



**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 Globally Harmonized
System of Classification and Labelling of Chemicals****Twenty-eight session**

Geneva, 10 – 12 December 2014

Item 2 (a) of the provisional agenda

**Classification criteria and related hazard communication:
Recommendations made by the Sub-Committee on its
twenty-fifth, twenty-sixth and twenty-seventh sessions****Draft amendments to the fifth revised edition of the Globally
Harmonized System of Classification and Labelling of
Chemicals (ST/SG/AC.10/30/Rev.5) adopted by the
Sub-Committee at its twenty-fifth, twenty-sixth
and twenty-seventh sessions****Note by the secretariat¹****Chapter 2.1**

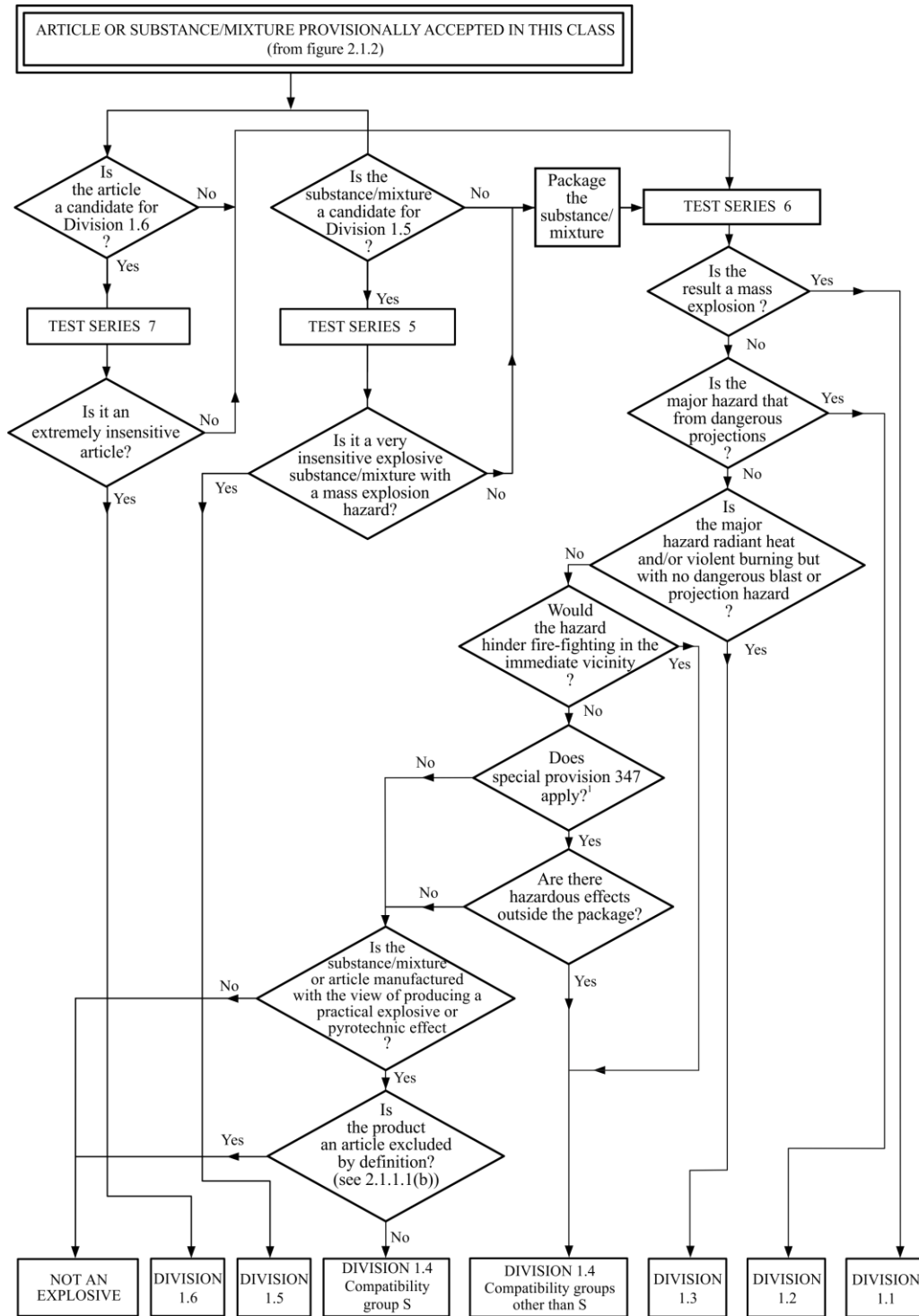
- 2.1.2.1 (f) Replace “articles which contain only extremely insensitive substances or articles” by “articles which predominantly contain extremely insensitive substances or articles”

(Reference document: ST/SG/AC.10/C.4/52, Annex I)

- Figure 2.1.3 Amend the figure by inserting a new box in the “No” line between the boxes that read “Would the hazard hinder fire-fighting in the immediate vicinity?” and “Are the hazardous effects outside the package”, as follows:

¹ In accordance with the programme of work of the Sub-Committee for 2013-2014 approved by the Committee at its sixth session (see ST/SG/AC.10/40, para. 14, and ST/SG/AC.10/C.4/48, Annex IV).

Figure 2.1.3: Procedure for assignment to a division in the class of explosives (Class 1 for transport)



¹ See Chapter 3.3 of the UN Model Regulations on the Transport of Dangerous Goods, Model Regulations for details.”

(Reference document: ST/SG/AC.10/C.4/54, Annex)

2.1.4.2.2 Amend the first sentence to read as follows: “The acceptance procedure for the hazard class Explosives need not be applied if:”

(Reference document: ST/SG/AC.10/C.4/52, Annex I)

2.1.4.2.2 (c) Amend to read as follows:

“(c) For an organic substance, or a homogenous mixture of organic substances, containing a chemical group (or groups) associated with explosive properties:

- the exothermic decomposition energy is less than 500 J/g, or
- the onset of exothermic decomposition is 500 °C or above

as indicated by Table 2.1.3.

Table 2.1.3 DECISION TO APPLY THE ACCEPTANCE PROCEDURE FOR THE HAZARD CLASS EXPLOSIVES FOR AN ORGANIC SUBSTANCE OR A HOMOGENOUS MIXTURE OF ORGANIC SUBSTANCES

Decomposition energy (J/g)	Decomposition onset temperature (°C)	Apply acceptance procedure? (Yes/No)
< 500	< 500	No
< 500	≥ 500	No
≥ 500	< 500	Yes
≥ 500	≥ 500	No

The exothermic decomposition energy may be determined using a suitable calorimetric technique (see section 20.3.3.3 of the *UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria*); or”.

(Reference document: ST/SG/AC.10/C.4/52, Annex I)

Chapter 2.2

Amend the chapter title to read: “Flammable gases”

2.2.1 Renumber current paragraph 2.2.1.2 as 2.2.1.3. Insert a new paragraph 2.2.1.2 to read as follows:

“2.2.1.2 “A *pyrophoric gas* is a flammable gas that is liable to ignite spontaneously in air at a temperature of 54 °C or below.”

(Reference document: ST/SG/AC.10/C.4/54, Annex)

2.2.2 Renumber current paragraph 2.2.2.2 as new 2.2.2.3 (current table 2.2.2 becomes table 2.2.3). Insert a new paragraph 2.2.2.2 to read as follows:

“2.2.2.2 A flammable gas is additionally classified as pyrophoric if it meets the criteria in the following table:

Table 2.2.2: Criteria for pyrophoric gases

Category	Criteria
Pyrophoric gas	Flammable gases that ignite spontaneously in air at a temperature of 54 °C or below.

NOTE 1: Spontaneous ignition for pyrophoric gases is not always immediate, and there may be a delay.

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

(Reference document: ST/SG/AC.10/C.4/54, Annex)

2.2.3 Renumber current paragraph before the table as 2.2.3.1. Amend current table 2.2.3 to read as follows:

“Table 2.2.4: Label elements for flammable gases

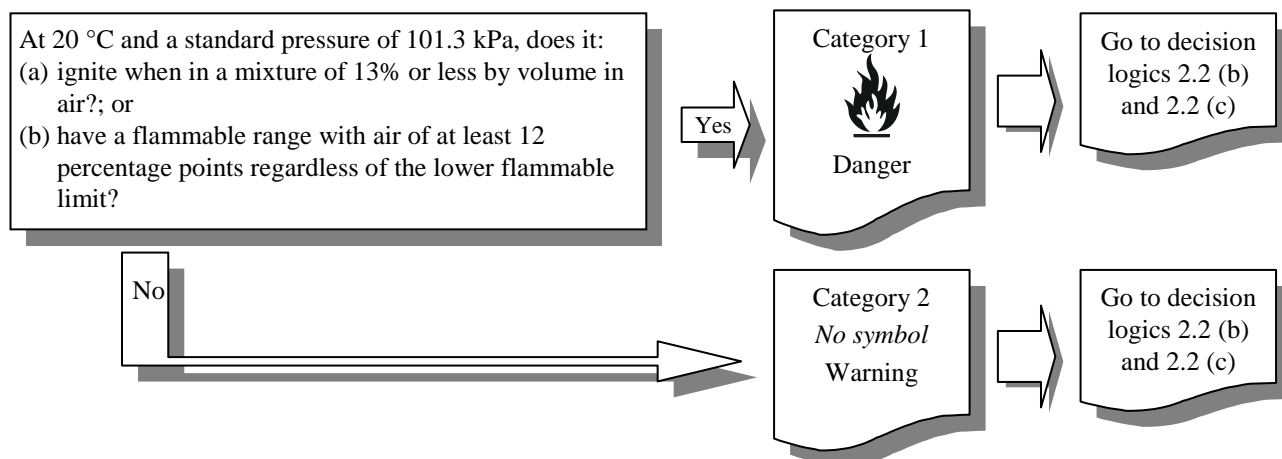
	Flammable gas		Additional sub-categories		
	Category 1	Category 2	Pyrophoric gas	Chemically unstable gas	
			Pyrophoric gas	Category A	Category B
Symbol	Flame	No symbol	Flame	No additional symbol	No additional symbol
Signal word	Danger	Warning	Danger	No additional signal word	No additional signal word
Hazard statement	Extremely flammable gas	Flammable gas	May ignite spontaneously if exposed to air	May react explosively even in the absence of air	May react explosively even in the absence of air at elevated pressure and/or temperature

Insert a new paragraph 2.2.3.2 to read as follows:

“2.2.3.2 If a flammable gas or gas mixture is additionally classified in one or more sub-categories, then all relevant classification(s) should be communicated on the safety data sheet as specified in Annex 4, and the relevant hazard communication elements included on the label.”

(Reference document: ST/SG/AC.10/C.4/54, Annex)

2.2.4.1 In decision logic 2.2 (a), insert two additional boxes with the text “Go to decision logics 2.2 (b) and 2.2 (c)” immediately to the right of the existing Category 1 and Category 2 boxes, as follows:



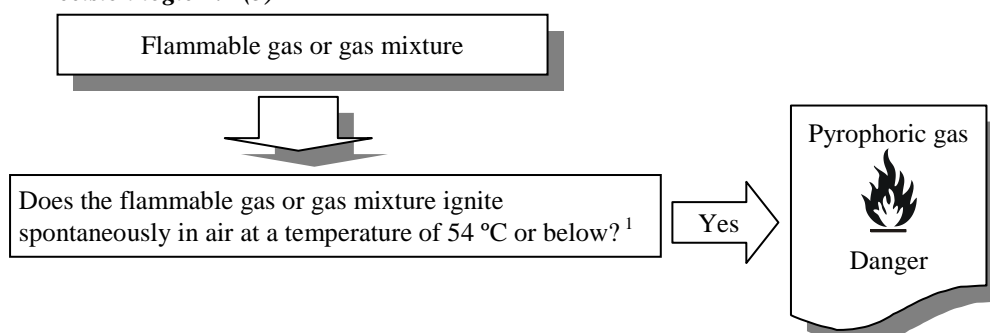
(Reference document: ST/SG/AC.10/C.4/54, Annex)

2.2.4.2 Insert a new paragraph 2.2.4.2 to read 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 pyrophoricity, a flammable gas mixture should be classified as a pyrophoric gas if it contains more than 1% (by volume) of pyrophoric component(s). ”*

- Current paragraph 2.2.4.2 becomes new paragraph 2.2.4.3 and current decision logic 2.2 (b) becomes decision logic 2.2 (c).

(Reference document: ST/SG/AC.10/C.4/54, Annex)

2.2.4.3 Current paragraphs 2.2.4.3 and 2.2.4.3.1 become new 2.2.4.4 and 2.2.4.4.1. Current paragraph 2.2.4.3.2 (“Chemical instability...classification purposes”) becomes new paragraph 2.2.4.4.4.

2.2.4.4.2 and 2.2.4.4.3 Insert two new paragraphs 2.2.4.4.2 and 2.2.4.4.3, to read 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 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 judgement on 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 judgement indicates a need for additional data to support the classification process.”.

(Reference document: ST/SG/AC.10/C.4/54, Annex)

Chapter 3.7

Table 3.7.1 In the heading, first column, replace “ingredients classified as” by “ingredient classified as”.

(Reference document: ST/SG/AC.10/C.4/54, Annex)

Chapter 3.8

3.8.3.4.6 Insert a new paragraph 3.8.3.4.6 as follows:

“3.8.3.4.6 In cases where the additivity approach is used for Category 3 ingredients, the “relevant ingredients” of a mixture are those which are present in concentrations $\geq 1\%$ (w/w for solids, liquids, dusts, mists, and vapours and v/v for gases), unless there is a reason to suspect that an ingredient present at a concentration $< 1\%$ is still relevant when classifying the mixture for respiratory tract irritation or narcotic effects.”

(Reference document: ST/SG/AC.10/C.4/54, Annex)

Chapter 3.10

3.10.3.3.1 to 3.10.3.3.2.3 Amend to read as follows:

“3.10.3.3.1 The “relevant ingredients” of a mixture are those which are present in concentrations $\geq 1\%$.

3.10.3.3.2 *Category 1*

3.10.3.3.2.1 A mixture is classified as Category 1 when the sum of the concentrations of Category 1 ingredients is $\geq 10\%$, and the mixture has a kinematic viscosity $\leq 20.5 \text{ mm}^2/\text{s}$, measured at 40°C.

3.10.3.3.2.2 In the case of a mixture which separates into two or more distinct layers, the entire mixture is classified as Category 1 if in any distinct

layer the sum of the concentrations of Category 1 ingredients is $\geq 10\%$, and it has a kinematic viscosity $\leq 20.5 \text{ mm}^2/\text{s}$, measured at 40°C .

3.10.3.3.3 Category 2

3.10.3.3.3.1 A mixture is classified as Category 2 when the sum of the concentrations of Category 2 ingredients is $\geq 10\%$ and the mixture has a kinematic viscosity $\leq 14 \text{ mm}^2/\text{s}$, measured at 40°C .

3.10.3.3.3.2 In classifying mixtures in this category, the use of expert judgment that considers surface tension, water solubility, boiling point, volatility is critical and especially when Category 2 substances are mixed with water.

3.10.3.3.3.3 In the case of classifying a mixture which separates into two or more distinct layers, the entire mixture is classified as Category 2 if in any distinct layer the sum of the concentrations of Category 2 ingredients is $\geq 10\%$, and it has a kinematic viscosity $\leq 14 \text{ mm}^2/\text{s}$, measured at 40°C .”.

(Reference document: ST/SG/AC.10/C.4/54, Annex)

Chapter 4.1

4.1.3.5.5.3 to 4.1.3.5.5.4 insert the text “multiplied by their corresponding M factors” in the following paragraphs, as follows:

4.1.3.5.5.3.1: Second sentence after “ingredients”

4.1.3.5.5.3.2: Second sentence after “Acute 1”

4.1.3.5.5.3.3: Second sentence after “Acute 1”

4.1.3.5.5.4.1: Second sentence after “ingredients”

4.1.3.5.5.4.2: Second sentence after “Chronic 1”

4.1.3.5.5.4.3: Second sentence after “Chronic 1”



(Reference document: ST/SG/AC.10/C.4/54, Annex)

Annex 1

In Table A1.2:

- Amend the title to read: “Flammable gases (see Chapter 2.2 for classification criteria)”.
- In the hazard class column, amend the text in the column to read “Flammable gases”.

Insert a new row for pyrophoric gases, before the row for “A (chemically unstable gases)” as follows:

Classification		Labelling				Hazard statement codes
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement	
		GHS	UN Model Regulations ^a			
Flammable gases	Pyrophoric gas			Danger	May ignite spontaneously if exposed to air	H232

(Reference document: ST/SG/AC.10/C.4/54, Annex)

Annex 3

Section 1, Table A3.1.1:

- Insert a new row to read as follows:

Code	Physical hazard statements	Hazard class (GHS chapter)	Hazard category
(1)	(2)	(3)	(4)
H232	May ignite spontaneously if exposed to air	Flammable gases (chapter 2.2)	Pyrophoric gas

- For H230 and H231 amend the name of the hazard class in column (3) to read: “Flammable gases (Chapter 2.2)”

Section 2, Table A3.2.2:

- For **P222**:

Insert a new row for the hazard class “Flammable gases (chapter 2.2)” (column 3) and hazard category “Pyrophoric gas” (column 4), with the same condition for use currently applicable to pyrophoric liquids and pyrophoric solids (column 5).

- For **P280**:

Insert a new row for the hazard class “Flammable gases (chapter 2.2)” (column 3) and hazard category “Pyrophoric gas” (column 4).

Section 3, paragraph A3.3.5:

- In the three tables for “Flammable gases (including chemically unstable gases) (chapter 2.2)”, amend the first line in the headings to read: “FLAMMABLE GASES”.
- Add a new matrix applicable to 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
P222 Do not allow contact with air. <i>– if emphasis of the hazard statement is deemed necessary.</i> P280 Wear protective gloves/protective clothing/eye protection/face protection. Manufacturer/supplier or the competent authority to specify the appropriate type of equipment.			

Note: This table lists only precautionary statements that are 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.

(Reference document: ST/SG/AC.10/C.4/54, Annex)