

Graphical symbols and signs —

Safety signs, including fire safety signs —

Part 1: Specification for geometric shapes, colours and layout

ICS 01.080.10; 13.220.01

Committees responsible for this British Standard

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Association of British Theatre Technicians
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 British Sign and Graphics Association
 Cinema Exhibitors Association
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 Electricity Association
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 Health and Safety Sign Association
 Home Office
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 Manchester Metropolitan University, Department of Psychology and Speech Pathology
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Foreword

This part of BS 5499 has been prepared by Subcommittee PH/8/1. It supersedes BS 5499-1:1990, which is withdrawn.

BS 5499 covers safety signs and fire safety signs since it is considered essential that all safety signs follow the same basic vocabulary of safety colours and geometric shapes.

BS 5499 comprises the following parts:

- *Part 1: Specification for geometric shapes, colours and layout;*
- *Part 2: Specification for self-luminous fire safety signs;*
- *Part 3: Specification for internally-illuminated fire safety signs;*
- *Part 4: Code of practice for escape route signing;*
- *Part 5: Signs with specific safety meanings;*
- *Part 11: Water safety signs.*

Part 6 on design principles for graphical symbols for use in safety signs is being drafted.

The requirements specified in this part of BS 5499 have been drawn up in the light of the Health and Safety (Safety Signs and Signals) Regulations 1996 [1]. This part of BS 5499 is aligned with ISO 3864.

The purpose of safety signs is to draw attention to objects and situations that affect or could affect health or safety and to provide information about safety, including safety in case of fire. It is important that the graphical symbols used in safety signs are standardized to aid comprehension. Whilst education in the comprehension of signs is essential, incomprehension caused by the lack of standardization can lead to confusion and possible danger. International travel and mobility of labour increase the need for a standardized method for safety communication.

The use of safety signs does not replace the need for proper working methods and instruction or for training in accident prevention and the actions to be taken in the event of emergency.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 23 and a back cover.

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1 Scope

This part of BS 5499 specifies a system of geometric shapes and safety colours for use with appropriate graphical symbols to produce safety signs. It is applicable to signs providing information on the actions to be taken to prevent, or reduce the risk of, accidents, for warning of hazards and for dealing with certain emergencies including the identification of escape routes and the location of fire equipment.

The standard also specifies the use of supplementary signs, including arrows, and the combination of signs. Safety marking is also specified. Information for use in the selection of sign sizes, and preferred sizes of signboards are also given.

NOTE The illustrations in this standard are as accurate as possible within the limitations of the printing process.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 5378-2, *Safety signs and colours — Part 2: Specification for colorimetric and photometric properties of materials*.

BS 5499-4, *Safety signs, including fire safety signs — Part 4: Code of practice for escape route signing*.

BS 5499-5, *Graphical symbols and signs — Safety signs, including fire safety signs — Part 5: Signs with specific safety meanings*.

BS 8501, *Graphical symbols and signs — Public information symbols*¹⁾.

ISO 6309, *Fire protection — Safety signs*.

PD 6578, *Guide to British, European and international graphical symbols, for use on equipment, for safety and fire safety, and for public information, in relation to ISO 7000 and IEC 60417*.

3 Terms and definitions

For the purposes of this part of BS 5499 the following terms and definitions apply.

3.1

safety sign

sign that gives a general safety message, by means of a combination of a safety colour and a geometric shape and which, by the inclusion of a graphical symbol, gives a particular safety meaning

3.2 types of safety sign

3.2.1

prohibition sign

safety sign that indicates that specific behaviour is forbidden

3.2.2

mandatory sign

safety sign that indicates that a specific course of action is to be taken

3.2.3

hazard sign

safety sign that indicates a specific source of potential harm

3.2.4

safe condition sign

safety sign that indicates a safety action, the location of safety equipment or a safety facility, or an escape route

3.2.5

fire equipment sign

safety sign that indicates the location or identification of fire equipment or how it should be used

¹⁾ In preparation.

3.3

supplementary sign

sign that is supportive of a safety sign by providing additional clarification

NOTE 1 A supplementary sign may comprise text or an arrow.

NOTE 2 A supplementary sign when used with a safety sign becomes part of the safety sign.

3.4

safety colour

specific colour to which a safety meaning is attributed

3.5

contrast colour

colour that contrasts with the safety colour in order to make the safety colour more conspicuous

3.6

letter height

nominal height of the lower case letter "x"

3.7

sign height

diameter of a circular geometric shape or height of a rectangular or triangular geometric shape

NOTE Any border is ignored.

3.8

graphical symbol

visually perceptible figure with a particular meaning used to transmit information independently of language

3.9

critical detail

element of a graphical symbol without which the graphical symbol cannot be understood

4 Types of signs

Each safety sign shall be of one of the following five types:

- a) a prohibition sign;
- b) a mandatory sign;
- c) a hazard sign;
- d) a safe condition sign;

NOTE Safe condition signs include escape route signs.

- e) a fire equipment sign.

5 Safety colours and contrast colours for safety signs

The safety colour and the contrast colour used for a safety sign shall be as specified for the particular type of sign in Table 1. The colorimetric and photometric properties of the safety colours and contrast colours shall be in accordance with BS 5378-2.

6 Geometric shapes for safety signs


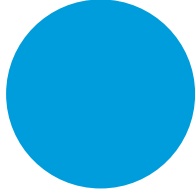



The geometric shape used for a safety sign shall be as specified for the particular type of sign in Table 1.

7 Graphical symbols for safety signs

The graphical symbol used on a safety sign shall be as simple as possible and shall be used to convey only one safety message, as follows.

- a) A prohibition sign shall show only what or who is forbidden.
- b) A mandatory sign shall show only what action is required.
- c) A hazard sign shall show only the nature of the potential harm.
- d) A safe condition sign shall show only the safety action or the location of the safety equipment or the safety facility or the escape route.
- e) A fire equipment sign shall show only the location of the fire equipment or the type of fire equipment or how it should be used.

Table 1 — Geometric shapes, safety colours and contrast colours for safety signs^a

Geometric shape	Meaning	Safety colour	Contrast colour	Graphical symbol colour	Examples of use
A circle 	Prohibition	Red	White	Black	No smoking No unauthorized vehicles Do not drink
A circle 	Mandatory action	Blue	White	White	Wear safety helmet Keep clear
An equilateral triangle with radiused outer corners 	Hazard	Yellow	Black	Black	Hot surface Acid High voltage
A rectangle (square or oblong) 	Safe condition Escape route Safety equipment	Green	White	White	First aid room Fire exit Evacuation assembly point
A rectangle (square or oblong) 	Fire equipment	Red	White	White	Fire point Fire alarm Wet riser Fire extinguisher

^a For the colour and geometric shape of supplementary signs see Clause 10.

8 Selection of safety signs

Safety signs shall be selected as follows.

- a) Where a safety sign incorporating a graphical symbol conveying the required meaning is specified in BS 5499-5 that safety sign shall be used.
- b) If a safety sign incorporating a graphical symbol with the required meaning is not specified in BS 5499-5, a graphical symbol taken from BS 8501, PD 6578 or ISO 6309 shall be used.
- c) When a graphical symbol, or a safety sign incorporating a graphical symbol, with the required meaning is not given in any of the documents listed in items a) and b), the appropriate general sign specified in BS 5499-5 shall be used, together with text on a supplementary sign.

NOTE 1 Figure 1 gives examples of this approach.

NOTE 2 As an alternative to option c) a new graphical symbol may be designed and submitted to BSI Technical Committee PH/8 for registration²⁾.

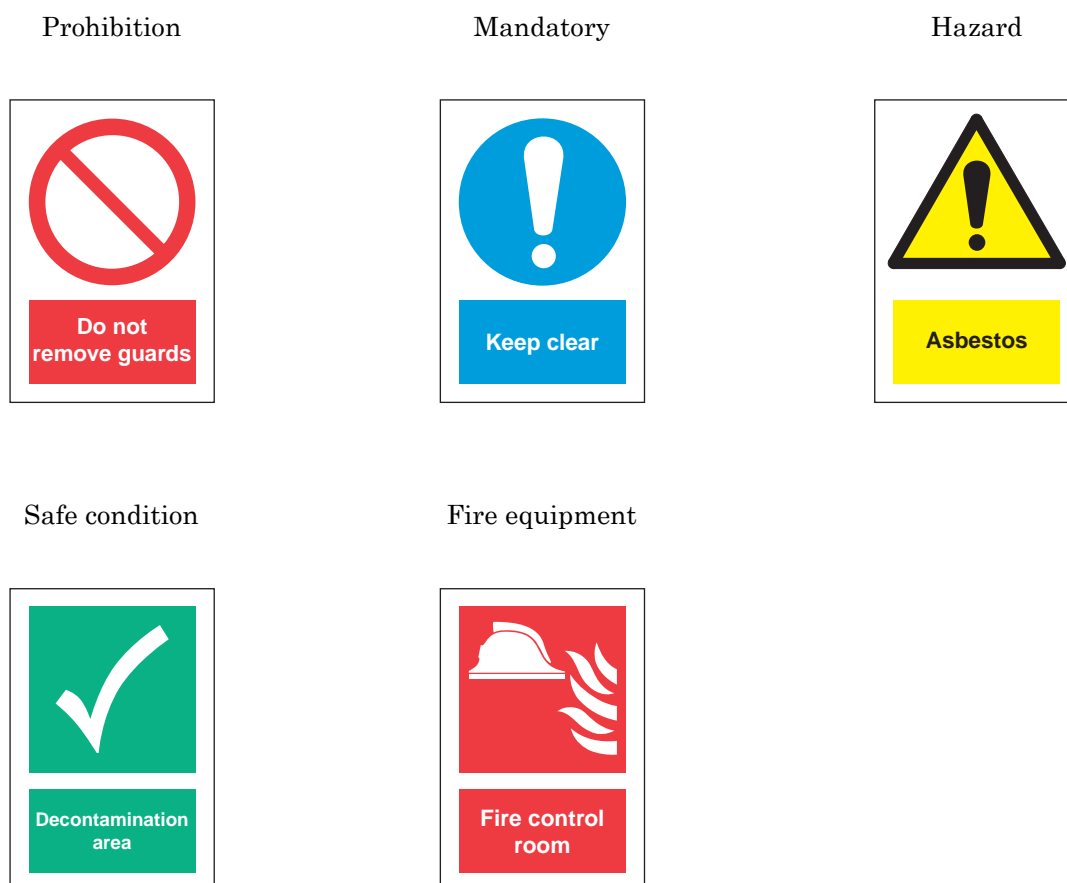


Figure 1 — Examples of safety signs comprising a general sign and text on a supplementary sign

9 Layout of safety signs

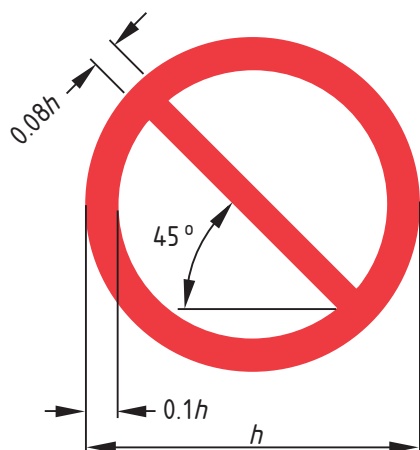
9.1 General

The layout of safety signs shall be as described in 9.2, 9.3, 9.4 and 9.5.

NOTE Borders are recommended to ensure contrast between the safety sign and its surroundings. The minimum recommended width of the border is indicated (but not illustrated) in 9.2 to 9.5.

²⁾ Details of the registration procedure and an application form can be obtained from The Secretary, Technical Committee PH/8, BSI, 389 Chiswick High Road, London W4 4AL.

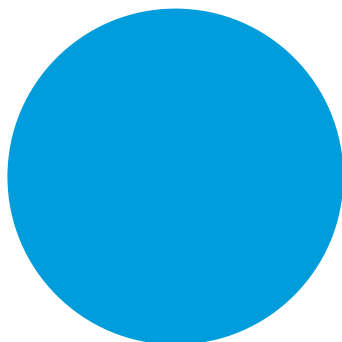
9.2 Prohibition signs



Geometric shape:	A circle.
Safety colour:	Red, covering at least 35 % of the area of the sign excluding any border.
Description:	A red circular band and a red negation bar at 45° descending diagonally from left to right through the centre of the circle, thickness of circular band 0.1 of the sign height, thickness of cross bar 0.08 of the sign height.
Background:	Colour white.
Contrast colour:	White.
Graphical symbol:	Colour black, placed centrally on the background so that it does not obliterate the negation bar. Graphical symbol partially obliterated by the negation bar.
Border:	Colour white, recommended width at least 0.025 of the sign height.
Text:	Any text shall be placed on a supplementary sign.
Example:	



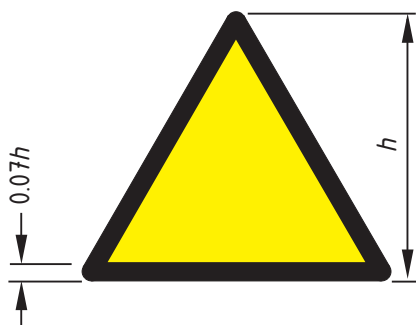
9.3 Mandatory signs



Geometric shape:	A circle.
Safety colour:	Blue.
Background:	Safety colour (blue), covering at least 50 % of the area of the sign excluding any border.
Contrast colour:	White.
Graphical symbol:	Colour white, placed centrally on the background.
Border:	Colour white, recommended width at least 0.025 of the sign height.
Example:	



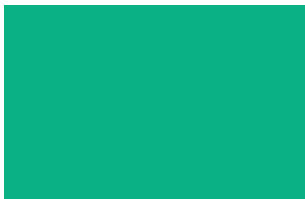
9.4 Hazard signs



Geometric shape:	An equilateral triangle with radiused outer corners.
Safety colour:	Yellow.
Description:	A black triangular band, width of band 0.07 of the sign height.
Background:	Safety colour (yellow), covering at least 50 % of the area of the sign excluding any border.
Contrast colour:	Black.
Graphical symbol:	Colour black, placed centrally on the background.
Border:	Colour white, recommended width at least 0.025 of the sign height.
Example:	



9.5 Safe condition signs



Geometric shape:	A rectangle (square or oblong).
Safety colour:	Green.
Background:	Safety colour (green), covering at least 50 % of the area of the sign excluding any border.
Contrast colour:	White.
Graphical symbol:	Colour white, placed centrally on the background.
Border:	Colour white, recommended width at least 0.025 of the sign height.

Examples:



NOTE 1 The green figure is preferred for face and externally illuminated signs.



NOTE 2 The white figure is preferred for self-luminous and internally illuminated signs.



NOTE 3 See also BS 5499-4.

9.6 Fire equipment signs



Geometric shape:	A rectangle (square or oblong).
Safety colour:	Red.
Background:	Safety colour (red), covering at least 50 % of the area of the sign excluding any border.
Contrast colour:	White.
Graphical symbol:	Colour white, placed centrally on the background.
Border:	Colour white, recommended width at least 0.025 of the sign height.
Example:	



10 Supplementary signs

10.1 General

NOTE 1 All types of safety signs may be used with a supplementary text sign if considered necessary or appropriate.

NOTE 2 Safe condition signs (including escape route signs) and fire equipment signs may be used with a supplementary directional arrow sign if considered necessary or appropriate (see 10.5).

The layout of supplementary signs shall be as specified in 10.2.

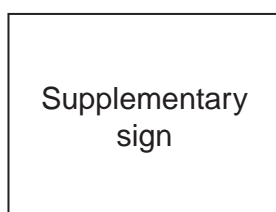
When the safety sign has a border the supplementary sign shall also have a border.

NOTE 3 The minimum recommended width of the border is indicated (but not illustrated) in 10.2.

The use of supplementary text signs shall be in accordance with 10.3.

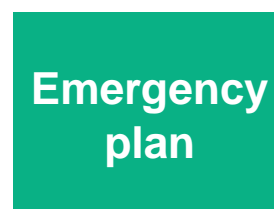
The use of supplementary directional arrow signs shall be in accordance with 10.5.

10.2 Layout of supplementary signs



Geometric shape:	A rectangle (square or oblong).
Background:	The safety colour of the associated safety sign.
Contrast colour:	The contrast colour of the associated safety sign.
Arrow or text:	The contrast colour of the associated safety sign, placed centrally on the background.
Border:	Colour white, recommended width at least 0.025 of the sign height.

Examples:



10.3 Supplementary text signs

A supplementary text sign shall only be used in association with a safety sign.

NOTE 1 The purpose of a supplementary text sign is either to:

- give the meaning of the graphical symbol on the safety sign; or
- provide more information to expand or particularize the meaning of the safety sign.

NOTE 2 Where doubt could exist as to the meaning of a graphical symbol used on a safety sign, a text sign should supplement the safety sign.

The supplementary text sign shall be located underneath or above or to the left or right of the safety sign. Supplementary text signs shall be in English.

NOTE 3 The English text may be supplemented by text in other languages when more than one language is in common use in the locality in which the sign is to be used. Where supplementary text signs in more than one language supplement a safety sign, it is essential that the text in each language conveys the same meaning.

10.4 Signal words for use on supplementary text signs used with hazard signs

In the case of a hazard sign, if it is considered necessary to alert the viewer to the relative severity of the risk, the supplementary text sign used with the hazard sign shall include a signal word.

NOTE 1 Signal words are based on an estimate of the risk and the probable consequence of exposure to the hazard.

One of three signal words shall be used, according to the meaning required, as given in Table 2. Only one signal word shall be used with each hazard sign.

When a signal word is used it shall:

- a) precede the other text in the supplementary sign;
- b) be in lower case letters with an upper case initial letter;
- c) be more prominent than the rest of the text of the supplementary sign;
- d) be legible at the same viewing distance as the hazard sign, using the distance factor $Z = 225$ (see Annex A).

NOTE 2 Care should be taken to avoid the misuse of signal words.

Table 2 — Signal words for use with hazard signs

Word	Meaning
Danger	Indicates a hazard with a high level of risk which, if not avoided, would be likely to result in death or serious injury. Its use shall be limited to the most hazardous situations.
Warning	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
Caution	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

NOTE 3 The width of the signal word should be at least the same width as the hazard sign it accompanies, as illustrated by Figure 2.

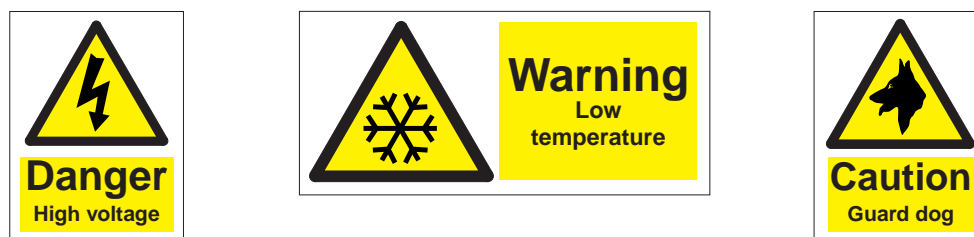


Figure 2 — Examples of the use of signal words with hazard signs

10.5 Supplementary directional arrow signs

A supplementary directional arrow sign shall only be used in association with an escape route sign or other safe condition sign or a fire equipment sign.

Only one arrow shall be used with each safety sign.

The arrow used with an escape route sign shall be as illustrated in Figure 3. Arrows associated with escape route signs shall be used as shown in BS 5499-4.

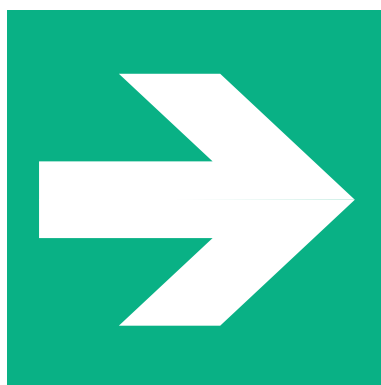


Figure 3 — Illustration of arrow to be used with an escape route sign

An arrow used with any other safe condition sign or a fire equipment sign shall be as illustrated in Figure 4.



a) Arrow for safe condition signs



b) Arrow for fire equipment signs

Figure 4 — Illustrations of arrow to be used with safe condition signs other than escape route signs, and with fire equipment signs

11 Combining signs

11.1 Combination signs

A combination sign, which is a sign comprising a safety sign and one or more supplementary signs on a single rectangular carrier, shall conform to the following requirements.

- a) Adjacent edges of the signs shall be the same size.
- b) In the case of combination signs used to convey directional messages, each combination sign shall convey only one directional message.

NOTE 1 In a combination sign internal borders may be omitted.

NOTE 2 Figure 5 shows an example of a combination sign.



Figure 5 — Example of a combination sign

11.2 Multiple signs

A multiple sign, which is a sign comprising two or more safety signs and any associated supplementary text signs on the same rectangular carrier, shall conform to the following requirements.

- a) Multiple signs shall be laid out so that each safety sign is clearly associated with the relevant supplementary text sign, if any.
- b) Adjacent edges of the signs shall be the same size.

NOTE 1 Multiple signs are used as a means of communicating complex safety messages.

NOTE 2 The order of the signs is optional.

NOTE 3 Figure 6 shows examples of three multiple signs.



Figure 6 — Examples of multiple signs

11.3 Composite signs

Each safety sign shall be used to convey only one safety message. Composite signs giving more than one safety message shall not be used. Graphical symbols shall not be combined to convey more than one safety message. For example, if a mandatory instruction to wear safety helmets and safety goggles is required, two signs shall be used. The safety helmet and safety goggles shall not be combined as one graphical symbol, see Figure 7.

WRONG:



CORRECT:

Two safety messages shall be shown by two separate signs.



Figure 7 — Use of signs to convey more than one safety message

A supplementary text sign placed with a safety sign shall not be used to convey a second safety message. For example, if a safety sign indicating a mandatory action is to be accompanied by an indication of a hazard, either two separate signs shall be used or the separate signs shall be combined as a multiple sign. Text regarding the nature of the hazard shall not be added to the mandatory action sign, see Figure 8.

WRONG:**CORRECT:**

Two safety messages shall be shown by two separate signs.



or



Figure 8 — Use of signs to convey more than one safety message with the inclusion of supplementary text signs

12 Lettering

12.1 Font

The font used shall be either:

- a) Helvetica medium, as shown in Figure 9; or
- b) another sans serif font with the following characteristics:
 - 1) widths of strokes throughout the letters constant within 10 %;
 - 2) widths of strokes at least one sixth of the letter height;
 - 3) width of the lower case letter “x” not less than 70 % of the letter height;
 - 4) not condensed, expanded, italic, script, outline or shaded;
 - 5) letters individually formed and not joined together.

Helvetica medium

Figure 9 — Helvetica medium font

12.2 Text

The initial letter of the first word shall be upper case and the remainder of the wording shall be lower case. Where a signal word is used on a supplementary text sign used with a hazard sign (see 10.4) the text after the signal word shall start on a new line; the initial letter of the first word shall be upper case and the remainder of the wording shall be lower case.

NOTE 1 The letter height used on supplementary text signs should be such that the text is legible but not so large as to dominate the graphical symbol. The letter height used on supplementary text signs should be in accordance with Table A.1.

NOTE 2 It is not necessary for the supplementary text to be legible at the maximum viewing distance of the safety sign.

13 Signboards

If a safety sign is carried on a signboard, the signboard shall be either rectangular or of the same geometrical shape as the safety sign.

NOTE 1 The signboard should preferably have a border.

NOTE 2 Table 3 gives the preferred sizes of signboards (see also illustration in Figure A.1).





Table 3 — Preferred sizes of signboards

Height of sign mm	Height of signboard mm
60	80
80	100
120	140
180	210
240	270
NOTE These sizes are given as guidance for manufacturers and are not mandatory.	

14 Safety marking

If safety marking is to be used for identification to convey a safety message it shall comprise alternating stripes of a safety colour and a contrast colour. The stripes shall be inclined at an angle of 45°, the width of the stripes shall be between 45 % and 55 % of the width of the safety marking and the colours shall be as given in Table 4.

Table 4 — Colours to be used in safety marking

Colours	Meaning
Safety colour red and contrast colour white 	To indicate prohibited areas
Safety colour blue and contrast colour white 	To indicate a mandatory instruction e.g. keep clear
Safety colour yellow and contrast colour black 	To indicate the location of hazards e.g. obstacles or changes of level
Safety colour green and contrast colour white 	To indicate safe areas or the location of emergency equipment

NOTE Safety marking may be used with or without a safety sign but safety marking should not be used as a substitute for a safety sign.

Annex A (informative)

Size of signs other than escape route signs

The recommendations given in this annex are applicable to signs other than escape route signs. Recommendations regarding sizes of escape route signs are given in BS 5499-4.

In order to decide on the minimum size of sign needed, the maximum viewing distance at which the sign is required to be conspicuous and intelligible has to be determined. The viewing distance at which a sign of a particular size is conspicuous and legible depends on the illumination of the sign. The sign height h , in millimetres (mm), needed for a particular viewing distance can be calculated from the following equation:

$$h = D/Z \quad (\text{A.1})$$

where

- D is the required viewing distance in millimetres (mm);
- Z is a distance factor to take account of the illumination of the sign and the amount of detail it contains.

Table A.1 gives sign heights (as defined in 3.7 and illustrated in Figure A.1) calculated for various maximum viewing distances in adequate (50 lux) vertical illuminance at the sign. These are based on a value of $Z = 120$ which takes account of the level of illumination and the need to comprehend a graphical symbol where the size of the critical detail is not less than 1/19th of the sign height. For text only signs, a value of $Z = 225$ should be used.

If a sign is brightly lit or is internally illuminated at all material times a smaller size than that given in Table A.1 would be acceptable.

Conversely if the sign is poorly lit or has complicated detail a larger sign would be needed.

Table A.1 — Minimum sign heights recommended for different maximum viewing distances

Maximum viewing distance ^a m	Minimum sign height ^b mm	Recommended letter height ^c in supplementary text sign mm
7	60	5
9	80	7
14	120	10
21	180	15
28	240	20

^a Calculated using equation A.1 with $Z = 120$ and rounded down to the nearest whole metre.
^b For intermediate viewing distances the next largest available sign height should be used.
^c See 3.6.

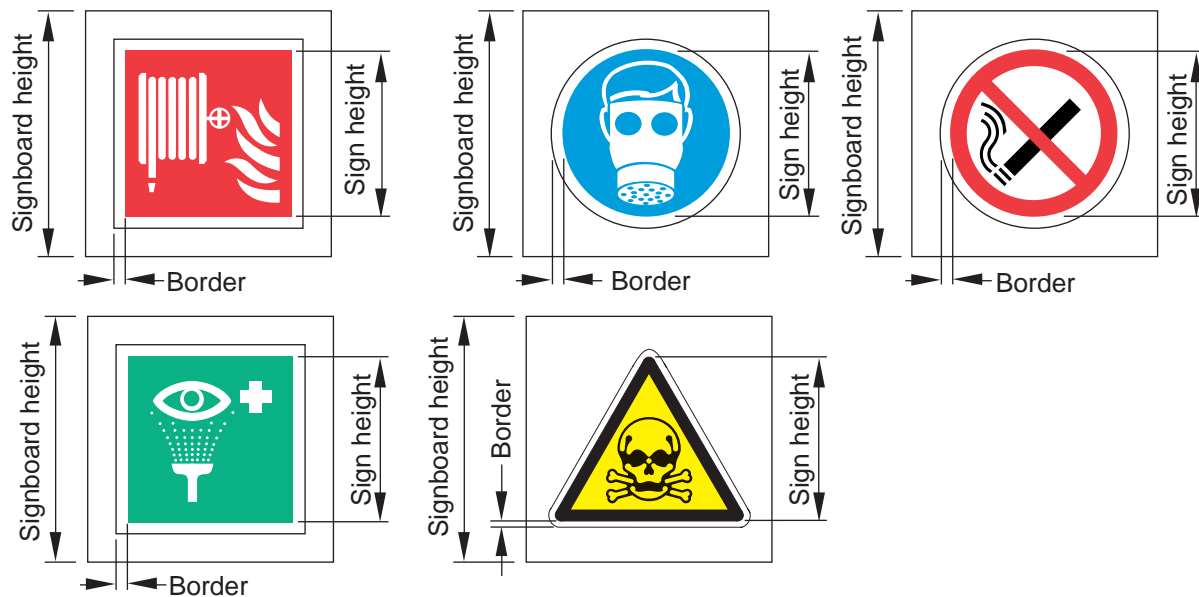


Figure A.1 — Illustration of sign heights and signboard heights

Bibliography

Standards publications

ISO 3864:1984, *Safety colours and safety signs*.

Other publications

[1] GREAT BRITAIN. Health and Safety (Safety Signs and Signals) Regulations 1996 (SI No. 1996/341). London, The Stationery Office.

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