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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****Thirty-ninth session**

Geneva, 20–24 June 2011

Item 5 (c) of the provisional agenda

Miscellaneous proposals of amendments to the**Model Regulations on the Transport of Dangerous goods: marking and labelling****Descriptions of labels, placards, symbols, markings and
marks****Transmitted by the expert from the United Kingdom¹****Background**

1. At the thirty-eight session of the Sub-Committee of Experts on the Transport of Dangerous Goods, the United Kingdom submitted the discussion document ST/SG/AC.10/C.3/2010/62 (Description of the dimensions and shape of labels or marks etc). This detailed possible editorial amendments to remove ambiguities from the descriptions of labels etc to facilitate the easier adherence and enforcement of Dangerous Goods regulations.
2. At the same session, a proposal for adding dimensions to the diagrams of stacking symbols in 6.5.2.2.2 and 6.6.3.3 from Sweden in document ST/SG/AC.10/C.3/2010/59 was adopted.
3. The expert from the United Kingdom offered to make a formal proposal based on ST/SG/AC.10/C.3/2010/62 for a future session; this offer was taken up by the Sub-Committee. This paper presents proposals for each diagram which appears in the Model Regulations.

¹ In accordance with the programme of work of the Sub-Committee for 2011-2012 approved by the Committee at its fifth session (refer to ST/SG/AC.10/C.3/76, para. 116 and ST/SG/AC.10/38, para. 16).

TDiscussion

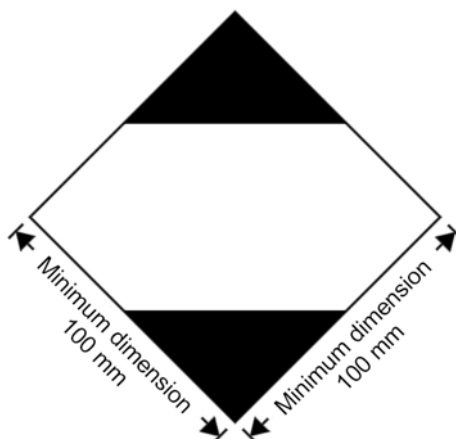
4. The United Kingdom expert has examined the Model Regulations to ascertain where diagrams of labels, placards, symbols, markings and marks occur. The intent is to evaluate the existing text and provide a comprehensive approach to improve the consistency of descriptions, remove ambiguity, and clarify the intent of the Model Regulations where necessary.
5. The Model Regulations include diagrams based on those appearing in the Regulations for the Safe Transport of Radioactive Material (TS-R-1) of the International Atomic Energy Agency (IAEA). These already have detailed descriptions, such as with Figure 5.2.1 (Class 7 trefoil) and Figure 5.3.1 (Class 7 placard). For this reason, and reasons of harmonisation with TS-R-1, this paper does not propose to amend these diagrams and text.
6. The proposed descriptions and diagrams of labels, placards, symbols, markings and marks may provide a standardized format for the design of any marks etc which may be added to the Model Regulations in future.

Proposal 1: Limited quantity marking

7. The United Kingdom proposes to clarify that dimensions referred to in the text are the edges of the diamond by adding dimensional arrows. To ensure the diamond remains in the correct shape, extra descriptive text is added. Certain aspects of the marking, such as the size of the white area and the symbol "Y" are not specified. This paper does not intend to add new provisions, so only clarification of the existing text is proposed rather than adding actual dimensions. To ease reference, the figure numbers are reinstated. The minimum dimension descriptions are reworded to align with text found elsewhere. By specifying that all sides shall be the same length, there can be no distortion of the shape of the marking by using different dimensions on each side. The amended sections 3.4.7 and 3.4.8 are intended to be an ideal type description. Any deviation from that type (i.e. a version with reduced dimensions) is described in a separate paragraph to maintain consistency with the diagram. The expert from the United Kingdom puts forward a number scheme to achieve this editorial function, but is open to different suggestions for doing this.
8. Amend sections 3.4.7 and 3.4.8 and insert new paragraphs 3.4.7.1, 3.4.7.2, 3.4.8.1 and 3.4.8.2 as follows (new text is underlined):

3.4.7 Marking for packages containing limited quantities

3.4.7.1 Except for air transport, packages containing dangerous goods in limited quantities shall bear the marking shown below:

Figure 3.4.1**Marking for packages containing limited quantities**

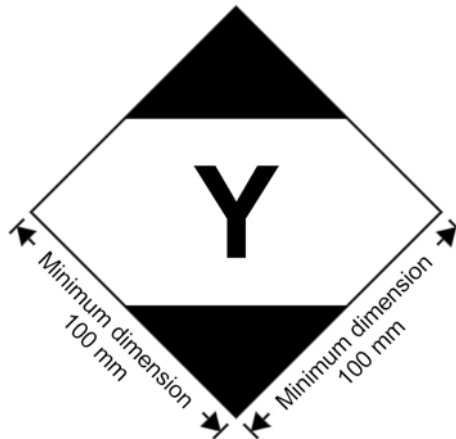
The marking shall be readily visible, legible and able to withstand open weather exposure without a substantial reduction in effectiveness.

The symbol shall be in the form of a square set at an angle of 45 degrees (diamond-shaped) with all four sides the same length and all features shall be in proportion to those shown. The top and bottom portions and the surrounding line shall be black. The centre area shall be white or a suitable contrasting background. The minimum dimensions shall be 100 mm x 100 mm and the minimum width of line forming the diamond shall be 2 mm.

3.4.7.2 If the size of the package so requires, the minimum outer dimensions shown in figure 3.4.1 may be reduced, to be not less than 50 mm x 50 mm provided the marking remains clearly visible. The minimum width of the line forming the diamond shall remain 2mm.

3.4.8 Marking for packages containing limited quantities conforming to Part 3, Chapter 4 of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air

3.4.8.1 Packages containing dangerous goods consigned for air transport in conformity with the provisions of Part 3, Chapter 4 of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air shall bear the marking shown below:

Figure 3.4.2

Marking for packages containing limited quantities conforming to Part 3, Chapter 4 of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air

The marking shall be in the form of a square set at an angle of 45 degrees (diamond-shaped) with all four sides the same length and all features shall be in proportion to those shown. The marking shall be readily visible, legible and able to withstand open weather exposure without a substantial reduction in effectiveness. The top and bottom portions and the surrounding line shall be black. The centre area shall be white or a suitable contrasting background. The minimum dimensions shall be 100 mm x 100 mm and the minimum width of line forming the diamond shall be 2 mm. The symbol "Y" shall be placed in the centre of the mark and shall be clearly visible. If the size of the package so requires, the dimension may be reduced, to be not less than 50 mm x 50 mm provided the marking remains clearly visible.

3.4.8.2 If the size of the package so requires, the minimum outer dimensions shown in figure 3.4.2 may be reduced, to be not less than 50 mm x 50 mm provided the marking remains clearly visible. The minimum width of the line forming the diamond shall remain 2 mm. The symbol "Y" shall remain in proportion to that shown in figure 3.4.2.

Proposal 2: Excepted quantity mark

9. The details of the excepted quantity mark were queried by the International Air Transport Association (IATA) in informal document INF.15 at the thirty-third session of the Sub-Committee in July 2008. IATA queried the shape of the mark, which had been intended to be square, but in fact had been reproduced as a rectangle. As a result, the illustration of the mark was revised to be square in the sixteenth revised edition of the Model Regulations.

10. The report of the thirty-third session records that the original intent of the UN Sub-Committee was to have the excepted quantity mark as a square (ST/SG/AC.10/C.3/66, para 119).

11. To make clear the intent of the Sub-Committee, this paper proposes to add a specification of a square to the Excepted Quantity mark wording. In addition, extra wording is added to ensure that the shape and details of the mark are in proportion to the

diagram. The existing descriptive sentence under the diagram has some editorial amendments to align the wording with the text found elsewhere in the Model Regulations.

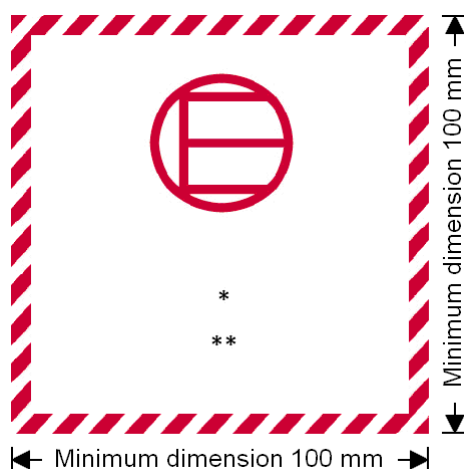
12. To remove any remaining doubt from the description of the size, dimensional arrows are proposed to be added to the diagram to make clear that the minimum dimensions are along of the edges of the mark.

13. Delete 3.5.4.2 and amend 3.5.4.3 follows (new text is underlined):

3.5.4.2 Deleted

3.5.4.3 An overpack containing dangerous goods in excepted quantities shall display the markings required by 3.5.4.1, unless such markings on packages within the overpack are clearly visible.

Figure 3.5.1



Excepted quantities mark

- * The Class or, when assigned, the Division number(s) shall be shown in this location.
- ** The name of the consignor or of the consignee shall be shown in this location if not shown elsewhere on the package.

The mark shall be in the form of a square. The minimum dimensions shall be 100 mm x 100 mm. The hatching and symbol shall be of the same colour, black or red, on white or suitable contrasting background. All features shall be in proportion to those shown.

Proposal 3: Environmentally hazardous substance mark

14. The proposal for the environmentally hazardous substance mark in Figure 5.2.2 is to align the description with that of the proposed limited quantity marking in Figure 3.4.1 and Figure 3.4.2 addressed in paragraph 8. This allows a more consistent approach within the Model Regulations, and allows a clearer specification of features such line width etc.

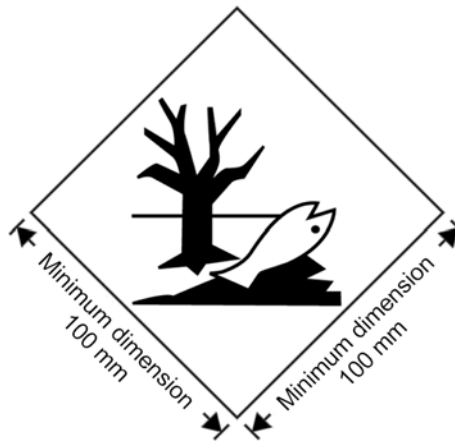
15. The environmentally hazardous substance mark has differing minimum dimensions for packagings and for cargo transport units. The minimum dimensions on cargo transport units are included in paragraph 5.2.1.6.3 together with the dimensions for packagings. Section 5.2.1 relates to packaging only. The expert from the United Kingdom proposes that the wording for the dimensions of the mark for cargo transport units should appear in

Chapter 5.3. The minimum dimensions are quoted in this new text, along with a minimum line width increased by the same factor as the overall size.

16. Delete the existing paragraph 5.2.1.6.3 and Figure 5.2.2 and replace with a new paragraph 5.2.1.6.3 and Figure 5.2.2 as follows:

5.2.1.6.3 The environmentally hazardous substance mark shall be as shown in Figure 5.2.2.

Figure 5.2.2



Environmentally hazardous substance mark

The symbol shall be in the form of a square set at an angle of 45 degrees (diamond-shaped) with all four sides the same length and all features shall be in proportion to those shown. The symbol (fish and tree) shall be on white or suitable contrasting background. The minimum dimensions shall be 100 mm x 100 mm and the minimum width of line forming the diamond shall be 2 mm. If the size of the package so requires, the dimension may be reduced, provided the marking remains clearly visible.

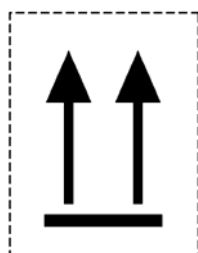
NOTE: *The labelling provisions of 5.2.2 apply in addition to any requirement for packages to bear the environmentally hazardous substance mark.*

17. Add a new paragraph 5.3.2.3.2 as follows:

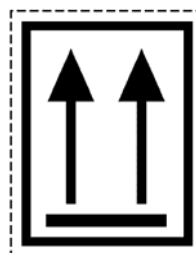
5.3.2.3.2 The environmentally hazardous substance mark for cargo transport units shall be as described in 5.2.1.6.3 and Figure 5.2.2, except that the minimum dimensions shall be 250 mm x 250 mm. The minimum width of line forming the diamond shall be 5 mm.

Proposal 4: Orientation arrows

18. The orientation arrows in paragraph 5.2.1.7.1 have no specified dimensions. This proposal does not intend to add any, other than to ensure that the arrows remain in proportion. Also, it is proposed to add a figure number to the diagrams for editorial neatness, with a view to Proposal 5 which proposes to add a new Figure 5.2.5.

Figure 5.2.3

or

Figure 5.2.4

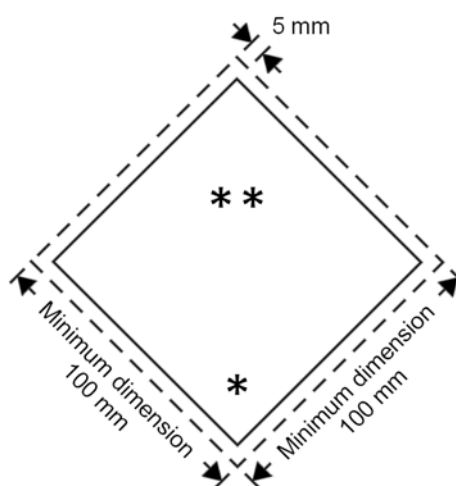
All features shall be in proportion to those shown.

Proposal 5: Class/division labels

19. Sub-paragraph 5.2.2.2.1.1 offers a highly detailed description of class/division labels. However, it still does not specify which dimensions are referred to with the minimum dimension. As a result, the expert from the United Kingdom proposes that the existing paragraph 5.2.2.2.1.1 be replaced with a figure to illustrate the overall dimensions, with much of the existing text used as explanatory text below. The phrase from the other proposals referring to proportions is not included as this is unnecessary and contradicts the existing requirement for the inner line to be always 5 mm from the edge, regardless of label size. A minimum width for the line forming the diamond is specified to be 2 mm as it is for the limited quantity markings. The amended paragraph 5.2.2.2.1.1 is intended to be an ideal type description. Any deviation from that type (i.e. a version with reduced dimensions) is described in a separate paragraph to maintain consistency with the diagram.

20. Delete the existing 5.2.2.2.1.1 and replace with a new sub-paragraph 5.2.2.2.1.1, Figure 5.2.5 and insert a new paragraph 5.2.2.2.1.8 as follows:

5.2.2.2.1.1 Labels shall be configured as shown in Figure 5.2.5. Labels shall be displayed on a background of contrasting colour, or shall have either a dotted or solid outer boundary line.

Figure 5.2.5

Class/division label

* Class or division number shall be shown in this location in the bottom corner.

** The class or division symbol/numeral/text shall be shown in this location.

5.2.2.2.1.8 If the size of the package so requires the dimensions may be reduced, provided the marking remains clearly visible. The line inside the edge shall remain 5 mm to the edge of the label. The minimum width of the line inside the edge shall remain 2mm. Dimensions for cylinders shall comply with 5.2.2.2.1.2.

The label shall be in the form of a square set at an angle of 45 degrees (diamond-shaped) with all four sides the same length. The minimum dimensions shall be 100 mm x 100 mm and the minimum width of the line inside the edge forming the diamond shall be 2 mm. The line inside the edge shall be parallel and 5 mm to the edge of the label. The line inside the edge on the upper half of the label shall be the same colour as the symbol and the line inside the edge on the lower half of the label shall be the same colour as the class or division number in the bottom corner.

Class/division placards (not Class 7)

21. The current description of non-class 7 placards in paragraph 5.3.1.2.1 lacks detail compared to the wording for class/division labels. The United Kingdom has come up with two possible solutions. The first is to insert a new figure into Chapter 5.3 (proposal 6). The second possible solution would be to refer to the proposed figure 5.2.5, with exceptions detailed in the text (proposal 7). The expert from the United Kingdom welcomes the views of the Sub-Committee on which approach is preferable.

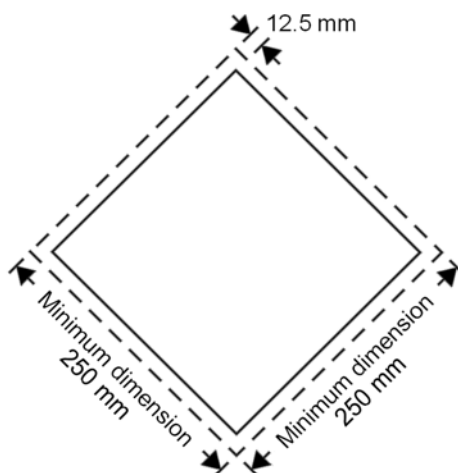
22. The proposals also specify what constitutes the edge of a placard (the edge of the plate itself rather than the part visible inside a holder) and the width of the line forming the diamond (5 mm which increases the measurement for the label by the same factor as the overall size).

Proposal 6

23. The description follows that proposed for class/division labels as closely as possible. To avoid altering the logical structure of the provisions, some references to labels remain in the descriptive text.

24. Delete the existing paragraph 5.3.1.2.1 and replace with a new paragraph 5.3.1.2.1 as follows:

"5.3.1.2.1 Except as provided in 5.3.1.2.2 for the Class 7 placard, a placard shall be configured as shown in Figure 5.3.0.

Figure 5.3.0**Placard (except for class 7)**

The placard shall be in the form of a square set at an angle of 45 degrees (diamond-shaped) with all four sides the same length. The minimum dimensions shall be 250 mm x 250 mm (to the edge of the placard outside a holder) and the minimum width of the line inside the edge forming the diamond shall be 5 mm. The line inside the edge shall be parallel and 12.5 mm to the edge of the label. The symbol and line inside the edge shall correspond in colour to the label for the class or division of the dangerous goods in question. The class or division symbol/numeral shall be positioned and sized in proportion to those prescribed in 5.2.2.2 for the corresponding class or division of the dangerous goods in question. The placard shall display the number of the class or division (and for goods in class 1, the compatibility group letter) of the dangerous goods in question in the manner prescribed in 5.2.2.2 for the corresponding label, in digits not less than 25 mm high."

Proposal 7

25. Delete paragraph 5.3.1.2.1 and replace with a new paragraph 5.3.1.2.1 as follows:

5.3.1.2.1 Except as provided in 5.3.1.2.2 for the class 7 placard, a placard shall follow the provisions of paragraphs 5.2.2.2.1 and 5.2.2.2.2 for the label of the class or division of the dangerous goods in question except:

- (a) The minimum dimensions shall be 250 mm x 250 mm (to the edge of the placard outside a holder) and the minimum width of the line inside the edge forming the diamond shall be 5 mm. The line inside the edge shall be parallel and 12.5 mm to the edge of the placard (outside a holder).
- (b) The class or division number (and for goods in Class 1, the compatibility group letter) of the dangerous goods in question shall have digits not less than 25 mm high.

26. As a consequential amendment, the final sentence of 5.3.1.1.2 could be deleted as this duplicates text in 5.2.2.2.1 referenced in 5.3.1.2.1.

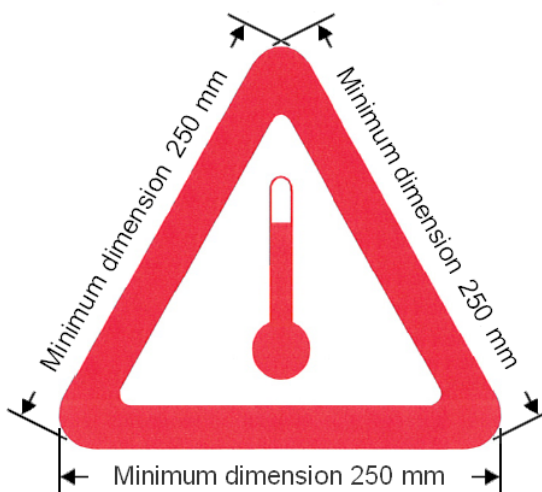
Proposal 8: Elevated temperature substance mark

27. The rounded sides of this mark could lead to confusion as to where the 250 mm side length should be measured. This proposal adds dimensional arrows pointing to the exact part of the rounded edge which is intended. The proposal also makes explicit the presumed intention for the mark to be an equilateral triangle (as shown in the diagram). This proposal also repositions the name of the mark below the diagram for editorial consistency.

28. In 5.3.2.2, amend the text and figure after "shown in Figure 5.3.4" to read as follows:

"Figure 5.3.4

Mark for carriage at elevated temperature



Mark for carriage at elevated temperature

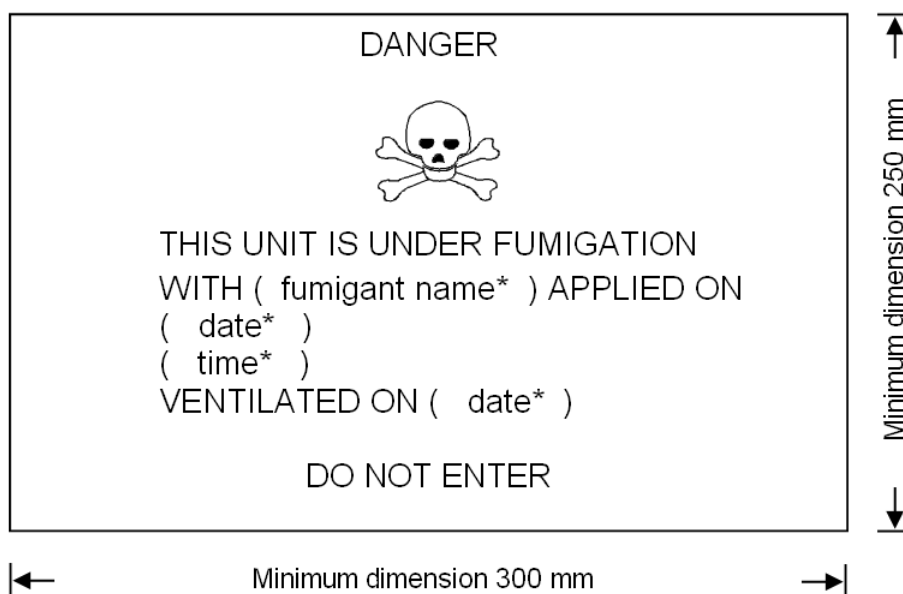
The symbol shall be an equilateral triangle with all three sides the same length and all features shall be in proportion to those shown. The colour of the mark shall be red. The minimum dimension of the sides shall be 250 mm."

Proposal 9: Fumigation warning mark

29. The fumigation warning mark already has dimensional arrows. This proposal is to align the description of the mark with the wording found for other marks. The line width is specified as with the limited quantity marking.

30. Amend 5.5.2.3.2 and Figure 5.5.1 to read as follows:

"5.5.2.3.2 The fumigation warning mark shall be as shown in Figure 5.5.1.

Figure 5.5.1: Fumigation warning mark

* Insert details as appropriate.

Fumigation warning mark

The mark shall be a rectangle. The minimum dimensions shall be 300 mm wide x 250 mm high and the minimum width of the outer line shall be 2 mm. The markings shall be in black print on a white background with lettering not less than 25 mm high. The skull and crossbones symbol shall be in proportion to that shown."

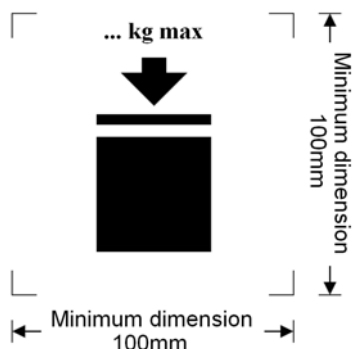
Proposal 10: IBC and large packaging stacking load symbols

31. At the thirty-eight session of the UN Sub-Committee of Experts on the Transport of Dangerous Goods (November/December 2010), the Swedish proposal to add dimensional arrows to the stacking load symbols was adopted (ST/SG/AC.10/C.3/2010/59). The expert from the United Kingdom proposes to align the existing wording and symbol artwork with the other proposals contained in this paper.

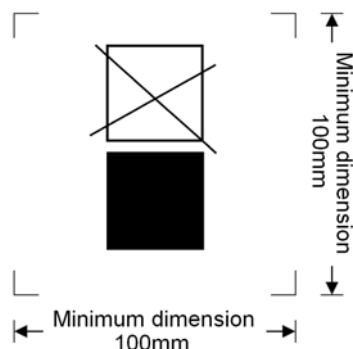
32. This proposal does not change the intent of the existing provisions. The stacking load symbols are used for IBCs and large packagings, the proposed alignment of text is below:

33. Amend 6.5.2.2.2 to read as follows:

"6.5.2.2.2 The maximum permitted stacking load applicable when the IBC is in use shall be displayed on a symbol as shown in Figure 6.5.1 or Figure 6.5.2, follows:
The symbol shall be durable and clearly visible.

Figure 6.5.1

IBCs capable of being stacked

Figure 6.5.2

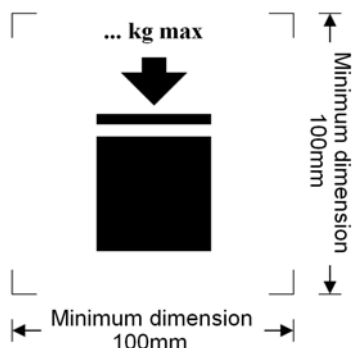
IBCs NOT capable of being stacked

~~The symbol shall not be less than 100 mm x 100 mm, be durable and clearly visible.~~

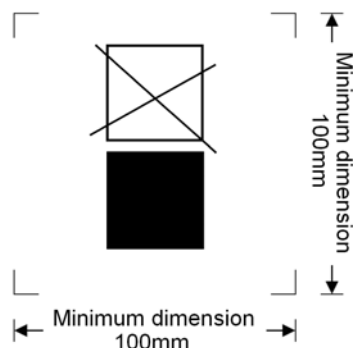
The minimum dimensions shall be 100 mm x 100 mm. The letters and numbers indicating the mass shall be at least 12 mm high. All features shall be in proportion to those shown."

34. Amend 6.6.3.3.3 to read as follows:

"6.6.3.3 The maximum permitted stacking load applicable when the large packaging is in use shall be displayed on a symbol as shown in Figure 6.6.1 or Figure 6.6.2, follows: The symbol shall be durable and clearly visible.

Figure 6.6.1

IBCs capable of being stacked

Figure 6.6.2

IBCs NOT capable of being stacked

~~The symbol shall not be less than 100 mm x 100 mm, be durable and clearly visible.~~

The minimum dimensions shall be 100 mm x 100 mm. The letters and numbers indicating the mass shall be at least 12 mm high. All features shall be in proportion to those shown. The mass marked above the symbol shall not exceed the load imposed during the design type test (see 6.6.5.3.3.4) divided by 1.8.

NOTE: *The provisions of 6.6.3.3 shall apply to all large packagings manufactured, repaired or remanufactured as from 1 January 2015."*

Transitional measures

35. Apart from the stacking load symbols which have minor artwork improvements, this paper proposes no changes to existing symbols. The main problem that the United Kingdom would anticipate would be for existing labels, placards, symbols, markings and marks which inadvertently do not meet the specifications of these proposals meaning that if adopted, they would not meet the regulations.

36. If adopted in the current biennium, these proposals would not pass through to the ICAO Technical Instructions, International Maritime Dangerous Goods code and RID/ADR/ADN until at least January 2015. Despite this timescale, the Expert from the United Kingdom appreciates that some transitional measures are needed and that they need to be harmonised across the modes. The United Kingdom does not have a fixed view on the exact length these may be.

37. The Expert from the United Kingdom suggests that transitional measures be adopted for each individual proposal if adopted. For those proposals where a transition date of 1 January 2015 is appropriate, no action need be taken. For those proposals which require a deviation from that date, a note in italics would need to be added to the appropriate amended text.

Guiding principles

38. This document proposes a more consistent approach for the description of labels, placards, symbols, markings and marks. If these proposals meet with the approval of the Sub-Committee, the expert from the United Kingdom suggests that the Guiding Principles be amended to include a standardized format for the design of any future labels, placards, symbols, markings and marks that may be added to the UN Model Regulations.
