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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
(Twenty-fourth session, 1-10 December 2003,
agenda item 3 (c))

EXPLOSIVES, SELF-REACTIVE SUBSTANCES AND ORGANIC PEROXIDES

Miscellaneous proposals

Transmitted by the expert from France

1. This document provides additional information in order to justify the proposal from France, about the removal of exclusion criteria of self-reactive substances, Division 4.1.
2. In a recent past we had to test several substances showing both self-reactive and oxidizing properties. As an example for these the following details concerning a multi-components powder with mineral oxidizing and organic flammable substances are presented.

Powder (mineral oxidizer mixed with organic flammable material)	Division 4.1 Self-reactive substance	Division 4.1 Flammable solids	Division 5.1 Oxidizing substances
criteria met	Division 4.1 self-reactive solid type E without temperature controlled- UN 3228	No	Division 5.1 PG III Oxidising solid N.O.S. UN 1479

- a) From UN N1 test results, this powder is not classified as a flammable solid, Division 4.1.

b) The two criteria for candidate as self-reactive substance are fulfilled :

- Heat of decomposition more than 300 J/g: : 1040 J/g
- Self-accelerating decomposition temperature (SADT) smaller than 75°C for a 50 kg package: 59°C
- According to the flow chart for self reactive substance the powder belongs to type E

So, this powder is a thermally unstable substances liable to undergo a strongly exothermic decomposition even without participation of oxygen (air).

c) The powder is also an oxidising substance according to the assignment procedure of Division 5.1: "Oxidising substances are classified in Division 5.1 in accordance with the test methods, procedures and criteria in the Manual of Tests and Criteria, Part III, section 34. In the event of divergence between test results and known experience, judgement based on known experience shall take precedence over test results."

3. Limited quantities and packing instructions for these two classifications :

- Division 4.1, Self-reactive solid, type E, without temperature regulation (SADT > 55°C), UN 3228 :
 - Limited quantities : 500 g
 - Packing instruction : P520
 - 4.1.1.1.5 : the packaging for self-reactive substances of Division 4.1 shall comply with the provisions for the medium danger group (Packing group II).
 - 4.1.7.1.4 : (d) : packing method OP8 : maximum quantities authorised per package : 200 kg (60kg for jerricans / 100 kg for boxes).
- Oxidising substances, Division 5.1 :UN 1479, oxidising solid, n.o.s, PG III
 - Limited quantities : 5 kg,
 - Packing instructions : P002, IBC08, LP02
 - P002 : single packaging (drums or jerricans) until 400 kg.
 - IBC08 : Intermediate Bulk Containers have a capacity of not more than 3,0 m3 for solids of packing groups II and III.
 - LP02 : large outer packaging : maximum capacity 3 m3

4. In conclusion: if this powder is classified as an oxidising substance, Division 5.1, PG III :

- In case of an inner packaging smaller than 5 kg, the full provisions and requirements of the UN recommendations don't apply. (chapter 3.4), but its self reactive properties would still remain in this quantity.
- Packed in IBC of 1 000 kg (1,5 m3), the product has a SADT around 38°C. This would create a permanent situation of threat even under normal condition of transport.

5. Risk communication problems

When assigned to class 4.1 there would be risk communication on the oxidising properties, but the situation would be worse if assigned to class 5.1 there would not be taken care of the self reactive properties that generate a much bigger danger, due to the low possible values of SADT.

Two options may be proposed to solve the risk communication issue:

Proposal 1:

Add new special provision against UN 3221 to 3230 drafted as follows:

“xxx When substances assigned to that entry have oxidising properties according to the assignment procedure for class 5.1 the packages shall also bear a label n° 5.1 “

Proposal 2:

Insert 10 new entries corresponding to the existing entries for self-reactive substances but with and oxidising subsidiary risk :

SELF-REACTIVE (SOLID/LIQUID) TYPE B to F OXIDIZING

The transport conditions shall be the same as for the current self reactive substances B to F but with a requirement for a subsidiary risk label 5.1.
