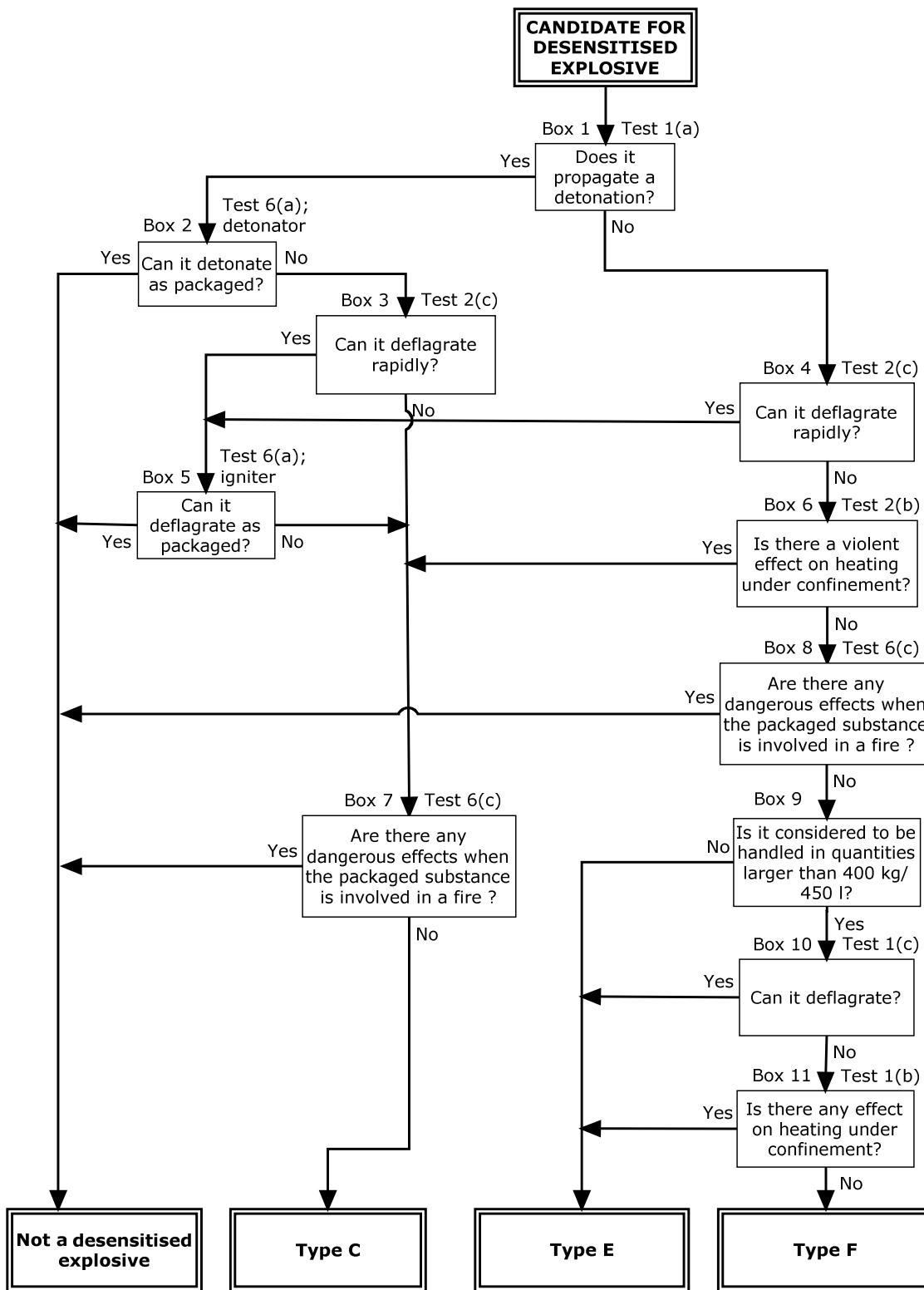
- Box 5: Test 6(a) as described in section 16.4.1., using an igniter to initiate the sample;
- Box 6: Test 2(b) as described in section 12.5.1 of the *Manual of Tests and Criteria*;
- Boxes 7 and 8: Test 6(c) as described in section 16.6.1 of the *Manual of Tests and Criteria*;
- Box 10: Test 1(c) as described in section 11.6.1 or 11.6.2 of the *Manual of Tests and Criteria*;
- Box 11: Test 1(b) as described in section 11.5.1 of the *Manual of Tests and Criteria*.

#### **2.17.4.2 Guidance**

When the results of the tests on a candidate for desensitised explosive indicates the outcome: “Not a desensitised explosive” the substance shall be included in the class of explosives.

The classification procedures for desensitised explosives need not be applied if the concentration of explosive material in the substance or mixture is less than [x]%

*Decision logic 2.17 for desensitised explosives*



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