

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**

19 June 2012

Twenty-third session

Geneva, 4–6 July 2012

Item 2 (d) of the provisional agenda

**Updating of the Globally Harmonized System
of Classification and Labelling of Chemicals (GHS): annexes**

Update on work of the informal correspondence group on Annexes 1-3 of the GHS: physical hazard precautionary statements

**Transmitted by the expert from the United Kingdom on behalf of the
informal correspondence group**

Introduction

1. At the 20th session of the UNSCEGHS, terms of reference were agreed for the continuing work of the informal correspondence group on improvement of Annexes 1-3 of the GHS. These were:

“Pursue work to further improve Annexes 1, 2 and 3 of the GHS, following the workstreams hereafter, with the first two given priority:

(i) Workstream 1: to develop proposals to rationalize and improve the usability of hazard and precautionary statements, including proposals to eliminate redundancies among these statements;

(ii) Workstream 2: to adjust as appropriate the precautionary statements for physical hazards, their allocation to hazard classes and categories, and their conditions for use;

(iii) Workstream 3: to improve the presentation of Annexes 1, 2 and 3 of the GHS, taking into account the intended audiences, uses and purposes of the GHS”.

2. This informal document updates the subcommittee on the status of work on the above workstreams.

3. Experts with an interest are invited to attend the meeting of the informal correspondence group in Room I from 08:00 – 09:15 on Friday 6th July 2012.

Workstream 1 – rationalisation of precautionary statements

4. Work since the last session has focused mainly on workstream 2 and there are currently no new developments to report on this workstream. Next steps will be discussed at the meeting on 6th June.

Workstream 2 – adjustment of physical hazard precautionary statements

5. This workstream derives from an earlier proposal by CEFIC in UN/SCEGHS/15/INF.9, to make some revisions to the GHS precautionary statements for physical hazards. CEFIC noted that some amendments of precautionary statements were needed, as well as alignment of these statements between hazard classes having more or less the same hazard characteristics. It was subsequently agreed that the work should be taken forward within the informal correspondence group on Annexes 1-3 to ensure that the outcomes were consistent with the group's work on rationalisation of the GHS precautionary statements.

6. Since the last session, a sub-group of members of the informal correspondence group with expertise in physical hazards has met five times and has developed a draft set of proposals for amendments to the physical hazard precautionary statements. The proposals are set out in **Appendix I**.

7. The draft proposals will be discussed with the correspondence group at the meeting on 6th July. Comments from the Subcommittee on the proposals are also welcome.

8. The correspondence group will aim to submit a working document containing the proposals for the next session.

Workstream 3 – Improvement of the presentation of Annexes 1-3 of the GHS

9. At its face-to-face meeting in December 2012, the group considered possible options to rationalise Annex 1-3 of the GHS. One idea briefly discussed was to merge Annexes 1 and 2 of the GHS. A thought starter for this proposal is included at **Appendix II**.

10. Several participants in the group expressed a need to consult other stakeholders on this and the matter will be addressed again during the face-to-face meeting on 6th July.

Appendix 1 – draft proposals for amendments to the GHS precautionary statements for physical hazards

Suggested changes to precautionary statements for physical hazards

Proposed additions are underlined, deletions are in ~~strikethrough~~

Note: Explanatory comments and a justification for the proposed changes are included in the last column "Explanation / Justification".

Organic Peroxides and Self-reactive substances

The hazardous properties of organic peroxides and self-reactive substances are more or less the same. In GHS the classification principles, classification flow-chart and tests to be executed are also identical as well as the breakdown of Types A-G. Furthermore, types A-G of organic peroxides and self-reactive substances have the same hazardous properties description. Therefore it is proposed to harmonise the precautionary statements for these two hazard classes.

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
P201	Obtain special instructions before use.	Explosives (chapter 2.1) (...)	Unstable explosive		
P202	Do not handle until all safety precautions have been read and understood.	Explosives (chapter 2.1) (...)	Unstable explosive		<u>Proposal to delete unstable explosive:</u> Unstable explosives are deleted from P202 since covered by P201, which is shorter and more relevant from a safety point-of-view.
		Germ cell mutagenicity (chapter 3.5)	1A, 1B, 2		
		Carcinogenicity (chapter 3.6)	1A, 1B, 2		
		Reproductive toxicity (chapter 3.7)	1A, 1B, 2		
		Flammable gases (including chemically unstable gases) (chapter 2.2)	A, B (chemically unstable gases)		
P210	Keep away from heat, sparks, open flames and other ignition sources/hot surfaces. – No smoking.	Explosives (chapter 2.1)	Divisions 1.1, 1.2, 1.3, 1.4 and 1.5	Manufacturer/supplier or the competent authority to specify applicable ignition source(s).	<u>Proposal to amend the wording of the statement:</u> This statement is important for avoiding ignition sources and should not be limited to one or two specific ignition sources (such as flames and hot surfaces for flammable liquids). By listing heat, sparks, open flames and other ignition sources, the user, on the one hand, is made aware what
		Flammable gases (chapter 2.2)	1, 2		
		Aerosols (chapter 2.3)	1, 2, 3		
		Flammable liquids (chapter 2.6)	1, 2, 3		
		Flammable solids (chapter 2.7)	1, 2		
		Self-reactive substances and mixtures (chapter 2.8)	Types A, B, C, D, E, F		

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
		Pyrophoric liquids (chapter 2.9)	1		common ignition sources are but on the other hand is also made aware that there might be further ignition sources.
		Pyrophoric solids (chapter 2.10)	1		
		Organic Peroxides (chapter 2.15)	Types A, B, C, D, E, F		
		Flammable liquids (chapter 2.6)	4	—specify to keep away from flames and hot surfaces	
		Oxidizing liquids (chapter 2.13)	1, 2, 3	—specify to keep away from heat	
		Oxidizing solids (chapter 2.14)	1, 2, 3		
P211	Do not spray on an open flame or other ignition source.	Aerosols (chapter 2.3)	1, 2, 3		<u>Proposal to delete category 3:</u> Aerosols of cat. 3 are not flammable and therefore do not need P211.
P220	Keep/Store away from clothing and from/other combustible materials.	Oxidizing gases (chapter 2.4)	1	... Manufacturer/supplier or the competent authority to specify other incompatible materials.	<u>Proposal to amend the wording of the statement and to delete the conditions for use:</u> For oxidizers the incompatible materials are combustible materials and these are all covered by naming clothing and combustible materials. No need to add further materials. Store is removed because it is covered by keep. ‘Keep/store’ is also confusing because the slash normally indicates a choice between two or more phrases.
		Oxidizing liquids (chapter 2.13)	<u>1, 2, 3</u>	... Manufacturer/supplier or the competent authority to specify other incompatible materials.	<u>Proposal to move category 1 from below (no separate lines are needed):</u> Category 1 is added here and deleted below.
		Oxidizing solids (chapter 2.14)	<u>1, 2, 3</u>	... Manufacturer/supplier or the competent authority to specify other incompatible materials.	
		Self-reactive substances and mixtures (chapter 2.8)	Types A, B, C, D, E, F	... Manufacturer/supplier or the competent authority to specify other incompatible materials.	<u>Proposal to delete self-reactives and organic peroxides:</u> The wording of P220 (even in its original form) aims at oxidizing properties (the need to keep away from clothing applies
		Organic Peroxides (chapter 2.15)	Types A, B, C, D, E, F	... Manufacturer/supplier or the competent authority to specify other incompatible materials.	

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
					only to oxidizers). Since self-reactives and organic peroxides do not have oxidizing properties this statement is not as appropriate as e.g. P420. P220 therefore should be removed for self-reactives and organic peroxides.
		Oxidizing liquids (chapter 2.13)	+	specify to keep away from clothing and other combustible materials.	<u>Proposal to move category 1 from here to category 2 and 3 above (see above).</u>
		Oxidizing solids (chapter 2.14)	+		
P221	Take any precaution to avoid mixing with <u>Do not mix with combustibles/...</u>	Oxidizing liquids (chapter 2.13)	1, 2, 3	... Manufacturer/supplier or the competent authority to specify other incompatible materials	<u>Proposal to delete P221:</u> P221 is redundant because the information is contained in P220 which applies to all categories of oxidizers.
		Oxidizing solids (chapter 2.14)	1, 2, 3		
P222	Do not allow contact with air.	Pyrophoric liquids (chapter 2.9)	1	if emphasis of the hazard statement is deemed necessary.	<u>Proposal to add conditions for use:</u> H250 "Catches fire spontaneously if exposed to air" already covers this and is always assigned.
		Pyrophoric solids (chapter 2.10)	1		
P223	Do not allow contact with water.	Substances and mixtures which, in contact with water, emit flammable gases (chapter 2.12)	1, 2	if emphasis of the hazard statement is deemed necessary.	<u>Proposal to add conditions for use:</u> H260 "In contact with water releases flammable gases, which may ignite spontaneously" and H261 "In contact with water releases flammable gas" already cover this and are always assigned.
P230	Keep wetted with...	Explosives (chapter 2.1)	Divisions 1.1, 1.2, 1.3, 1.4, 1.5	for substances and mixtures which are wetted, diluted, dissolved or suspended with a phlegmatizer in order to reduce or suppress their explosive properties (desensitized explosives). ... Manufacturer/supplier or the competent authority to specify appropriate material.	<u>Proposal to amend the conditions for use:</u> "Normal" explosives are not wetted and therefore this statement would not apply to them. It has to be clarified that this statement applies only to desensitized explosives. NOTE: may need to be revisited once work on desensitised explosives is complete.

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
				if drying out increases explosion hazard, except as needed for manufacturing or operating processes (e.g. nitrocellulose).	
P231	Handle and store contents under inert gas/...	<u>Pyrophoric liquids (chapter 2.9)</u>	<u>1</u>	... Manufacturer/supplier or the competent authority to specify appropriate liquid or gas if "inert gas" is not appropriate.	<p>Proposal to amend the wording of the statement:</p> <p>More clear and specifies that the appropriate liquid or gas has to be specified if inert gas is not sufficient (e.g. white phosphorous under water)</p> <p><u>Proposal to add pyrophoric liquids and solids:</u></p> <p>Necessary, especially if to be handled under something else than inert gas.</p> <p><u>Proposal to add conditions for use:</u></p> <p>An explanation is needed what is expected to add for the dots.</p>
		<u>Pyrophoric solids (chapter 2.10)</u>	<u>1</u>		
		Substances and mixtures which, in contact with water, emit flammable gases (chapter 2.12)	1, 2, 3	<p>- if the substance or mixture reacts readily with moisture in air.</p> <p>... Manufacturer/supplier or the competent authority to specify appropriate liquid or gas if "inert gas" is not appropriate.</p>	
P232	Protect from moisture	Substances and mixtures which, in contact with water, emit flammable gases (chapter 2.12)	1, 2, 3		
P233	Keep container tightly closed	Flammable liquids (chapter 2.6)	1, 2, 3	- if the liquid product is volatile and may so as to generate an explosive hazardous atmosphere	<p><u>Proposal to amend the conditions for use:</u></p> <p>The term "product" is not used in the GHS and the statement applies to liquids only. Explosive atmosphere is more specific than hazardous atmosphere, because the conditions for use only apply to flammable liquids.</p>
		<u>Pyrophoric liquids (chapter 2.9)</u>	<u>1</u>		<p><u>Proposal to add pyrophoric liquids and solids:</u></p> <p>Obviously highly appropriate (in order to avoid ignition of the pyrophoric substance upon contact with air).</p>
		<u>Pyrophoric solids (chapter 2.10)</u>	<u>1</u>		
P234	Keep only in original packaging container	<u>Explosives (chapter 2.1)</u>	<u>Divisions 1.1, 1.2, 1.3, 1.4, 1.5</u>		<u>Proposal to amend the wording of the statement:</u>

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
		Self reactive substances and mixtures (chapter 2.8)	Types A, B, C, D, E, F		"Packaging" is the terminology used in transport. And the reason for assigning P234 to explosives, self-reactives and organic peroxides is that the classification is dependent on the (transport) packaging, and changing the packaging could substantially increase the hazard. <u>Proposal to add explosives:</u> Classification is packaging dependent. <u>Proposal to amend the name of the hazard class for corrosive to metals:</u> In line with the actual name of the hazard class.
		Organic Peroxides (chapter 2.15)	Types A, B, C, D, E, F		
		Substances and mixtures Corrosive to metals (chapter 2.16)	1		
P235	Keep cool	Flammable liquids (chapter 2.6)	1, 2, 3,4	<i>- for flammable liquids Category 1 and other liquids that are volatile and may generate an explosive atmosphere.</i>	<u>Proposal to delete category 4:</u> Flash point is above 60 °C, therefore the statement is not necessary for this category 4. <u>Proposal to add conditions for use:</u> Clarification for which substances the statement is most appropriate.
		Self-reactive substances and mixtures (chapter 2.8)	Types A, B, C, D, E, F	<i>- may be omitted if P411 is given on the label</i>	<u>Proposal to add precedence rule</u> P411 requires storage at specific temperatures, so is more precise than P235 and makes it redundant.
		Self-heating substances and mixtures (chapter 2.11)	1, 2	<i>- may be omitted if P413 is given on the label.</i>	<u>Proposal to add precedence rule</u> P413 gives more precise instructions regarding storage temperatures so makes P235 redundant.
		Organic peroxides (chapter 2.15)	Types A, B, C, D, E, F	<i>- may be omitted if P411 is given on the label</i>	<u>Proposal to add precedence rule</u> P411 requires storage at specific temperatures, so is more precise than P235 and makes it redundant.

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
P240	Ground/bond container and receiving equipment.	Explosives (chapter 2.1)	Divisions 1.1, 1.2, 1.3, 1.4, 1.5	- <i>if the explosive is electrostatically sensitive.</i>	
		Flammable liquids (chapter 2.6)	1, 2, 3	if electrostatically sensitive material is for reloading. - <i>if the liquid product is volatile and may so as to generate an explosive-hazardous atmosphere.</i>	<u>Proposal to amend the conditions for use for flammable liquids:</u> More appropriate and specific.
		Flammable solids (section 2.7)	1, 2	- <i>if the solid is electrostatically sensitive-material is for reloading</i>	<u>Proposal to amend the conditions for use for flammable solids:</u> More appropriate
		<u>Self-reactive substances and mixtures (chapter 2.8)</u>	<u>Type A to F</u>	- <i>if electrostatically sensitive and able to generate an explosive atmosphere.</i>	<u>Proposal to add self-reactives and organic peroxides:</u> Appropriate for self-reactives and organic peroxides as well under the respective conditions for use.
		<u>Organic peroxides (chapter 2.15)</u>	<u>Type A to F</u>		
P241	Use explosion-proof electrical/ventilating/lighting/.../equipment/...	Flammable liquids (chapter 2.6)	1, 2, 3	- <i>if the liquid is volatile and may generate an explosive atmosphere.</i> ...Manufacturer/supplier or the competent authority to specify <u>specific</u> other electrical, ventilating, lighting or other equipment <u>if necessary and as appropriate.</u> - <i>may be omitted where local or national legislation introduces more specific provisions.</i>	<u>Proposal to amend the wording of the statement:</u> Explosion proof equipment includes ventilating, lighting etc. Therefore "Use explosion-proof equipment" normally is sufficient. However, some countries might be of the opinion that this should be further elaborated. The statement therefore can amended by adding specific equipment such as electrical, ventilating or lighting equipment (dots added). <u>Proposal to amend the conditions for use:</u>
		Flammable solids (chapter 2.7)	1, 2	- <i>if dust clouds can occur.</i> ...Manufacturer/supplier to specify specific other equipment	More specific for which flammable liquids this statement applies. In addition it is pointed out that - if more

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
				if necessary and as appropriate. <i>- may be omitted where local or national legislation introduces more specific provisions.</i>	specific provisions exist - this statement is not necessary and could be misleading because it may not fully correspond to local/national requirements.
P242	Use only non-sparking tools	Flammable liquids (chapter 2.6)	1, 2, 3	<i>- if the liquid is volatile and may generate an explosive atmosphere and if the minimum ignition energy is very low. (This applies to substances and mixtures where the minimum ignition energy is < 0.1 mJ, e.g. carbon disulfide)</i>	<u>Proposal to add conditions for use:</u> In principal we think this statement is not needed with regard to labelling of chemicals and therefore would prefer its deletion. It has a very limited applicability, see left. Moreover, P242 is covered by P241 (non-sparking tools are specific equipment which then could be mentioned in P241). However, if not deleted, the conditions for use should be as specific as possible.
P243	Take precautionary measures against Prevent static discharges.	Flammable liquids (chapter 2.6)	1, 2, 3	<i>- if the liquid is volatile and may generate an explosive atmosphere.</i> <i>- may be omitted where local or national legislation introduces more specific provisions.</i>	<u>Proposal to amend the wording of the statement:</u> Shorter and clearer. <u>Proposal to add conditions for use:</u> More specific for which flammable liquids this statement applies. In addition it is pointed out that - if more specific provisions exist - this statement is not necessary and could be misleading because it may not fully correspond to local/national requirements.
P244	Keep valves and fittings free from oil and grease.	Oxidizing gases (chapter 2.4)	1		
P250	Do not subject to grinding/shock/.../friction	Explosives (chapter 2.1)	<u>Unstable explosive.</u> Divisions 1.1, 1.2, 1.3, 1.4, 1.5	... Manufacturer/supplier or the competent authority to specify applicable rough handling. <i>- if the explosive is mechanically sensitive</i>	<u>Proposal to add unstable explosives:</u> Applies just as for the other divisions. <u>Proposal to amend the conditions for use:</u> Clarification that this statement applies only if the explosive is mechanically

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
					sensitive.
P251	Do not pierce or burn, even after use.	Aerosols (chapter 2.3)	1, 2, 3		
[P260-P273 – do not apply to physical hazards]					
P280	Wear protective gloves/protective clothing/eye protection/face protection	Explosives (chapter 2.1)	<u>Unstable explosive</u> , Divisions 1.1, 1.2, 1.3, 1.4, 1.5	–specify face protection– Manufacturer/supplier or the competent authority to specify <u>the appropriate</u> type of equipment.	<u>Proposal to add unstable explosives:</u> Applies just as for the other divisions. <u>Proposal to amend the conditions for use:</u> Face protection is not always appropriate, appropriate protection should rather be specified.
		Flammable liquids (chapter 2.6)	1, 2, 3, 4	–specify protective gloves and eye/face protection– Manufacturer/supplier or the competent authority to specify <u>the appropriate</u> type of equipment	<u>Proposal to amend the conditions for use:</u> Appropriate protection should be specified.
		Flammable solids (chapter 2.7)	1, 2		
		Self-reactive substances and mixtures (chapter 2.8)	Types A, B, C, D, E, F		
		Pyrophoric liquids (chapter 2.9)	1		
		Pyrophoric solids (chapter 2.10)	1		
		Self-heating substances and mixtures (chapter 2.11)	1, 2		
		Substances and mixtures which, in contact with water, emit flammable gases (chapter 2.12)	1, 2, 3		
		Oxidizing liquids (chapter 2.13)	1, 2, 3		
		Oxidizing solids (chapter 2.14)	1, 2, 3		
		Organic peroxides (chapter 2.15) (...)	Types A, B, C, D, E, F		
		Acute toxicity – dermal (chapter 3.1)	1, 2, 3, 4		
		Skin corrosion (chapter 3.2)	1A, 1B, 1C	- <i>Specify protective</i>	

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
				<i>gloves/clothing and eye/face protection.</i> Manufacturer/supplier or the competent authority to specify type of equipment.	
		Skin irritation (chapter 3.2)	2	- <i>Specify protective gloves.</i>	
		Skin sensitization (chapter 3.4)	1, 1A, 1B	Manufacturer/supplier or the competent authority to specify type of equipment.	
		Severe eye damage (chapter 3.3)	1	- <i>Specify eye/face protection.</i>	
		Eye irritation (chapter 3.3)	2A	Manufacturer/supplier or the competent authority to specify type of equipment.	
		Germ cell mutagenicity (chapter 3.5)	1A, 1B, 2	Manufacturer/supplier or the competent authority to specify type of equipment.	
		Carcinogenicity (chapter 3.6)	1A, 1B, 2		
		Reproductive toxicity (chapter 3.7)	1A, 1B, 2		
P282	Wear cold insulating gloves/face shield/eye protection	Gases under pressure (chapter 2.5)	Refrigerated liquefied gas		
P283	Wear fire/flamm resistant/retardant clothing	Oxidizing liquids (chapter 2.13)	1		
		Oxidizing solids (chapter 2.14)	1		
P231 + P232	Handle and store contents under inert gas/... Protect from moisture.	<u>Pyrophoric liquids (chapter 2.9)</u>	<u>1</u>	... Manufacturer/supplier or the competent authority to specify appropriate liquid or gas if "inert gas" is not appropriate.	<u>Consequential amendment from P231 above:</u> <u>Proposal to amend the wording of the statement:</u>
		<u>Pyrophoric solids (chapter 2.10)</u>	<u>1</u>		
		Substances and mixtures which, in contact with water, emit flammable gases (chapter 2.12)	1, 2, 3	- <i>for substances and mixtures which react readily with moisture in air.</i> ... Manufacturer/supplier or the competent authority to specify appropriate liquid or gas if "inert	More clear and specifies that the appropriate liquid or gas has to be specified if inert gas is not sufficient (e.g. white phosphorous under water) <u>Proposal to add pyrophoric liquids and solids:</u>

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				<u>gas" is not appropriate.</u>	Necessary especially if to be handled under something else than inert gas. <u>Proposal to add conditions for use:</u> An explanation is needed of what to add in place of the dots.
P235 + P410	Keep cool. Protect from sunlight.	Self-heating substances and mixtures (chapter 2.	1, 2		
P302	IF ON SKIN:	<u>Flammable liquids (chapter 2.6)</u>	<u>1, 2, 3</u>		<u>Proposal to add flammable liquids (see P303 below).</u> P302 is a simpler and shorter phrase that adequately captures the concern with flammable liquids. <u>For further discussion with the correspondence group</u>
		Pyrophoric liquids (chapter 2.9)	1		
		<u>Pyrophoric solids (chapter 2.10)</u>	<u>1</u>		<u>Proposal to add pyrophoric solids:</u> Pyrophoric solids have to be added because they have P335 + P334 assigned which need to be combined with if "on skin:".
		<u>Substances which, in contact with water, emit flammable gases (chapter 2.12)</u>	<u>1, 2</u>		<u>Proposal to add water-reactives, cat. 1 and 2:</u> Water-reactives cat. 1 and 2 have to be added because they have P335 + P334 assigned which need to be combined with if "on skin:".
		<u>Skin corrosion</u>	<u>1A, 1B, 1C</u>		<u>Proposal to add skin corrosion:</u> P303 can be deleted if skin corrosion is moved from P303 to P302.
P303	IF ON SKIN (or hair):	Flammable liquids (chapter 2.6)	1, 2, 3		<u>Proposal to move flammable liquids to P302 (see P302 above)</u>

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
					<u>For further discussion with the correspondence group</u>
		<u>Skin corrosion</u>	<u>1A, 1B, 1C</u>		<u>Proposal to move skin corrosion to P302</u> <u>For further discussion with the correspondence group</u>
P306	IF ON CLOTHING:	Oxidizing liquids (chapter 2.13)	1		
		Oxidizing solids (chapter 2.14)	1		
P315	Get immediate medical advice/attention.	Gases under pressure (chapter 2.5)	Refrigerated liquefied gas		
P334	Immerse in cool water/wrap in wet bandages.	Pyrophoric liquids (chapter 2.9)	1		
		Pyrophoric solids (chapter 2.10)	1		
		Substances and mixtures which, in contact with water, emit flammable gases (chapter 2.12)	1, 2	<u>Use only "Immerse in cool water" and not "wrap in wet bandages"</u>	<u>Proposal to amend the conditions for use for water-reactives</u> A lot of water (for which wet bandages are not enough) is needed in order to be safe because otherwise the heat of reaction will cause a problem.
P335	Brush off loose particles from skin	Pyrophoric solids (chapter 2.10)	1		
		Substances and mixtures which, in contact with water, emit flammable gases (chapter 2.12)	1, 2		
P336	Thaw frosted parts with luke warm water. Do not rub affected area.	Gases under pressure (chapter 2.5)	Refrigerated liquefied gas		
P353	Rinse skin with water/shower	Flammable liquids (chapter 2.6)	1, 2, 3		<u>Proposal to delete flammable liquids:</u> Substances that are classified for health hazards require appropriate action to that effect anyway (see for example skin irritation). Not necessary just because of the flammability.

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
					<u>For further discussion with the correspondence group</u>
P360	Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.	Oxidizing liquids (chapter 2.13)	1		
		Oxidizing solids (chapter 2.14)	1		
P361	Take off immediately all contaminated clothing.	Flammable liquids (chapter 2.6)	1, 2, 3		<p><u>Proposal to delete flammable liquids:</u> Substances that are classified for health hazards as named to the left require appropriate action to that effect anyway. Not necessary just because of the flammability. <u>2nd proposal:</u> retain but combine with P302</p> <p><u>Proposals for further discussion with the correspondence group</u></p>
		Acute toxicity, dermal (chapter 3.1)	1, 2, 3		
		Skin corrosion (chapter 3.2)	1A, 1B, 1C		
P370	In case of fire:	Explosives (chapter 2.1)	<u>Unstable explosive.</u> Divisions 1.1, 1.2, 1.3, 1.4, 1.5		<u>Proposal to add unstable explosives:</u> Needed for combination with P380 just as for the other explosives divisions.
		<u>Flammable gases (chapter 2.2)</u>	<u>1, 2</u>		<u>Proposal to add flammable gases:</u> Needed for combination with P381.
		Oxidizing gases (chapter 2.4)	1		
		Flammable liquids (chapter 2.6)	1, 2, 3, 4		
		Flammable solids (chapter 2.7)	1, 2		
		Self-reactive substances and mixtures (chapter 2.8)	Types A, B, C, D, E, F		
		Pyrophoric liquids (chapter 2.9)	1		
		Pyrophoric solids (chapter 2.10)	1		
		Substances which, in contact with water, emit flammable gases (chapter 2.12)	1, 2, 3		

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
		Oxidizing liquids (chapter 2.13)	1, 2, 3		
		Oxidizing solids (chapter 2.14)	1, 2, 3		
		Organic peroxides (chapter 2.15)	Types A, B, C, D, E, F		Proposal to add organic peroxides: In analogy to self-reactives (they have the same hazard).
P371	In case of major fire and large quantities:	Oxidizing liquids (chapter 2.13)	1		
		Oxidizing solids (chapter 2.14)	1		
P372	Explosion risk in case of fire	Explosives (chapter 2.1)	Unstable explosives and Divisions 1.1, 1.2, 1.3, 1.4, 1.5	<i>- except for explosives of division 1.4S in transport packaging</i> <i>- except if explosives are 1.4S AMMUNITION OR COMPONENTS THEREOF</i>	Proposal to amend the text of the statement: As P370 "In case of fire" is assigned anyway it can conveniently be combined with "Explosion risk" instead of "Explosion risk in case of fire" (see below the combination statements). <u>Proposal to delete the conditions for use:</u> Compatibility groups only apply to transport packages and are generally not used in the GHS (labelling according to the GHS does not distinguish between 1.4 and 1.4S). That way warning against explosion risks is ensured in all cases. <u>Alternative if the conditions for use are not deleted:</u> If the conditions for use are not deleted they should be changed to <i>- may be omitted for explosives of division 1.4S in transport packaging</i>
		Self-reactive substances and mixtures (chapter 2.8)	Type A		Proposal to add self-reactives and organic peroxides, Type A:
		Organic peroxides (chapter 2.15)	Type A		Must have been omitted originally (same hazard as unstable explosives). Needed for combination of P370 + P380 + P372 + P373 as proposed below.

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
P373	DO NOT fight fire when fire reaches explosives	Explosives (chapter 2.1)	Unstable explosives and Divisions 1.1, 1.2, 1.3, 1.4, 1.5	<i>- except for explosives of division 1.4S in transport packaging</i>	<u>Proposal to add conditions for use:</u> Division 1.4S is only assigned if there are no hazardous effects outside the package (see also Figure 2.3 of the GHS) so that a fire can be fought. Therefore P375 is more appropriate for 1.4S – if in the transport packaging (see below).
		<u>Self-reactive substances and mixtures (chapter 2.8)</u>	Type A		<u>Proposal to add self-reactives and organic peroxides, Type A:</u> Must have been omitted originally (same hazard as unstable explosives). Needed for combination of P370 + P380 + P372 + P373 as proposed below.
		<u>Organic peroxides (chapter 2.15)</u>	Type A		
P374	Fight fire with normal precautions from a reasonable distance	Explosives (chapter 2.1)	Division 1.4	<i>-if explosives are 1.4S AMMUNITION AND COMPONENTS THEREOF.</i>	<u>Proposal to move division 1.4 to P375:</u> P375 is more appropriate (and cautious) than P374 because reference to an explosion risk should be maintained for class 1 substances (even for division 1.4S), which is not mentioned when using P374.
P375	Fight fire remotely due to the risk of explosion.	<u>Explosives (chapter 2.1)</u>	Division 1.4	<i>- for explosives of division 1.4S in transport packaging</i>	<u>Proposal to move division 1.4 from P374:</u> P375 is more appropriate than P374 for class 1 because reference to an explosion risk should be maintained which is not mentioned when using P374 (even for division 1.4S), which is not mentioned when using P374.
		Self-reactive substances and mixtures (chapter 2.8)	Types A, B		<u>Proposal to delete self-reactives, Type A:</u> P373 should apply instead. It is dangerous to fight a fire of Type A substances (same hazard as unstable explosives) and should always be advised against.
		Oxidizing liquids (chapter 2.13)	1		
		Oxidizing solids (chapter 2.14)	1		
		<u>Organic peroxides (chapter 2.15)</u>	Type B		<u>Proposal to add organic peroxides:</u>

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
					In analogy to self-reactives (they have the same hazard).
P376	Stop leak if safe to do so.	Oxidizing gases (chapter 2.4)	1		
P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely	Flammable gases (chapter 2.2)	1, 2		
P378	Use... to extinguish.	Flammable liquids (chapter 2.6)	1, 2, 3, 4	... Manufacturer/supplier or the competent authority to specify appropriate media <i>- if water increases risk</i>	
		Flammable solids (chapter 2.7)	1, 2		
		Self-reactive substances and mixtures (chapter 2.8)	Types A , B, C, D, E, F		<u>Proposal to delete self-reactives, Type A:</u> P373 should apply instead. It is dangerous to fight a fire of Type A substances (same hazard as unstable explosives) and should always be advised against.
		Pyrophoric liquids (chapter 2.9)	1		
		Pyrophoric solids (chapter 2.10)	1		
		Substances and mixtures which, in contact with water, emit flammable gases (chapter 2.12)	1, 2, 3		
		Oxidizing liquids (chapter 2.13)	1, 2, 3		
		Oxidizing solids (chapter 2.14)	1, 2, 3		
		<u>Organic peroxides (chapter 2.15)</u>	<u>Types B, C, D, E, F</u>		<u>Proposal to add organic peroxides:</u> In analogy to self-reactives (they have the same hazard).

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
P380	Evacuate area	Explosives (chapter 2.1)	Unstable explosives		
		Explosives (chapter 2.1)	Divisions 1.1, 1.2, 1.3, 1.4, 1.5		
		Self-reactive substances and mixtures (chapter 2.8)	Types A, B		
		Oxidising liquids (chapter 2.13)	1		
		Oxidising solids (chapter 2.14)	1		
		<u>Organic peroxides (chapter 2.15)</u>	<u>Types A, B</u>		<u>Proposal to add organic peroxides:</u> In analogy to self-reactives (they have the same hazard).
P381	Eliminate all ignition sources if safe to do so.	Flammable gases (chapter 2.2)	1, 2		
P390	Absorb spillage to prevent material-damage.	Substances and mixtures Corrosive to metals (chapter 2.16)	1		<u>Proposal to amend the name of the hazard class for corrosive to metals:</u> In line with the actual name of the hazard class.
P302 + P334	IF ON SKIN: Immerse in cool water/wrap in wet bandages	Pyrophoric liquids (chapter 2.9)	1		
P302 3 + P361+ P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.	Flammable liquids (chapter 2.6)	1, 2, 3		<u>First preference:</u> to delete this precautionary statement as it is overly precautionary for flammable liquids. <u>Second preference:</u> amend as suggested See above the justification for P302, P303. Remark: The combination of P303 (or P302) + P361 + P353 for skin corrosion should be discussed by the health experts. <u>For further discussion with the correspondence group</u>

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
P306 + P360	IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.	Oxidizing liquids (chapter 2.13)	1		
		Oxidizing solids (chapter 2.14)	1		
P302 + P335 + P334	IF ON SKIN: Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.	Pyrophoric solids (chapter 2.10)	1	<i>- Use only "Immerse in cool water" and omit "wrap in wet bandages"</i>	<u>Consequential amendment: See above the justification for P302 and for P334.</u>
		Substances and mixtures which in contact with water emit flammable gases (chapter 2.12)	1, 2		
P336 + P315	Thaw frosted parts with luke warm water. Do not rub affected area. Get immediate medical advice/attention.	<u>Gases under pressure (chapter 2.5)</u>	<u>Refrigerated liquefied gas</u>		<u>No change, just a new combination because P315 "Get immediate medical advice/attention" has to follow something.</u>
P370 + P376	In case of fire: Stop leak if safe to do so.	Oxidizing gases (chapter 2.4)	1		
P370 + P378	In case of fire: Use ... to extinguish.	Flammable liquids (chapter 2.6)	1, 2, 3, 4	... Manufacturer/supplier or the competent authority to specify appropriate media <i>- if water increases risk</i>	<u>Consequential amendment: See above the justification for P378.</u>
		Flammable solids (chapter 2.7)	1, 2		
		Self-reactive substances and mixtures (chapter 2.8)	Types A , B, C, D, E, F		
		Pyrophoric liquids (chapter 2.9)	1		
		Pyrophoric solids (chapter 2.10)	1		
		Substances and mixtures which, in contact with water, emit flammable gases (chapter 2.12)	1, 2, 3		
		Oxidizing liquids (chapter 2.13)	1, 2, 3		
		Oxidizing solids (chapter 2.14)	1, 2, 3		
		<u>Organic peroxides (chapter 2.15)</u>	<u>Types B, C, D, E, F</u>		
P370 + P372 + P380 + P373	In case of fire: <u>Explosion risk.</u> Evacuate area. <u>Do NOT fight fire when fire reaches explosives.</u>	Explosives (chapter 2.1)	<u>Unstable explosives,</u> Divisions 1.1, 1.2, 1.3, 1.4, 1.5	<i>- except for explosives of division 1.4S in transport packaging</i>	<u>Consequential amendment: See above the justification for P370, P372, P373 and P380:</u> This combination would replace P370 +

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
		<u>Self-reactive substances and mixtures (chapter 2.8)</u>	<u>Type A</u>		P380 and combines all the response PS for these categories which apply in case of fire. It avoids saying 'in case of fire' twice.
		<u>Organic peroxides (chapter 2.15)</u>	<u>Type A</u>		
P370 + P380 + P375	In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.	<u>Explosives (chapter 2.1)</u>	<u>Division 1.4</u>	<i>- for explosives of division 1.4S in transport packaging</i>	<u>Consequential amendment: See above justification for P375.</u>
		Self-reactive substances and mixtures (chapter 2.8)	Types A, B		
		<u>Organic peroxides (chapter 2.15)</u>	<u>Type B</u>		
<u>P370 + P381</u>	<u>In case of fire: eliminate all ignition sources if safe to do so.</u>	<u>Flammable gases (chapter 2.2)</u>	<u>1, 2</u>		<u>Consequential amendment: See above the justification for P370.</u>
P371 + P380 + P375	In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.	Oxidizing liquids (chapter 2.13)	1		
		Oxidizing solids (chapter 2.14)	1		
P401	Store in accordance with....	Explosives (chapter 2.1)	Unstable explosives and divisions 1.1, 1.2, 1.3, 1.4, 1.5	... Manufacturer/supplier or the competent authority to specify local/regional/national/international regulations as applicable	
P402	Store in a dry place	Substances and mixtures which, in contact with water, emit flammable gases (chapter 2.12)	1, 2, 3		

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
P403	Store in a well-ventilated place.	Flammable gases (chapter 2.2)	1, 2		
		Oxidizing gases (chapter 2.4)	1		
		Gases under pressure (chapter 2.5)	Compressed gas		
			Liquefied gas		
			Refrigerated liquefied gas		
			Dissolved gas		
		Flammable liquids (chapter 2.6)	1, 2, 3, 4	- <i>for flammable liquids Category 1 and other liquids that are volatile and may generate an explosive atmosphere.</i>	<u>Proposal to add conditions for use:</u> Clarification for which substances the statement is most appropriate.
Self-reactive substances and mixtures (chapter 2.8)	Types A, B, C, D, E, F	- <i>except for temperature controlled self-reactive substances and mixtures or organic peroxides because condensation and consequent freezing may take place.</i>	<u>Proposal to add conditions for use:</u> Clarification for which substances the statement is not appropriate.		
Organic peroxides (chapter 2.15)	Types A, B, C, D, E, F		<u>Proposal to add organic peroxides:</u> In analogy to self-reactives (they have the same hazard).		
P404	Store in a closed container.	Substances and mixtures which, in contact with water, emit flammable gases (chapter 2.12)	1, 2, 3		

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
P406	Store in a corrosion corrosive resistant /... container with a resistant inner liner.	Substances and mixtures Corrosive to metals (chapter 2.16)	1	... Manufacturer/supplier or the competent authority to specify other compatible materials. <i>- not necessary if P234 is assigned</i>	<u>Proposal to amend the text of the statement:</u> Technically correct wording <u>Proposal to amend the name of the hazard class for corrosive to metals:</u> In line with the actual name of the hazard class. <u>Alternative proposal:</u> Delete P406 since P234 already covers the concern.
P407	Maintain air gap between stacks/pallets	Self-heating substances and mixtures (chapter 2.11)	1, 2		

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
P410	Protect from sunlight	Aerosols (chapter 2.3)	1, 2		
		Gases under pressure (chapter 2.5)	Compressed gas	- <i>may be omitted for gases filled in transportable gas cylinders in accordance with packing instruction P200 of the UN Recommendations on the Transport of Dangerous Goods, Model Regulations, unless those gases are subject to (slow) decomposition or polymerisation, or the competent authority provides otherwise.</i>	
			Liquefied gas		
			Dissolved gas		
		<u>Self-reactive substances and mixtures (chapter 2.8)</u>	<u>Types A, B, C, D, E, F</u>		<u>Proposal to add self-reactives:</u> In analogy to organic peroxides (they have the same hazard).
		Self-heating substances and mixtures (chapter 2.11)	1, 2		
Organic peroxides (chapter 2.15)	Types A, B, C, D, E, F				
P411	Store at temperatures not exceeding ...°C/...°F	Self-reactive substances and mixtures (chapter 2.8)	Types A, B, C, D, E, F	- <i>if temperature control is required (according to section 2.8.2.3 or 2.15.2.3 of the GHS), or if otherwise deemed necessary.</i> ... Manufacturer/supplier or the competent authority to specify temperature.	<u>Proposal to amend the conditions for use:</u> Generally only necessary if temperature control is needed/required.
		Organic Peroxides (chapter 2.15)	Types A, B, C, D, E, F		
P412	Do not expose to temperatures exceeding 50°C/122°F	Aerosols (chapter 2.3)	1, 2, 3		
P413	Store bulk masses greater than ... kg/...lbs at temperatures not exceeding ...°C/...°F	Self-heating substances and mixtures (chapter 2.11)	1, 2	... Manufacturer/supplier or the competent authority to specify temperature.	

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
P420	Store separately, away from other materials.	Self-reactive substances and mixtures (chapter 2.8)	Types A, B, C, D, E, F		<u>Proposal to amend the statement:</u> Shorter and more appropriate. <u>Proposal to add oxidizing liquids and oxidizing solids category 1:</u> Oxidizers of cat. 1 are not compatible with other chemicals and it is essential to store them separately.
		Self-heating substances and mixtures (chapter 2.11)	1, 2		
		<u>Oxidizing liquids (chapter 2.13)</u>	<u>1</u>		
		<u>Oxidizing solids (chapter 2.14)</u>	<u>1</u>		
		Organic peroxides (chapter 2.15)	Types A, B, C, D, E, F		
P422	Store contents under...	Pyrophoric liquids (chapter 2.9)	+	... Manufacturer/supplier or the competent authority to specify appropriate liquid or inert gas.	<u>Proposal to delete P422:</u> If P231 is amended as proposed above, it covers handling and storage and P422 is not necessary anymore (see above)
		Pyrophoric solids (chapter 2.10)	+		
P402 + P404	Store in a dry place. Store in a closed container.	Substances and mixtures which, in contact with water, emit flammable gases (chapter 2.12)	1, 2, 3		
P403 + P235	Store in a well-ventilated place. Keep cool	Flammable liquids (chapter 2.6)	1, 2, 3, 4	- for flammable liquids, Category 1 and other liquids that are volatile and may generate an explosive atmosphere.	<u>Proposal to add conditions for use:</u> Clarification for which substances the statement is most appropriate.
		Self-reactive substances and mixtures (chapter 2.8)	Types A, B, C, D, E, F		
		<u>Organic peroxides (chapter 2.15)</u>	<u>Types A, B, C, D, E, F</u>		
P410 + P403	Protect from sunlight. Store in a well-ventilated place.	Gases under pressure (chapter 2.5)	Compressed gas	- may be omitted for gases filled in transportable gas cylinders in accordance with packing instruction P200 of the UN Recommendations on the Transport of Dangerous Goods, Model Regulations, unless	
			Liquefied gas		
			Dissolved gas		

Code	Prevention precautionary statements	Hazard class	Hazard category	Conditions for use	Explanation / Justification
				<i>those gases are subject to (slow) decomposition or polymerisation, or the competent authority provides otherwise.</i>	
P410 + P412	Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.	Aerosols (chapter 2.3)	1, 2		
P411 + P235	Store at temperatures not exceeding ...°C/...°F. Keep cool.	Organic peroxides (chapter 2.15) Self reactive substances and mixtures (chapter 2.8)	Types A, B, C, D, E, F Types A, B, C, D, E, F	... Manufacturer/supplier or the competent authority to specify temperature.	<u>Proposal to delete the combination statement (not the individual statements):</u> Self-reactives and organic peroxides have both statements assigned but they should not be assigned both at the same time. If temperature control is required, P411 should be assigned (then "Keep cool" is not needed) and if no temperature control is required P235 should be assigned. Therefore the combination statement can be deleted.

Appendix 2 – thought starter for merging the information in Annexes 1 and 2 of the GHS.

ANNEX [1+2]












CLASSIFICATION AND LABELLING SUMMARY TABLES

(notes: this is a thought starter, mindful of the fact that the notes from Annex 1 in GHS 4th revised edition need to be considered and that the location of the column containing the TDG pictograms may not be ideal)



Annex 2

CLASSIFICATION AND LABELLING SUMMARY TABLES






A2.1 Explosives (see Chapter 2.1 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Explosives	Unstable explosive		<i>Not applicable</i>	Danger	H200: Unstable explosive
	Division 1.1				H201: Explosive; mass explosion hazard
	Division 1.2				H202: Severe projection hazard
	Division 1.3				H203: Explosive; fire, blast or projection hazard
	Division 1.4			Warning	H204: Fire or projection hazard
	Division 1.5	<i>No pictogram</i>		Danger	H205: May mass explode in fire
	Division 1.6	<i>No pictogram</i>		<i>No signal word</i>	<i>No hazard statement</i>



A2.2 Flammable gases (including chemically unstable gases) (see Chapter 2.2 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Flammable gases (including chemically unstable gases)	1			Danger	H220: Extremely flammable gas
	2	No pictogram	Not required	Warning	H221: Flammable gas
	A (chemically unstable gases)	No additional pictogram	Not required	No additional signal word	H230: May react explosively even in the absence of air
	B (chemically unstable gases)	No additional pictogram	Not required	No additional signal word	H231: May react explosively even in the absence of air at elevated pressure and/or temperature









A2.3 Aerosols (see Chapter 2.3 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Aerosols	1			Danger	H222: Extremely flammable aerosol H229: Pressurized container: may burst if heated
	2			Warning	H223: Flammable aerosol H229: Pressurized container: may burst if heated
	3	No pictogram		Warning	H229: Pressurized container: may burst if heated







A2.4 Oxidizing gases (see Chapter 2.4 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Oxidizing gases	1			Danger	H270: May cause or intensify fire; oxidizer





A2.5 Gases under pressure (see Chapter 2.5 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Gases under pressure	Compressed gas			Warning	H280: Contains gas under pressure; may explode if heated
	Liquefied gas			Warning	H280: Contains gas under pressure; may explode if heated
	Refrigerated liquefied gas			Warning	H281: Contains refrigerated gas; may cause cryogenic burns or injury
	Dissolved gas			Warning	H280: Contains gas under pressure; may explode if heated








A2.6 Flammable liquids (see Chapter 2.6 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Flammable liquids	1			Danger	H224: Extremely flammable liquid and vapour
	2			Danger	H225: Highly flammable liquid and vapour
	3			Warning	H226: Flammable liquid and vapour
	4	No pictogram	Not required	Warning	H227: Combustible liquid



A2.7 Flammable solids (see Chapter 2.7 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Flammable solids	1			Danger	H228: Flammable solid
	2			Warning	H228: Flammable solid



A2.8 Self-reactive substances and mixtures (see Chapter 2.8 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Self-reactive substances and mixtures	Type A		<i>Not applicable</i>	Danger	H240: Heating may cause an explosion
	Type B			Danger	H241: Heating may cause a fire or explosion
	Type C and D			Danger	H242: Heating may cause a fire
	Type E and F			Warning	H242: Heating may cause a fire
	Type G	<i>No pictogram</i>	<i>Not required</i>	<i>No signal word</i>	<i>No hazard statement</i>





A2.9 Pyrophoric liquids (see Chapter 2.9 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Pyrophoric liquids	1			Danger	H250: Catches fire spontaneously if exposed to air







A2.10 Pyrophoric solids (see Chapter 2.10 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Pyrophoric solids	1			Danger	H250: Catches fire spontaneously if exposed to air







A2.11 Self-heating substances and mixtures (see Chapter 2.11 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Self-heating substances and mixtures	1			Danger	H251: Self-heating; may catch fire
	2			Warning	H252: Self-heating in large quantities; may catch fire







A2.12 Substances and mixtures, which in contact with water, emit flammable gases (see Chapter 2.12 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Substances and mixtures, which in contact with water, emit flammable gases	1			Danger	H260: In contact with water releases flammable gases which may ignite spontaneously
	2			Danger	H261: In contact with water releases flammable gases
	3			Warning	H261: In contact with water releases flammable gases








A2.13 Oxidizing liquids (see Chapter 2.13 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Oxidizing liquids	1			Danger	H271: May cause fire or explosion; strong oxidizer
	2			Danger	H272: May intensify fire; oxidizer
	3			Warning	H272: May intensify fire; oxidizer



A2.14 Oxidizing solids (see Chapter 2.14 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Oxidizing solids	1			Danger	H271: May cause fire or explosion; strong oxidizer
	2			Danger	H272: May intensify fire; oxidizer
	3			Warning	H272: May intensify fire; oxidizer








A2.15 Organic peroxides (see Chapter 2.15 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Organic peroxides	Type A		<i>Not applicable</i>	Danger	H240: Heating may cause an explosion
	Type B			Danger	H241: Heating may cause a fire or explosion
	Type C and D			Danger	H242: Heating may cause a fire
	Type E and F			Warning	H242: Heating may cause a fire
	Type G	<i>No pictogram</i>	<i>Not required</i>	<i>No signal word</i>	<i>No hazard statement</i>




A2.16 Corrosive to metals (see Chapter 2.16 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Corrosive to metals	1			Warning	H290: May be corrosive to metals




A2.17 Acute toxicity (see Chapter 3.1 for details)

Classification		Labelling				
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement	
		GHS	UN Model Regulations			
Acute toxicity	1	Oral			Danger	H300: Fatal if swallowed
		Dermal				H310: Fatal in contact with skin
		Gases, vapours, dust/mist				H330: Fatal if inhaled
	2	Oral			Danger	H300: Fatal if swallowed
		Dermal				H310: Fatal in contact with skin
		Gases, vapours, dust/mist				H330: Fatal if inhaled
	3	Oral			Danger	H301: Toxic if swallowed
		Dermal				H311: Toxic in contact with skin
		Gases, vapours, dust/mist				H331: Toxic if inhaled
	4	Oral		<i>Not required</i>	Warning	H302: Harmful if swallowed
		Dermal				H312: Harmful in contact with skin
		Gases, vapours, dust/mist				H332: Harmful if inhaled
	5	Oral	<i>No pictogram</i>	<i>Not required</i>	Warning	H303: May be harmful if swallowed
		Dermal				H313: May be harmful in contact with skin
		Gases, vapours, dust/mist				H333: May be harmful if inhaled




A2.20 Respiratory sensitizer (see Chapter 3.4 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Respiratory sensitizer	1		<i>Not required</i>	Danger	H334: May cause allergy or asthmatic symptoms or breathing difficulties if inhaled
	1A (where data are sufficient and where required by a competent authority)		<i>Not required</i>	Danger	H334: May cause allergy or asthmatic symptoms or breathing difficulties if inhaled
	1B (where data are sufficient and where required by a competent authority)		<i>Not required</i>	Danger	H334: May cause allergy or asthmatic symptoms or breathing difficulties if inhaled



A2.21 Skin sensitizer (see Chapter 3.4 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Skin sensitizer	1		<i>Not required</i>	Warning	H317: May cause an allergic skin reaction
	1A (where data are sufficient and where required by a competent authority)		<i>Not required</i>	Warning	H317: May cause an allergic skin reaction
	1B (where data are sufficient and where required by a competent authority)		<i>Not required</i>	Warning	H317: May cause an allergic skin reaction

A2.18 Skin corrosion/irritation (see Chapter 3.2 for details)



Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Skin corrosion/irritation	1 Corrosive (including A, B and C)			Danger	H314: Causes severe skin burns and eye damage
	2 Irritant ^a		<i>Not required</i>	Warning	H315: Causes skin irritation
	3 Mild irritant ^b	<i>No pictogram</i>	<i>Not required</i>	Warning	H316: Causes mild skin irritation

^aApplies to all authorities^bApplies to some authorities**A2.19 Serious eye damage/eye irritation** (see Chapter 3.3 for details)



Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Serious eye damage/eye irritation	1 Irreversible effects		<i>Not required</i>	Danger	H318: Causes serious eye damage
	2A Irritant ^a		<i>Not required</i>	Warning	H319: Causes serious eye irritation
	2B Mild irritant ^b	<i>No pictogram</i>	<i>Not required</i>	Warning	H320: Causes eye irritation

^aApplies to all authorities^bApplies to some authorities

A2.22 Germ cell mutagenicity (see Chapter 3.5 for details)



Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Germ cell mutagenicity	1 (both 1A and 1B)		<i>Not required</i>	Danger	H340: May cause genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
	2		<i>Not required</i>	Warning	H341: Suspected of causing genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)

A2.23 Carcinogenicity (see Chapter 3.6 for details)




Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Carcinogenicity	1 (both 1A and 1B)		<i>Not required</i>	Danger	H350: May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
	2		<i>Not required</i>	Warning	H351: Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) ^a

^aSome authorities will choose to label according to this provision, others may not

A2.24 Toxic to reproduction (see Chapter 3.7 for details)



Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Toxic to reproduction	1 (both 1A and 1B)		<i>Not required</i>	Danger	H360: May damage fertility or the unborn child (state specific effect if known) (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
	2		<i>Not required</i>	Warning	H361: Suspected of damaging fertility or the unborn child (state specific effect if known) (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
	Additional category for effects on or via lactation	<i>No pictogram</i>	<i>Not required</i>	<i>No signal word</i>	H362: May cause harm to breast-fed children

A2.25 Specific target organ toxicity following single exposure (see Chapter 3.8 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Specific target organ toxicity following single exposure	1		<i>Not required</i>	Danger	H370: Causes damage to organs ^{a,b}
	2		<i>Not required</i>	Warning	H371: May cause damage to organs ^{a,b}
	3		<i>Not required</i>	Warning	H335: May cause respiratory irritation

^astate all organs affected, if known^bstate route of exposure if it is conclusively proven that no other routes of exposure cause the hazard



A2.26 Specific target organ toxicity following repeated exposure (see Chapter 3.9 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Specific target organ toxicity following repeated exposure	1		<i>Not required</i>	Danger	H372: Causes damage to organs ^a through prolonged or repeated exposure ^b
	2		<i>Not required</i>	Warning	H373: May cause damage to organs ^a through prolonged or repeated exposure ^b



^astate all organs affected, if known

^bstate route of exposure if it is conclusively proven that no other routes of exposure cause the hazard





A2.27 Aspiration hazard (See chapter 3.10 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Aspiration hazard	1		<i>Not required</i>	Danger	H304: May be fatal if swallowed and enters airways
	2		<i>Not required</i>	Warning	H305: May be harmful if swallowed and enters airways


A2.28 (a) Acute hazards to the aquatic environment (see Chapter 4.1 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Acute hazards to the aquatic environment	Acute 1			Warning	H400: Very toxic to aquatic life
	Acute 2	No pictogram	Not required	No signal word	H401: Toxic to aquatic life
	Acute 3	No pictogram	Not required	No signal word	H402: Harmful to aquatic life

A2.28 (b) Long-term hazards to the aquatic environment (see Chapter 4.1 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Long-term hazards to the aquatic environment	Chronic 1			Warning	H410: Very toxic to aquatic life with long lasting effects
	Chronic 2			No signal word	H411: Toxic to aquatic life with long lasting effects
	Chronic 3	No pictogram	Not required	No signal word	H412: Harmful to aquatic life with long lasting effects
	Chronic 4	No pictogram	Not required	No signal word	H413: May cause long lasting harmful effects to aquatic life

A2.29 Hazard to the ozone layer (see Chapter 4.2 for details)

Classification		Labelling			
Hazard class	Hazard category	Pictogram		Signal word	Hazard statement
		GHS	UN Model Regulations		
Hazard to the ozone layer	1		Not required	Warning	H420: Harms public health and the environment by destroying ozone in the upper atmosphere