Draft Guidelines for the Communication of Safety Information

Scope

These guidelines are applicable to symbols and associated text for the following safety sign categories for internal and external use on vehicles of categories M2 and M3:

a) Safe condition signs

b) Fire safety signs

[c) Passenger alarm / communication device signs

]

NOTE: Prohibition, mandatory action, hazard warning [, passenger alarm / communication device] and general information signs are not covered within these recommendations.

Purpose of the safety signs and colours

The purpose of safety signs is to draw attention rapidly to objects and situations affecting safety, and to gain rapid understanding of a specific message that enables those involved to act in a pre-determined way. As a result, safety signs shall be used only for information that is related to the immediate safety of passengers and crew, and to assist persons attending any emergency situation.

Definitions

Combination sign Sign that combines a safety sign and an associated supplementary sign on the same rectangular carrier (ISO 3864-1).
Direction sign Safe condition sign that contains directional information only.
Egress Normal action of passengers as they exit a vehicle in normal conditions.
Escape Actions of passengers as they seek to exit a vehicle in abnormal (emergency) conditions and when normal egress routes and facilities are unavailable, or are blocked as a result of the vehicle condition.
Evacuation Act of emptying a vehicle of passengers using normal egress routes or facilities as a reaction to abnormal conditions.
Evacuation route Route that provides a means of evacuation from a point in a vehicle to a final exit from the vehicle.

Exclusion zone A zone set within the graphic symbol tile that has a width equal to 8% of the graphic symbol tile ('tile') height (ISO 3864-3).
Fire safety sign Safety sign that indicates the location or identification of fire equipment (ISO 3864-1).
Graphical symbol Visually perceptible figure with a particular meaning used to transmit information independently of language (ISO 17724).
Graphic symbol tile ('tile') The square area enclosing the exclusion zone and the graphical symbol. It does not include the border to the safety sign.
Header text Text that labels a device, equipment or an evacuation route.
Instruction sign Safe condition sign that contains a set of actions only. It does not contain directional information.
Instruction text Text that contains action information.
Letter height Height of the lower case 'x'.
[**Passenger communication sign** A sign that indicates the location of a passenger alarm or communication device.]
Photoluminescence Luminescence caused by absorption of optical radiation (ISO 17724)
Photo-luminescent material A material that absorbs optical radiation and emits that energy over a period of time after the source has been removed.
Safe condition sign Safety sign that indicates a safety action, the location of safety equipment or a safety facility, or an evacuation route (ISO 3864-1).
Safety colour Colour to which a safety meaning is attributed.
Safety sign Sign which gives a general safety message, obtained by a combination of a colour and geometric shape and which, by the addition of a graphical symbol, gives a particular safety message (ISO 17724).
Sign height Height of a rectangular geometric shape – the border is ignored.
Supplementary sign Sign that is supportive of a safety sign and the main purpose of which is to provide additional clarification (ISO 3864-1).
Safe observation distance Distance a person can be from a safety sign while still able to identify the safety sign and have the opportunity to follow the message (ISO 3864-1).

General signage requirements

All signs that are relevant during an emergency shall be visible in the absence of light, whether daylight or artificial. These requirements shall apply to features such as vehicle escape and evacuation points, evacuation routes, door releases, first aid equipment, [emergency hammers] and fire extinguishers.

Safety signs shall be of photo-luminescent material. See Appendix 1 for minimum performance parameters and classification according to ISO 17398.

NOTE: It is important that photo-luminescent signs are not located in positions where they may be obscured during operation of the vehicle, for example by luggage, or in the shadow of fixtures and fittings and other features that form the interior of a vehicle. [A minimum illumination of [50] lux is recommended to maximise the level of excitation received from the available light sources (both daylight and artificial) so that the optimum performance from the material may be obtained when required under low light and emergency conditions.] *or* [Photo-luminescent signs shall be provided with not less than the minimum level of illumination necessary to charge the material to meet the minimum level of performance specified.]

Safe condition signs shall comprise a white pictogram on a green safety colour background (RAL 6032) (Table E.1 ISO 3864-4). The background shall take up at least 50% of the area of the sign (Figure 4 ISO 3864-1).

Fire safety signs [and passenger communication signs] shall comprise a white pictogram on a red safety colour background (RAL 3001) (Table E.1 ISO 3864-4). The background shall take up at least 50% of the area of the sign (Figure 5 ISO 3864-1).

It should be noted that the visual appearance of the 'white' areas of photo-luminescent signs is a greenish-yellow colour.

To aid conspicuity and contrast against various backgrounds, all safety signs shall have a 2mm wide white border, irrespective of the size of the sign.

Information for passengers

Where equipment is provided for passenger use, safety signs shall be positioned so as to be easily read and the information easily understood in relation to the use of the equipment.

Sign positioning

The positioning of safety signs shall have priority over all other signs.

Safe condition signs shall:

(i) be positioned adjacent to, or on, both internal and external door release devices identifying the device and instructions for their operation.

(ii) be provided informing passengers of the location and direction in which emergency equipment, e.g. first aid box, may be found and, where appropriate, supplies instructions for its use.

(iii) identify doors dedicated to emergency egress (escape) and include instructions on the operation of any internal or external release device.

(iv) indicate the direction of opening of both hinged and sliding doors.

All fire equipment shall be identified by fire safety signs and include instructions on its operation and any precautions to be taken before operating it.

Graphics guidelines

Basic principles

Each safety sign shall be used to convey only one safety message. Wherever possible, the information provided shall be in the form of graphical symbols; words, letters and numbers shall not be used within the graphic symbol tile. However, words, letters and numbers may supplement graphics in a combination sign.

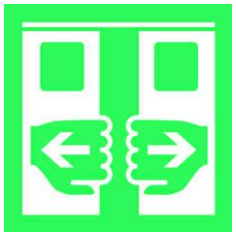
Arrows shall be used vertically, horizontally or at 45° inclination only.

Where possible, symbols shall be symmetrical about the horizontal and / or vertical axes of the symbol tile.

Graphic symbols shall usually be centred within the tile. However, this rule does not apply to arrows at 45° inclination.

When alternative orientations of a symbol are available, the symbol shall be orientated according to the direction of use, e.g. indicating clockwise or anti-clockwise rotation of a handle, or movement to the left or to the right.

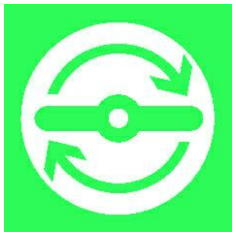
Symbols requiring an action by the user, e.g. 'pull doors apart' shall, wherever possible, show a person (or part of a person) operating the device.



Pull doors apart

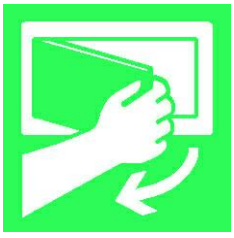
Symbols depicting movement shall show an arrow pointing in the direction of motion. Where a rotational movement is required, a curved arrow shall be used that is concentric with the centre of rotation of the device.

Pull handle

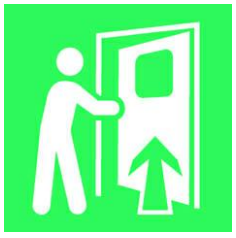


Turn handle

Where devices are to be operated, panels removed or doors opened, the symbols should ideally show the action in progress.



Pull handle



Open door away from you

Graphic symbol tile size

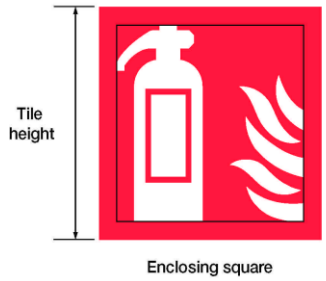
Graphic symbol tiles shall be sized in relation to the required viewing distance for the sign in which they appear. The following sign sizing rules shall apply:

a) There shall be only one viewing distance defined per sign.
b) All instruction signs shall be sized for a 1.0 metre viewing distance only.
c) Non-instructional signs shall be sized according to the viewing distance requirements for a particular vehicle.
d) The sizing requirements for the tile and the element spacing values shall be selected according to the following table:

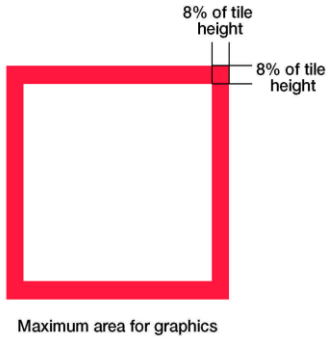
		Spacing values		
Viewing distance (metres)	Tile size (millimetres)	8% of tile size	16% of tile size	24% of tile size
1.0	33.0	2.6	5.3	7.9
1.5	43.9	3.5	7.0	10.5
2.0	52.6	4.2	8.4	12.6
2.5	59.6	4.8	9.5	14.3
3.0	65.5	5.2	10.5	15.7
3.5	70.5	5.6	11.3	16.9
4.0	74.7	6.0	12.0	17.9
4.5	78.4	6.3	12.5	18.8
5.0	81.6	6.5	13.1	19.6
5.5	84.4	6.8	13.5	20.3
6.0	86.9	7.0	13.9	20.9
6.5	89.2	7.1	14.3	21.4
7.0	91.2	7.3	14.6	21.9
7.5	93.0	7.4	14.9	22.3
8.0	94.7	7.6	15.1	22.7
8.5	96.2	7.7	15.4	23.1
9.0	97.6	7.8	15.6	23.4
9.5	98.8	7.9	15.8	23.7
10.0	100.0	8.0	16.0	24.0

Graphic symbols

All graphic symbols used in safety signs shall be designed with reference to the tile. All graphic elements of a symbol shall be contained within the tile without encroaching into the exclusion zone.



Enclosing square

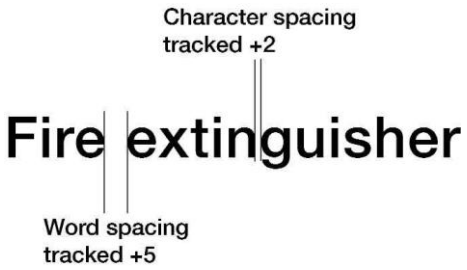


Maximum area for graphics

Typography

Typeface
The typeface for all safety signs shall be sans-serif [Helvetica Medium].

Character and word spacing
Character spacing shall be tracked +2 (22% of letter height) and word spacing shall be tracked +5 (75% of letter height).



Standard text sizes
Text within safety signs shall be sized in relation to the required viewing distance and/or the associated tile according to the following table:

	Letter height			
Viewing distance (metres)	Header text (millimetres)	Secondary text (millimetres)	Instruction text (millimetres)	Non-critical text (millimetres)
1.0	5.5	3.9	3.9	2.8
1.5	7.3	5.1	Instruction text and non-critical text shall always be sized for viewing at 1.0 metre	
2.0	8.8	6.1		
2.5	9.9	7.0		
3.0	10.9	7.6		
3.5	11.7	8.2		
4.0	12.5	8.7		
4.5	13.1	9.1		
5.0	13.6	9.5		
5.5	14.1	9.9		
6.0	14.5	10.1		
6.5	14.9	10.4		
7.0	15.2	10.6		
7.5	15.5	10.9		
8.0	15.8	11.0		
8.5	16.0	11.2		
9.0	16.3	11.4		
9.5	16.5	11.5		
10.0	16.7	11.7		

Each safety sign may incorporate a maximum of three different sizes of text for a specified sign viewing distance, e.g.

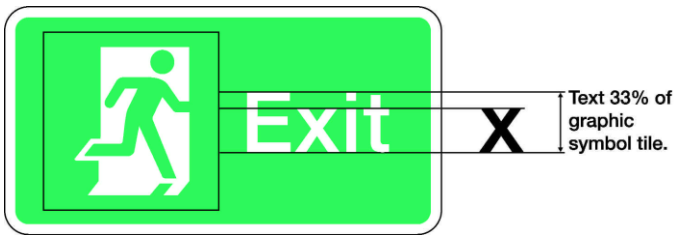
a) Header text (e.g. 'Emergency door release')
b) Instruction text (e.g. 'Strike cover')
c) Non-critical text (e.g. 'Penalty for improper use')

Instruction text and non-critical text shall not appear on signs with a specified viewing distance of greater than 1.0 metre.

Header text and secondary text may appear on signs of any viewing distance up to a maximum of 10.0 metres.

Special header text size
A special header text size is permitted in [four] cases:

a) 'Exit'



b) 'Emergency door release'

c) Numerals denoting instructions within a sequence

[d) 'Alarm'

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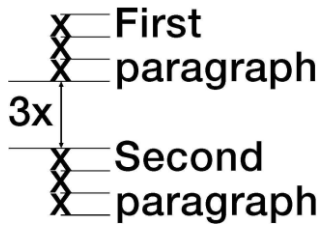
In these cases the text size shall be larger, in proportion to the associated tile, than the normal header text. The height of the upper case letter and numerals shall be 33% of the associated tile size. The lower case letter height and the height of instruction numerals shall be according to the following table:

Viewing distance (metres)	Special header text (letter height) (millimetres)	Height of instruction numerals (millimetres)
1.0	8.0	10.9
1.5	10.6	Instruction numbers shall always be sized for viewing at 1.0 metre
2.0	12.7	
2.5	14.5	
3.0	15.9	
3.5	17.1	
4.0	18.1	
4.5	19.0	
5.0	19.8	
5.5	20.5	
6.0	21.1	
6.5	21.6	
7.0	22.1	
7.5	22.5	
8.0	22.9	
8.5	23.3	
9.0	23.6	
9.5	24.0	
10.0	24.2	

Line spacing
The letter height shall be used as the space between two lines of text of equal size. If a sign requires more than one paragraph of text there shall be a spacing equivalent to 3-times the header 'x' height. However, multiple paragraphs of text should be avoided within safety signs.



If using different sizes of text within the same section of a safety sign, a space equivalent to 1.5 times the header 'x' height shall be used to separate the paragraphs.

Upper or lower case letters
Mixed upper and lower case letter shall be used in all safety signs. Upper case letters shall only be used for the first letter of a sentence.

Type ranging
Text shall be aligned to the left on all signs.

Wording

Wording not only affects understanding of the safety sign, but also the speed of reading.

Readability

Use short concise expressions.
Use active sentences, e.g. 'push button to open door', rather than 'the door will open when the button is pushed'.
Avoid statements that rely on punctuation.

Negatives

Avoid negative statements in general text.
Avoid double negatives.
Avoid qualifying negatives, e.g. 'except'.

Modifiers

Avoid vague modifiers, e.g. 'many'.
Avoid redundant modifiers, e.g. 'sufficient', 'enough'.
Avoid contradictory modifiers, e.g. 'quite extreme'.
Avoid weak modifiers, e.g. 'quite', 'rather', 'well', 'fairly'.

Confusions

Avoid terms or phrases known only to the Industry and use common language.
Use simple / short words where possible.

A. McKenzie
30th July 2010

Appendix 1

Minimum performance parameters and classification according to ISO 17398

Performance parameters

Luminance performance

The decay characteristics shall meet, as a minimum, sub-classification C in Table 2 of 5.5, when measured in accordance with 7.11 and, in the case of signs for exterior use, after testing in accordance with 7.3.

Flame resistance

As specified in 5.1.1.

Resistance to humidity

As specified in 5.1.2.

Wipe resistance

As specified in 5.1.3.

Surface print adhesion

As specified in 5.1.4.

Finish (Gloss)

Determined in accordance with 5.1.5.

Weather resistance (exterior use)

No visible change after testing as specified in 5.3.

Resistance to test liquids

No visible change after testing in accordance with 7.15. Test specimens shall be subjected to each of the liquids listed in Table 9. A new test specimen may be used for each immersion test.

Wipe resistance

No visible change after testing in accordance with 7.16.

Classification

Classification

Signs shall be classified according to Table 1 of 4.1.

Designation and marking

In accordance with 8.1 and 8.2.

[Appendix 2

Symbol Set

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