



**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****Forty-sixth session**

Geneva, 1 – 9 December 2014

Item 2 (b) of the provisional agenda

**Recommendations made by the Sub-Committee on
its forty-third, forty-fourth and forty-fifth sessions
and pending issues: listing, classification and
packing****Sub-Committee of Experts on the Globally Harmonized
System of Classification and Labelling of Chemicals****Twenty-eighth session**

Geneva, 10 – 12 December 2014

Item 2 (b) (i) of the provisional agenda

**Classification criteria and related hazard communication:
work of the Sub-Committee of Experts on the Transport of
Dangerous Goods (TDG): physical hazards****Classification under UN No. 2211 and UN No. 3314****Transmitted by the European Chemical Industry Council (CEFIC)¹****Introduction**

1. As has been demonstrated earlier in proposal ST/SG/AC.10/C.3/2011/30 concerning Polymeric beads, expandable and Plastics moulding compounds, evolving flammable vapours, there are big differences in respect of different material ability to give off flammable vapours. Due to these differences it was suggested to implement a new method that could determine if there was a risk for formation of flammable atmospheres in the container or not.

2. Several suggestions were received from a number of delegates on that proposal which was modified accordingly in November 2011 and submitted as informal document INF.32 (40th session) as a proposal of amendment to Special Provision 207. At the forty-fifth session in July 2014, informal document INF.13 was submitted. Valuable comments were received, and based on these comments, CEFIC hereby submits an amended proposal.

¹ In accordance with the programme of work of the Sub-Committee for 2013-2014 approved by the Committee at its sixth session (refer to ST/SG/AC.10/C.3/84, para. 86 and ST/SG/AC.10/40, para. 14).

Justification

3. The proposed test method is applicable for the two substances to which SP207 is assigned (UN 2211 and UN 3314).

4. In essence the products have to be stored under complete closed conditions at 50 °C for two weeks. After this period the atmosphere in the closed sample holder is analysed for available of flammable vapours. When the concentration is lower than 20% of the lower explosion limit, the material is not to be classified under UN No. 2211 or UN No. 3314.

5. The 50 °C temperature was chosen because numerous investigations show that the temperature of the bulk material of cargo never exceeds +50°C even under extreme conditions. Therefore, CEFIC is of the opinion that a test with the temperature continuously being held at 50°C for 2 weeks represents a worst case transport condition. References to the various investigations are:

- Validation of the UN criteria for the uncooled sea transport of liquid organic peroxides: Full- scale test and modeling, Journal of Loss Prevention in the Process Industries 21 (2008) 635–641, M. Steensma, P. Schuurman and W.A. Mak;
- The temperature curve of last year for Shipment from China to Europe, temperature sensor on pallet close to the doors (see annex 1);
- The temperature readings, as given in annex 2 that were recorded during transport from Sweden to; Japan, Australia, Brazil, United States of America and Mexico. The sensor was placed on the top of the fiber drums, close to the ceiling of the container;
- Study by BAM, referred to in informal document INF.30 (32nd session), presented in December 2007.

Proposal 1

6. CEFIC proposes the following test method to be included in a new section 38.4 of the “Manual of Tests and Criteria” as follows:

38.4 Substances evolving flammable vapour

38.4.1 Purpose

This section of the Manual presents the test procedure to determine whether during handling, transport and storage substances of Class 9 evolving flammable vapours (see UN Nos. 2211 and 3314), are able to evolve a dangerous concentration of flammable vapours in closed containers resulting in the formation of a flammable atmosphere and, as a consequence, have to be classified or not.

38.4.2 Scope

The scope of the test method is to determine whether polymeric beads and moulding compounds, with encapsulated blowing agent, fulfilling the description of UN No. 2211 or UN No. 3314, need not to be classified under these UN numbers.

38.4.3 Classification procedure for substances liable to evolve flammable vapours

Polymeric beads and moulding compounds, with encapsulated blowing agent shall be tested according to the procedures below to determine whether classification under UN No. 2211 or UN No. 3314 is needed.

38.4.4 Test U 1: Test method for substances liable to evolve flammable vapours

38.4.4.1 Introduction

The ability to evolve flammable vapours is determined by placing the substance in a hermetically closed glass bottle, at a specified temperature for a prescribed period of time, and then, determine the identity and concentration of flammable vapours.

38.4.4.2 Apparatus and materials

A serum flask equipped with rubber septa with a volume of 50 ml to allow for enough samples to be analyzed. A heating cabinet for storage of samples at prescribed time and temperature. A gas chromatographic (GC) apparatus and accompanying equipment, for analysis of flammable vapour concentration in the gas-phase.

38.4.4.3 Procedure

The substance in its commercial form should be put in a serum flask of 50 ml, with a degree of filling of 50% volume ratio and sealed with rubber septa. The sealed flask is put into a heating cabinet at 50°C for 14 days. After 14 days remove the flask from the heating cabinet and analyze the gas phase twice on the GC and calculate the average concentration of the flammable vapour. The test should be performed at three samples on the same substance.

38.4.4.4 Test criteria and method of assessing results

Substances need not be classified as Polymeric beads, expandable or Plastics moulding compounds, evolving flammable vapours if the concentration of the flammable vapours is less than or equal to 20% of the Lower Explosive Limit (LEL) of the flammable vapour in all of the three samples.

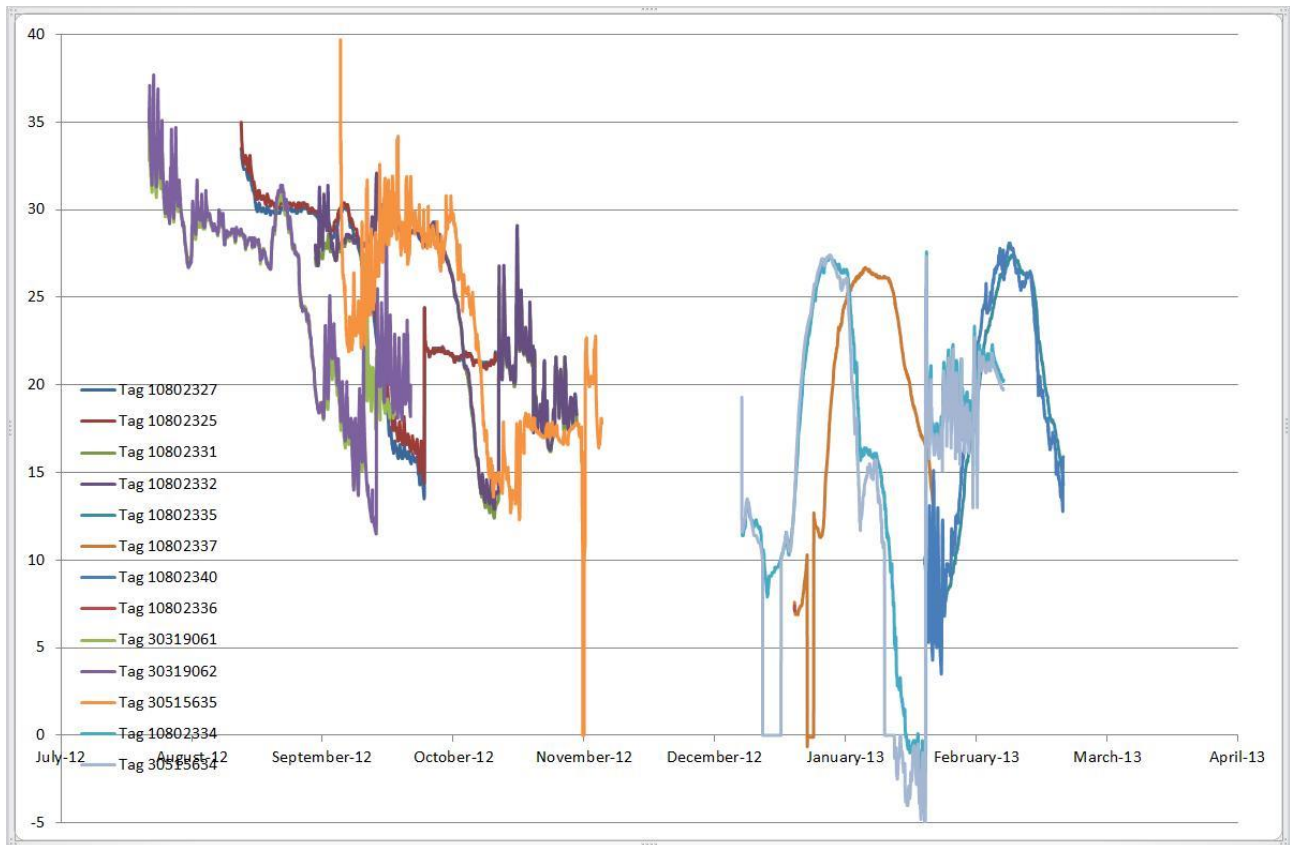
Proposal 2

7. CEFIC proposes to add the following sentence to special provision 207, which is already assigned to UN Nos. 2211 and 3314:

“When it can be demonstrated that no flammable vapour, resulting in a flammable atmosphere, is evolved according to test U1: Test method for substances liable to evolve flammable vapours, of the Manual of Tests and Criteria, polymeric beads, expandable or plastics moulding compounds need not be classified under this UN number. This test should only be performed when de-classification of a substance is considered.”.

Annex 1

Temperature curve of last year for shipment from China to Europe, temperature sensor on pallet close to the doors



Annex 2

The temperature readings during transports from Sweden to Japan, Australia, Brazil, United States of America and Mexico. The sensor was placed on the top of the fiber drums, close to the ceiling of the container

Temperature in containers to different destinations

