

**Committee of Experts on the Transport of Dangerous Goods
and on the Globally Harmonized System of Classification
and Labelling of Chemicals**

18 June 2014

**Sub-Committee of Experts on the
Transport of Dangerous Goods**

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Geneva, 23 June – 2 July 2014

Item 10 (c) of the provisional agenda

**Issues relating to the Globally Harmonized System
of Classification and Labelling of Chemicals:
pyrophoric gases**

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

Twenty-seventh session

Geneva, 2 – 4 July 2014

Item 3 (g) of the provisional agenda

**Classification criteria and related hazard
communication: miscellaneous**

**Corrections to the proposal in
ST/SG/AC.10/C.3/2014/54 – ST/SG/AC.10/C.4/2014/5**

Transmitted by the expert from the United States of America

Introduction

1. This paper reflects additional work and agreements reached by experts from Germany, Sweden, United Kingdom, Canada, European Industrial Gases Association (EIGA), the Compressed Gas Association (CGA), and the United States of America since submitting the working and accompanying informal paper on pyrophoric gases in April 2014 (See ST/SG/AC.10/C.3/2014/54–ST/SG/AC.10/C.4/2014/5 and INF.4 (GHS, 27th session) - INF.7 (TDG, 45th session)). This group of experts met by teleconference and corresponded through email to reach agreement on the guidance necessary for classification and labelling of pyrophoric gases.
2. Paragraphs 3 to 6 of this paper explain the corrections, while paragraphs 8 to 12 of this paper identify the corrections proposed. In addition, the revised parts of Chapter 2.2 and Annex 3 are provided in visible mode (“track changes”) in the Annex to the paper.

Corrections to the proposed amendments

3. Precautionary statement P233 (“Keep container tightly closed”) was originally assigned in order to align with the precautionary phrases used for pyrophoric solids and liquids. This phrase is not used for other gases, such as flammable gases, as gases are provided in cylinders or closed receptacles. The experts agreed to correct this oversight in an informal paper. See the amendments proposed for Annex 3 in paragraph 10(b) of the working paper.
4. The explanatory note associated with Table 2.2.2 and the footnote to the decision logic for pyrophoric gases did not convey the proper physical properties to be considered. The team corrected these two notes. The experts also corrected the location of the footnote

in the decision logic so that it appears at the end of the question. See paragraph 8(c), bullet 2, and paragraph 8(e), bullet 2 of the working paper, respectively.

5. The experts reviewed the guidance proposed for pyrophoric gases and determined that the guidance proposed in paragraph 8(e), bullet 5 of the working paper did not provide adequate information for those performing classification of pyrophoric gases.

6. The working paper also contains a numbering error, which is correct in the informal paper. The working paper identifies a new “Table 2.2.3: Label elements for flammable gases” in paragraph 8(d), bullet 2 of the working paper. The correct number and title for this table is “Table 2.2.4: Label elements for flammable gases”.

Corrected proposals

7. The Sub-Committee is invited to review and comment on the following corrections to the amendments proposed in document ST/SG/AC.10/C.3/2014/54 – ST/SG/AC.10/C.4/2014/5.

Corrections to the proposed amendments to Chapter 2.2

8. In Note 2 to Table 2.2.2 (paragraph 8(c), bullet 2 of the working paper):
replace “*its auto-ignition temperature*” with “*its pyrophoricity*” and “*is classified*” with “*should be classified*”

9. In section 2.2.3 (paragraph 8 (d) bullet 2 of the working paper) replace “table 2.2.3” with “table 2.2.4” (twice)

10. In the footnote to decision logic 2.2 (b) (paragraph 8(e), bullet 2 of the working paper):

- (a) place the reference to the footnote after the question mark; and
- (b) replace “*its auto-ignition temperature*” with “*its pyrophoricity*” and “*is classified*” with “*should be classified*”

11. For Section 2.2.4.2 (paragraph 8(e), bullet 5 of the working paper):

- (a) In paragraph 2.2.4.4.2, insert “at 54°C” after “should be determined”
- (b) In paragraph 2.2.4.4.3:
 - (i) delete “or mixture”
 - (ii) insert the following text at the end of the first sentence:

“Flammable gas mixtures, which have not been tested for pyrophoricity and contain more than one percent pyrophoric components, should be classified as a pyrophoric gas. Expert judgment in the properties and physical hazards of pyrophoric gases and their mixtures should be used in assessing the need for classification of flammable gas mixtures containing one percent or less pyrophoric components. In this case, testing need only be considered if expert judgment indicates a need for additional data to support the classification process.”

Corrections to the proposed amendments to Annex 3

12. In Section 2, Table A3.2.2, (paragraph 10 (b) of the working paper), delete “P233 and” in the heading of the first proposed amendment so that the amendment becomes applicable only to “P280”. The proposed amendment to P222 remains unchanged.

Annex

Consequential corrections to the amendments shown in track-changes in INF.4 (GHS, 27th session) – INF.7 (TDG, 45th session)

Only the texts for which corrections are proposed are reproduced here. The remainder of the proposals as shown in INF.4–INF.7 remain unchanged. Corrections are shown in “track-changes”.

Chapter 2.2

2.2.2.2 Amend Note 2 to table 2.2.2 as follows:

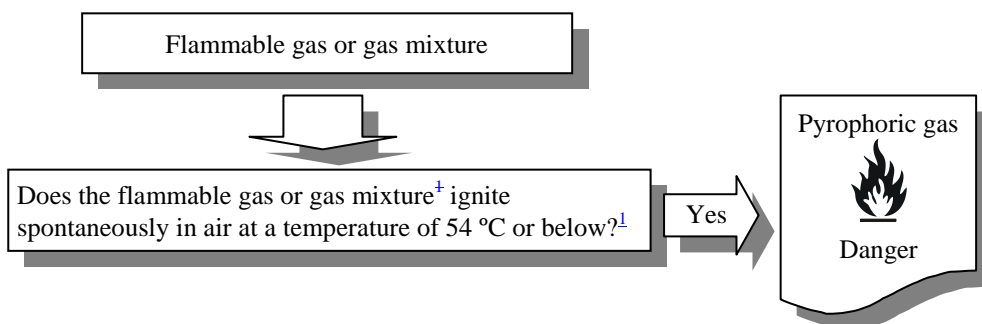
“NOTE 2: In the absence of data on its ~~auto ignition temperature~~ pyrophoricity, a flammable gas mixture ~~is-should be~~ classified as a pyrophoric gas if it contains more than 1% (by volume) of pyrophoric component(s).”

2.2.4.2 Amend paragraph 2.2.4.2 and its corresponding footnote as follows:

“2.2.4.2 Decision logic for pyrophoric gases

To classify a flammable gas as a pyrophoric gas, data on its ability to ignite in air are required. The classification is according to decision logic 2.2 (b).

Decision logic 2.2 (b)



¹ In the absence of data on its ~~auto ignition temperature~~ pyrophoricity, a flammable gas mixture should be is-classified as a pyrophoric gas if it contains more than 1% (by volume) of pyrophoric component(s).”

2.2.4.4 Amend paragraphs 2.2.4.4.2 and 2.2.4.4.3 as follows:

“2.2.4.4.2 Pyrophoricity should be determined at 54 °C in accordance with either IEC 60079-20-1 ed1.0 (2010-01) “Explosive atmospheres - Part 20-1: Material characteristics for gas and vapour classification - Test methods and data” or DIN 51794 “Determining the ignition temperature of petroleum products”.

2.2.4.4.3 The classification procedure for pyrophoric gases need not be applied when experience in production or handling shows that the substance ~~or mixture~~ does not ignite spontaneously on coming into contact with air at a temperature of 54 °C or below. Flammable gas mixtures, which have not been tested for pyrophoricity and contain more than one percent pyrophoric components, should be classified as a pyrophoric gas. Expert

judgment in the properties and physical hazards of pyrophoric gases and their mixtures should be used in assessing the need for classification of flammable gas mixtures containing one percent or less pyrophoric components. In this case, testing need only be considered if expert judgment indicates a need for additional data to support the classification process.”

Annex 3, Section 2, Table A3.2.2

Amend P233 in Table A3.2.2 as follows:

Table A3.2.2: Codification of prevention precautionary statements

(1)	Prevention precautionary statements (2)	Hazard class (3)	Hazard category (4)	Conditions for use (5)
P233	Keep container tightly closed.	Flammable gases (chapter 2.2)	Pyrophoric gas	
		Flammable liquids (chapter 2.6)	1, 2, 3	<i>– if the liquid is volatile and may generate an explosive atmosphere.</i>
		Pyrophoric liquids (chapter 2.9)	1	
		Pyrophoric solids (chapter 2.10)	1	
		Acute toxicity, inhalation (chapter 3.1)	1, 2, 3	<i>– if the chemical is volatile and may generate a hazardous atmosphere.</i>
		Specific target organ toxicity, single exposure; respiratory tract irritation (chapter 3.8)	3	

Annex 3, Section 3, matrix for flammable gases in A3.3.5

Amend the matrix for pyrophoric gases as follows:

FLAMMABLE GASES (Chapter 2.2) (Pyrophoric gases)

Symbol Flame

Hazard category	Signal word	Hazard statement
Pyrophoric gas	Danger	H232 May ignite spontaneously if exposed to air



Precautionary statements			
Prevention	Response	Storage	Disposal
<p>P222 Do not allow contact with air. – if emphasis of the hazard statement is deemed necessary.</p> <p>P233 Keep container tightly closed.</p> <p>P280 Wear protective gloves/protective clothing/eye protection/face protection. Manufacturer/supplier or the competent authority to specify the appropriate type of equipment.</p>			

Note: This table lists only the precautionary statement that is assigned due to the pyrophoricity of the gas. For the other precautionary statements that are assigned based on the flammability, see the respective tables for flammable gases.

