



UNIT-15 Safety Signs and Signals

Learning Outcomes

By the end of this unit the learner will be able to:

Unit 15

Safety Signs and Signals

What do the Regulations require?

1. The Regulations require employers to ensure that safety signs are provided (or are in place) and maintained in circumstances where there is a significant risk to health and safety that has not been removed or controlled by other methods. This is only appropriate where use of a sign can further reduce the risk. The other methods may include engineering controls or safe systems of work and may be required under other relevant legislation. Safety signs are not a substitute for those other methods of control.
2. In determining when and where to use safety signs, employers must take into account the results of the risk assessment made under the Management of Health and Safety at Work Regulations 1999 (the Management Regulations).
3. This assessment should identify hazards, the risks associated with those hazards, and the control measures to be taken. When those control measures have been put in place there may be a significant 'residual' risk such that employees must be warned of any further measures necessary. Safety signs should be used if they will help to further reduce this residual risk. If the risk is not significant there may be no need to provide a sign.
These Regulations make it clear that safety signs are not a substitute for other means of controlling risks to employees; safety signs are to warn of any remaining significant risk or to instruct employees of the measures they should take in relation to these risks. For example, in some workplaces there may be a risk of foot injury despite taking measures to control the risk and it may be appropriate to remind staff using the sign indicating that wearing foot protection is mandatory.
4. Although these Regulations do not require safety signs to be used where there is no significant risk to health and safety, certain fire safety signs may have to be displayed under separate legal provisions. If you have any doubts check this with your enforcing authority for fire safety.

What about information, instruction and training?

5. It is important that employers ensure that their employees are aware of and understand the meaning of safety signs and signals either seen or heard during their work, including providing training where necessary. Although most safety signs are self-explanatory, employees (particularly new, young or inexperienced ones) may be unfamiliar with the meaning of some of the less commonly used signs. It is therefore important that the meaning of any sign is clearly explained, and that employees are aware of the consequences of not following the warning or instruction given by the sign. Text supplementing the sign may have a useful role here.

What is a safety sign?

6. The Regulations cover a variety of methods of communicating health and safety information. The terms used in the Regulations mean the following:
 - a. **safety and/or health sign** – a sign providing information or instruction about safety or health at work by means of a signboard, a colour, an illuminated sign or acoustic signal, a verbal communication or hand signal;
 - b. **signboard** – a sign which provides information or instructions by a combination of shape, colour and a symbol or pictogram which is rendered visible by lighting of sufficient intensity. In practice, many signboards may be accompanied by supplementary text, eg 'Fire exit', alongside the symbol of a moving person. Signboards can be of the following types:



- (i) **prohibition sign** – a sign prohibiting behaviour likely to increase or cause danger (eg ‘no access for unauthorised persons’);



- (ii) **warning sign** – a sign giving warning of a hazard or danger (eg ‘danger: electricity’);



- (iii) **mandatory sign** – a sign prescribing specific behaviour (eg ‘eye protection must be worn’);



- (iv) **emergency escape or first-aid sign** – a sign giving information on emergency exits, first aid, or rescue facilities (eg ‘emergency exit/escape route’);

- c. **safety colour** – a colour to which a specific meaning is assigned (eg yellow means ‘be careful’ or ‘take precautions’);
- d. **symbol or pictogram** – these appear in Schedule 1, although some variation in detail is acceptable provided the meaning is the same (examples of variations are included in BS EN ISO 7010). They are for use on a signboard or illuminated sign (eg the trefoil ionising radiation warning sign);
- e. **illuminated sign** – a sign made of transparent or translucent materials which is illuminated from the inside or the rear to give the appearance of a luminous surface (eg emergency exit signs);
- f. **acoustic signal** – a sound signal which is transmitted without the use of a human or artificial voice (eg a fire alarm);

- g. **verbal communication** – a predetermined spoken message communicated by a human or artificial voice;
- h. **hand signal** – a movement or position of the arms or hands giving a recognised signal and guiding people who are carrying out manoeuvres which are a hazard or danger to people;
- i. **fire safety sign**

Where and to whom do these Regulations apply?

Employers/employees

- 7. The Regulations place duties on employers in respect of risks to their employees with the principal duty being to ensure that safety signs are in place.
- 8. In some industries, for example offshore, many employees are employed by contractors who are not in control of the places in which their employees work. In practice, safety signs will normally be provided by the employer or person in charge of the workplace, usually the owner or operator of the installation.
- 9. The Management Regulations are relevant in these cases, particularly regulation
- 10. This requires the 'host' employer (or self-employed person) to give information on risks and the associated precautions arising from that employer's activities to the employer of persons at work there. In these cases, the employer or contractor will usually be able to meet their obligations by relying on the arrangements made by the host (ie the owner or operator).
- 11. Contractors who are also employers will want to check that their employees are familiar with the meaning of safety signs likely to be encountered during the course of their work. They may also wish to make checks – where there is a 'host' employer – that appropriate signs are in place.

Application offshore

- 12. The Regulations apply to work activities carried out in British territorial waters and in designated areas of the UK Continental Shelf. The activities are those listed in the Health and Safety at Work etc Act 1974 (Application outside Great Britain) Order 2013. This includes offshore installations, wells, pipeline works and activities connected with installations and wells such as construction, loading and unloading of supply vessels, and diving operations offshore. Note that for offshore installations the emergency warning arrangements, including the tones of acoustic signals and colours of illuminated signs, are covered in the Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995.

Fire safety

- 13. The way these Regulations apply with respect to fire safety signs (eg fire exit signs and fire alarms) is described in Part 3. Further provisions for specific fire safety signs are required by other provisions such as Building Regulations and the Regulatory Reform (Fire Safety) Order 2005.

Circumstances where these Regulations do not apply

Non-employees

14. These Regulations do not place any duty on employers to provide signs to warn other people (eg visitors, neighbours) of risks to their health and safety. They do not apply to the self-employed. However, in both these cases, employers and certain self-employed people will still have duties under section 3 of the Health and Safety at Work etc Act 1974 (the HSW Act), and regulation 12 of the Management Regulations regarding the health and safety of non-employees, and may find the safety signs described here helpful in meeting their general duties to ensure, so far as is reasonably practicable, the health and safety of others not in their employ but who may be affected by their work activity.

Supply of articles and dangerous substances

15. The Regulations have no requirements regarding the supply of either articles or dangerous substances.
16. Most machinery will be subject to the Supply of Machinery (Safety) Regulations 2008 which also contain marking requirements (supporting European standards provide ways of meeting these requirements).

Internal works traffic

17. The signs specified in Schedule 1 of the Regulations are not intended for use in directing traffic on public roads, waterways etc. However, the Regulations require the use of road traffic signs, as prescribed in the Road Traffic Regulation Act 1984 (examples of which are shown in the Department for Transport publications *Know your traffic signs*⁴ and *Highway code*⁵) to regulate road traffic within workplaces where necessary.

Application to merchant shipping

18. Seagoing ships are subject to separate merchant shipping legislation. Regulation 3(1)(d) of the Regulations disapplies them from ships in respect of the normal shipboard activities of a ship's crew under the direction of the master. It does not, however, disapply them in respect of other work activities. For example, where a shore-based contractor goes on board to carry out work on the ship, that person's activities will be subject to the Regulations within territorial waters. In these cases, the contractor should make checks to ensure, for example, that appropriate signs are in place. This partial exemption applies to seagoing ships only. The Regulations apply in full to ships operating on inland waters.

Using safety signs effectively

19. This part aims to help employers comply with their duties to select, make effective use of, and maintain safety signs. The technical requirements of the Regulations relating to the various

types of safety signs are explained.

General rules on use

20. The signs shown in Schedule 1 of the Regulations are to be used when it is necessary to convey the relevant message or information specified in the Regulations.
21. If the hearing or sight of any employee is impaired, for example by wearing personal protective equipment, additional measures should be taken to ensure that employees can see or hear the warning sign or signal, for example by increasing the brilliance or volume.
22. In some cases, more than one type of safety sign may be necessary, for example an illuminated warning sign indicating a specific risk combined with an acoustic alarm meaning 'general danger' to alert people, or hand signals combined with verbal instructions.

Maintenance

23. All safety signs must be properly maintained so that they are capable of performing the function for which they are intended. This can range from the routine cleaning of signboards to regular checks of illuminated signs and testing of acoustic signals to see that they work properly.
24. All safety signs should maintain their intrinsic features under power failure – either from emergency lighting or phosphorescent material – unless the hazard is itself eliminated by the power failure.

Safety colours

25. In these Regulations signs incorporating certain colours have specific meanings. Table 1 identifies the colours for safety signs generally (for fire safety signs, see Part 3).

Table 1 Safety sign colours (excluding fire safety signs)

Colour	Meaning or purpose	Instruction and information
Red	Prohibition sign Danger alarm	Dangerous behaviour; stop; shutdown; emergency cut-out devices; evacuate
Yellow Amber	Warning sign	Be careful; take precautions; examine
Blue	Mandatory sign	Specific behaviour or action, eg wear protective equipment
Green	Emergency escape First-aid sign No danger	Doors; exits; escape routes; equipment and facilities Return to normal

Using signboards

26. Where signboards are used in a workplace, ensure that they are sufficiently large and clear to be easily seen and understood. For example, when describing available equipment the safety sign

should show clearly where that equipment is. All safety signs require adequate illumination and size should be appropriate for intended viewing distance; information can be found in BS 5499-4:2013 and

BS 5499-10:2014. Signboards should also be durable, securely fastened and properly maintained (eg washed or resurfaced) to ensure they remain visible. 38 Permanent signboards are necessary, except in cases where the workplace or hazard is temporary. Even in these cases safety signs must still be consistent with the requirements of the Regulations. For example, use of a portable warning sign by

cleaners may be necessary if a hazard such as a slippery floor exists for a short period.

27. Take care to avoid using too many signboards in close proximity.

Signboards are only effective if they can be seen and understood. If too many signs are placed together there is a danger of confusion or of important information being overlooked.

28. If circumstances change, making a particular signboard unnecessary (ie if the hazard no longer exists), it is important to ensure its removal so that misleading information is not displayed.

Pictograms

29. Small differences from the pictograms or symbols shown in Schedule 1 of the Regulations are acceptable, providing they do not affect or confuse the message that the sign conveys and as long as the resultant sign still meets the relevant identified 'intrinsic features'. For example, the pictograms within BS EN ISO 7010 can be used to comply with the Regulations.

30. If Schedule 1 of the Regulations does not contain a suitable signboard then it is acceptable to design your own, providing it conforms to the general principles described in the Regulations. However, where the warning sign is to be used on a room storing material or containers used at work for chemical substances or mixtures (classified as hazardous according to the criteria for any physical or health hazard class) subject to the CLP Regulation, you must use one of the signs in paragraph 3.2 of Part II, Schedule 1 or, if there is no equivalent warning sign, the relevant hazard pictogram, as laid down in Annex V to the CLP Regulation, must be used.

31. If a pictogram needs to be designed it should be as simple as possible, containing only necessary detail. Guidance can be found in BS ISO 3864-1:2011 and BS ISO 3864-4:2011, where design principles that can be followed are described. The principles will ensure the pictogram is understood for the application and will meet the geometric shape and colour required by the Regulations.

32. Pictograms used in signs should be as simple as possible and contain only necessary detail. BS EN ISO 7010 contains examples of varied signs which may be useful. As an example, the following emergency escape route pictograms are from BS EN ISO 7010.



33. 45 It may sometimes be useful to supplement a safety sign with text to aid understanding. This may be important, for example when introducing a new or unfamiliar sign, or using a general danger or warning sign. In these cases, the meaning is reinforced if the background colour of the supplementary sign is the same as the colour used on the safety sign it is supplementing.
34. Any supplementary sign or text used with a particular safety sign must be chosen to reflect the same safety sign category. So, for example, if a mandatory sign is used, ensure that accompanying text (if any) describes the mandatory nature (using the word 'must' rather than 'should' or 'may') of the action to be taken, such as 'Face protection **must** be worn'.

Signboards appearing in Schedule 1

35. The intrinsic features of the four types of signboards referred to in Table 1, and also fire safety signs, are described below. Examples of each type of sign are also included. You may also use variations of these signs as long as they retain the 'intrinsic features' described in each section or use the signs in BS EN ISO 7010, which has been developed and provides more variations, particularly of the fire exit/ escape signs.

Prohibitory signs

Intrinsic features:

- a) round shape;
- b) black pictogram on white background, red edging and diagonal line (the red part to take up at least 35% of the area of the sign)



No access for unauthorised persons



Smoking and naked flames forbidden



No smoking



No access for pedestrians



Not drinkable



Do not extinguish with water



No access for industrial vehicles



Do not touch

Warning signs – General

36. The 'Harmful or irritant material' warning sign (black cross on a yellow triangle warning sign) which previously appeared in the Regulations was removed by regulation 3(4)(c) of the CLP (Amendment) Regulations. Where employers would previously have used this they should now use the most relevant warning sign from the others available. Where the warning sign does not relate to the CLP Regulation new designs of pictograms may be developed as long as they are clear and meet these intrinsic features.

Intrinsic features:

- a) triangular shape;
- b) black pictogram on a yellow background with black edging (the yellow part to take up at least 50% of the area of the sign).



Flammable material or high temperature*



Explosive material



Toxic material



Corrosive material



Radioactive material



Overhead load



Industrial vehicles



Danger: electricity



General danger



Laser beam



Oxidant material



Non-ionising radiation



Strong magnetic field



Obstacles



Drop



Biological risk†



Low temperature

This sign has been deleted from the list by the UK CLP Regulations and should not be used

Harmful or irritant material

* In the absence of a specific sign for high temperature.

† Pictogram laid down in Council Directive 90/679/EEC of 26 November 1990 on the protection of workers from the risks related to exposure to biological agents at work (Seventh individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) OJ No L374, 31.12.1990, p

Mandatory signs

Intrinsic features:

- a) round shape;
- b) White pictogram on a blue background (the blue part to take up at least 50% of the area of the sign).



**Eye protection
must be worn**



**Safety helmet
must be worn**



**Ear protection
must be worn**



**Respiratory equipment
must be worn**



**Safety boots
must be worn**



**Safety gloves
must be worn**



**Safety harness
must be worn**



**Face protection
must be worn**



**Safety overalls
must be worn**



**Pedestrians must
use this route**

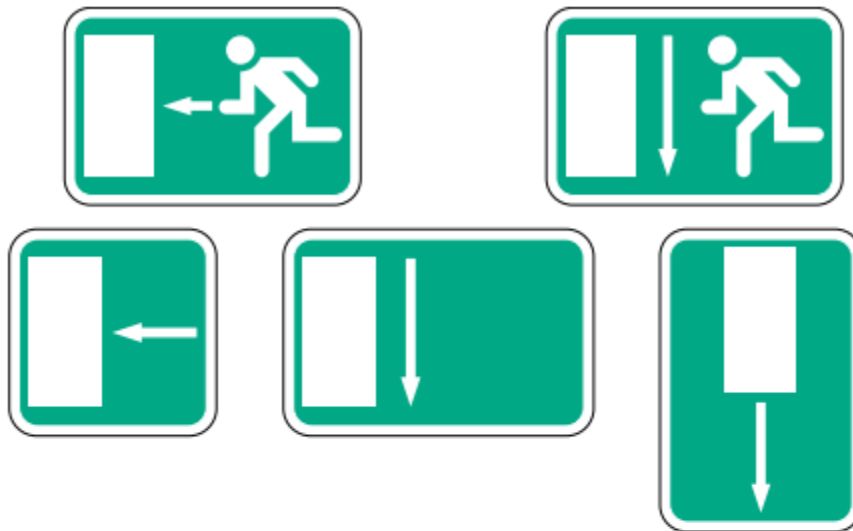


**General mandatory sign
(to be accompanied
where necessary by
another sign)**

Emergency escape or first-aid signs

Intrinsic features:

- a) rectangular or square shape;
- b) white pictogram on a green background (the green part to take up at least 50% of the area of the sign)

Emergency exit/escape route signs**Examples from BS EN ISO 7010****Supplementary 'This way' signs for emergency exits/escape routes**

37. For emergency exit signs for safe exit routes (*Safety signs. Code of practice for escape route signing* BS 5499-4:2013 applies) care should be taken that 'This way' arrows for emergency equipment location (red background direction arrows) are not in contradiction with escape direction



First-aid signs**First-aid poster****Stretcher****Eyewash****Safety shower****Emergency telephone
for first aid or escape****Firefighting signs**

Intrinsic features:

- a) rectangular or square shape;
- b) white pictogram on a red background (the red part to take up at least 50% of the area of the sign)

**Fire hose****Fire extinguisher****Ladder****Emergency fire
telephone****Examples from BS EN ISO 7010****Fire extinguisher****Fire alarm**

Supplementary 'This way' signs for firefighting equipment

38. Care should be taken that the use of arrows to indicate the direction to emergency equipment cannot be confused with direction of escape and should not be in contradiction. If there is a risk that confusion may arise which could result in those evacuating a building being misdirected, you should consider whether these signs should be used.



Warning signs – Chemical labelling and packaging

39. These labels do not appear in Schedule 1 of the Regulations but in Annex V to the CLP Regulation.
40. There are no intrinsic features laid down for the labels under the CLP Regulation. You must use the most appropriate sign of those available and cannot create variations.
41. These labels do not form part of the Regulations but have an impact on signage used with hazardous substances and mixtures which have resulted in changes to those Regulations.

GHS hazard pictograms



Gas under pressure



Explosive



Oxidising



Flammable



Corrosive



Health hazard



Acute toxicity



Serious health hazard



Hazardous to the environment

Using signs on containers and pipes

42. Containers, tanks and vessels used in the workplace for hazardous chemical substances or mixtures, and the visible pipes in the workplace containing or transporting hazardous substances and mixtures, should generally be labelled with the relevant pictograms in accordance with the CLP Regulation.
43. There are, however, a number of exceptions:
 - a) it may not be necessary to affix signs to pipes where the pipe is short and connected to a container which is clearly signed, such as a welding set;
 - b) Containers need not be labelled where the contents may change regularly (for example chemical process vessels and pipework which are not dedicated to one substance). In these cases, employers must have other arrangements for ensuring that employees know the hazardous properties of the contents of the container; for example, employers could provide suitable process instruction sheets or training for employees.
44. The CLP (Amendment) Regulations amend the provisions relating to containers and pipes. Where these containers or pipes are not excepted and are used for, contain or are involved in the transporting of hazardous chemical substances and mixtures, they must be labelled in accordance with the CLP Regulation, using the relevant hazard pictogram from Annex V to the CLP Regulation.
45. However, the CLP (Amendment) Regulations also permit use of the hazard warning symbols specified in other systems so labels can be:
 - a) replaced by warning signs from Part II of Schedule 1 of the Regulations, provided they contain the same pictograms or symbols. If there is no equivalent in Part II, the relevant hazard pictogram from Annex V of the CLP Regulation must be used;
 - b) supplemented by additional information, eg about the risk or the hazardous chemical;
 - c) in the case of containers transported at the place of work, supplemented or replaced by EU applicable signs. Confusion is unlikely to arise since similar pictograms are used in the different types of signs. What may differ are the shape and the colour of the signs.
46. Where signs or labels are used they may be supplemented by additional information, such as the name of the hazardous substance or mixture and details of the hazard.
47. The signs or labels must be mounted on the sides that are visible and to be durable. Labels can be in self-adhesive or painted form.
48. When deciding where signs or labels should be placed on pipework containing hazardous substances it is important to avoid causing confusion, so do not use too many signs.
49. Signs or labels will be most useful at points where employees are likely to be exposed to the contents of the pipework, for example sampling or filling points, drain valves, and flanged joints which are likely to need periodic breaking. Where there are long pipe runs on which points of potential exposure are infrequent, labels or signs may also be displayed at intermediate points. Note that these Regulations do not cover the colour coding of pipes. However, BS 1710:2014 *Specification for identification of pipelines and services* may be of further interest since it provides guidance on the use of different colours and safety signs to identify the contents of

pipework and the associated risk.

Using signs to mark areas, rooms and enclosures

50. It is important to mark those areas, rooms or enclosures used for the storage of significant quantities of hazardous substances or mixtures by a suitable warning sign, unless the warning labels on individual containers are clearly visible from outside or nearby. Note that marking requirements for explosives stores are dealt with in the Manufacture and Storage of Explosives Regulations 2005.
51. Where stores are being used for hazardous chemicals or mixtures they should be indicated by the relevant warning sign taken from paragraph 3.2 of Part II of Schedule 1 of the Regulations (the yellow triangle black pictogram warning signs). If there is no equivalent warning sign in these provisions then the relevant hazard pictogram from Annex V to the CLP Regulation must be used. Stores containing a number of different substances may be indicated by the 'general danger' warning sign.
52. The signs or labels referred to above must be positioned, as appropriate, near storage areas or on doors leading into storage rooms.

Dangerous Substances (Notification and Marking of Sites) Regulations 1990 (the NMS Regulations)

53. The provisions in the Regulations for marking stores containing dangerous substances overlap with the requirements of the NMS Regulations. Site entrances to most stores containing 25 tonnes or more of dangerous substances must be marked under the NMS Regulations. The purpose of the marking is to provide information to the fire and emergency services attending an incident at the site. However, the primary function of the Regulations is to provide information to employees. The signs to be used under both sets of Regulations are very similar and signs complying with the NMS Regulations, on sites where they apply, will in general also satisfy the marking requirements of the Regulations. The NMS Regulations do not apply offshore.

Using signs to mark obstacles, dangerous locations and traffic routes

54. The Work at Height Regulations 2005 are concerned with preventing injuries caused by falls from heights or from being struck by falling objects. Regulation 13(5) and (6) of the Workplace (Health, Safety and Welfare) Regulations 1992 (the Workplace Regulations) includes requirements to prevent injuries caused by falling into, for example, a tank or a pit. In many cases, fall protection measures such as secure barriers are required to prevent falls. However, where the risk is low or where it is impracticable to safeguard by other means, marking the dangerous location in accordance with Part V of Schedule 1 will be necessary – for example, highlighting the edge of a raised platform or area where objects may fall using markings consisting of yellow and black (or red and white) stripes, as shown overleaf:



Signs for marking obstacles and dangerous locations

55. The stripes are at an angle of 45° and more or less of equal size.
56. Regulation 17 of the Workplace Regulations includes requirements for indicating traffic routes within workplaces where necessary for reasons of health and safety. Part V of Schedule 1 of the Regulations requires the markings to take the form of continuous lines, preferably yellow or white, taking into account the colour of the ground.
57. Traffic routes in built-up areas outdoors do not have to be marked if suitable pavements or barriers are already provided.
58. The Regulations do not require outdoor traffic routes to be marked in areas that are not built-up. This is because risks to the health and safety of employees are likely to be low. However, there may be cases requiring either use of clearly defined traffic routes or safe systems of work (possibly including the use of banksmen to direct traffic) to help meet general duties under the HSW Act, eg when vehicles are operating (particularly during reversing) close to employees working on foot.
59. In some cases it may not be possible to mark traffic routes clearly by means of painted lines, for example in underground coal mines. In these cases other measures may be necessary to ensure that pedestrians are not put at risk by vehicles.

Using acoustic signals and illuminated signs

General principles

60. Regulation 24 of the Provision and Use of Work Equipment Regulations 1998 includes requirements for work equipment to incorporate any warning or warning devices necessary for reasons of health and safety. This could include the use of acoustic signals and illuminated signs instead of conventional signboards. The signals or signs used must meet the minimum requirements described in the relevant part of Schedule 1 of these Regulations (Parts VI or VII). The signals also must be suitable for the working environment. For example, in an explosive atmosphere ensure they do not pose a risk of ignition.
61. Guidance on signals forming part of fire warning systems (eg fire alarms) is covered in Part 3.
62. When acoustic signals or illuminated signs have to be activated (either automatically or in line with other safety arrangements) it is important they remain so for as long as the danger exists or until receipt of any planned acknowledgement.
63. Acoustic signals and illuminated signs must be checked at regular intervals to ensure that they are functioning correctly. The more hostile the environment, the more frequently they should be checked.

Illuminated signs

64. The sign has to be bright enough to be seen, without causing glare.
65. Care should be taken to ensure that a number of illuminated signs are not used together if this could give rise to confusion. Confusion could also arise if an illuminated sign is placed close to any other similar light source.
66. The luminous area of the sign may be of a single safety colour or contain a pictogram on a specified background consistent with the requirements of Schedule 1 of the Regulations.
67. If an illuminated sign can be either 'on' continuously or operate intermittently (ie flash on and off), use the flashing sign to indicate a higher level of danger or a more urgent need for intervention or action.
68. The duration and frequency of flashes for an intermittent illuminated sign should be such as to ensure the message is properly understood, and avoid any confusion with other illuminated signs, including continuous illuminated signs.
69. If a flashing sign is used instead of, or together with, an acoustic signal, it is important to synchronise the two. This means that the duration and frequency of flashes should be in line with both the pulse length and interval for an acoustic signal. The choice of equipment and the way it operates, of course, must take account of other risks. For example, with fast flicker rates epilepsy could be triggered in some people or, in other cases, some types of electronic pulse could be a danger in respect of stores containing certain explosives.
70. Where flashing signs are used to warn of imminent danger, it is particularly important to ensure that measures are in place to either detect failure of the sign quickly or to prevent its failure (eg by fitting duplicate bulbs etc).

Acoustic signals

71. So that they can be heard, acoustic signals should be set at a level which is considerably higher in terms of frequency than the ambient noise, for example 10 dB above the level of ambient noise at that frequency. However, make sure the level is neither excessive nor painful. It is also important for signals to be easily recognisable, particularly in terms of pulse length and the interval between pulses or groups of pulses.
72. Ensure that acoustic signals are not used more than one at a time.
73. If a device can emit an acoustic signal at variable frequencies (this includes an intermittent signal operating on a discrete frequency) or constant frequencies, use the variable frequency set at 10 dB above the ambient level at the appropriate frequency to indicate a higher level of danger or a more urgent need for intervention or action.
74. Acoustic signals for fire alarms are covered in Part 3.

Using hand signals to direct hazardous operations

75. Hand signals can be used to direct hazardous operations such as crane or vehicle manoeuvres. Ensure that the signals are precise, simple and easy to make and to understand.

76. Check also that the signaller is competent to make hand signals and is trained in their correct use.

Specific rules governing use

77. The signaller must be able to see all the manoeuvres being made by the people receiving the signals without being endangered by them.
78. During manoeuvres, make sure that the duties of the signaller are confined to directing manoeuvres and to other specific measures aimed at the safety of nearby workers (eg keeping people back a safe distance).
79. In some cases, the precautions described above may have to be supplemented, for example with further signallers to help co-ordinate the action. In such cases, make sure that the person receiving the signals takes them from one signaller only unless specific arrangements have been made.
80. When an operator is unable to continue the manoeuvre safely, the operation must be discontinued until further instructions are received from the signaller.
81. Where weather conditions may obscure viewing or result in poor light, the use of high-visibility clothing may be required to ensure the safety of the signaller under the Personal Protective Equipment at Work Regulations 1992.8 Such clothing provides an additional benefit as it may also help the operator see the signaller. The use of other items such as signalling bats and reflective arm bands may also help the operator see and understand the signals.

Codes of hand signals

82. Where hand signals are used, ensure they are consistent with the code of signals shown in Schedule 1 of the Regulations or meet either BS 6736:1986 *Code of practice for hand signalling for use in agricultural operations* or BS 7121-1:2006 *Code of practice for safe use of cranes* which are referred to in Schedule 2 of the Regulations.
83. There may be situations where these codes of hand signals are insufficient to meet communication needs. In these cases, additional signals can be used based on existing signalling practice.
84. Irrespective of the code of hand signals chosen, it is important that they are used consistently throughout a firm or workplace. If employees are unfamiliar with the code in use then appropriate training is necessary. Particular care is needed with new employees who have previously used different codes of hand signals. They may not fully understand the signals in use and may therefore require retraining.

Using verbal signals to direct hazardous operations

85. Verbal signals can also be used to direct hazardous operations. Such signals can be spoken messages given either by human or artificial voice, and either given directly or recorded. Spoken messages must be clear, concise and understood by the listener.
86. The verbal signals described here also represent a suitable means to help comply with relevant parts of section 2 of the HSW Act and regulations 10 and 13 of the Management Regulations (ie

those parts which require employees to be provided with adequate information, instruction and training to ensure their health and safety when directing hazardous operations).

Specific rules governing use

87. The people involved should have a good knowledge of the language used so that they are able to pronounce and understand the spoken message correctly and react accordingly.
88. If verbal communication is used instead of hand signals, use the code words in Table 2 and ensure that if the two are used together they are co-ordinated.

Table 2 Code words for verbal communication

Code word	Meaning
Start	Start an operation
Stop	Interrupt or end an operation
End	Stop an operation
Raise	Raise a load
Lower	Lower a load
Forwards	Move forwards
Backwards	Move backwards
Right	Move to signaller's right
Left	Move to signaller's left
Danger	Emergency stop
Quickly	Speed up a movement

89. Whatever system of code words is being used it is important that it can be properly understood. Where English is not the first language of most staff the codes do not necessarily have to be in English. However, there must be safeguards to ensure others affected by the operation can be easily made aware of any danger.

What is a fire safety sign?

90. A fire safety sign is defined in regulation 2(1) as a sign (including an illuminated sign or an acoustic signal) which:
- provides information on escape routes and emergency exits in case of fire;
 - provides information on the identification or location of firefighting equipment;
 - gives warning in case of fire.

When are fire safety signs required?

91. Duties on employers to provide these signs will mostly arise, for England and Wales, from the Regulatory Reform (Fire Safety) Order 2005, and, for Scotland, the Fire (Scotland) Act 2005 and other fire legislation. The effect here of the Regulations will, in most cases, be to describe the types of sign you may use. Often the enforcing authority for fire safety will determine where to

locate the signs. In other cases, you should provide signs depending on the outcome of your assessment of risks to health and safety. If changes to existing signs are proposed, check first with your enforcing authority.

Safety colours

92. Information on colours for safety signs, but for fire safety signs in particular, is given in Table 3.

Table 3 Colours for fire safety signs

Colour	Meaning or purpose	Instruction and information
Red	Firefighting equipment	Identification and location
Green	Emergency escape	Doors, exits, escape routes

What about signs pre-dating these Regulations?

93. If there are fire safety signs still in use which contain symbols or pictograms which conform to the requirements of BS 5499 they will meet the requirements of these Regulations, provided they continue to fulfil their purpose effectively. However, BS EN ISO 7010 provides examples for graphical symbols and

BS 5499-4:2013 and BS 5499-10:2014 give information for application, size and siting.

94. A fire safety sign which bears only text (ie typically 'Fire Exit') will not be acceptable, although text can be used in combination with pictograms, perhaps in order to comply with the requirements of a fire certificate.

What do the signs look like?

95. The signs for emergency escape routes and firefighting equipment are contained in the Regulations in Schedule 1, Part II, paragraphs 3.4 and 3.5. As for safety signs generally, the symbols used may be slightly different from those shown provided the meaning is clear. These may be supplemented by directional arrows which are used with the pictogram to form the sign. Note, however, that a directional arrow is not acceptable on its own (refer to BS 5499-10:2014 for examples of effective practice).

Maintenance

96. All signs should be properly maintained. It is also important that signs are fixed securely and are sufficiently large to be clearly seen.

Using signs in buildings and structures

97. People usually leave premises by the same way that they enter or by routes which are familiar to them. Alternative exits (ie all emergency exits and any exits not in normal use) should be clearly indicated so that people know there are additional ways to leave. In addition, the provision of well-signposted exits in full view will give a feeling of security in an emergency.
98. Make sure the fire exit sign is displayed immediately above the exit opening or, if this is not possible, choose a position where the sign can be clearly seen and is least likely to be obstructed or obscured by smoke.
99. Where an exit cannot be seen or where a person escaping may be in doubt about the location of an exit (eg in warehouses where goods for transit and other obstructions may prevent a clear view of the exit doors), fire exit signs, including a directional arrow, are appropriate at suitable points along the escape route.
100. In buildings with multiple occupants a common approach to the provision of fire safety signs is sensible so that people are not confused about the exit routes from the building. In such cases, it is normally the owner of the building who has responsibility for displaying signs in common areas (eg stairways) and if there is any doubt check this with your enforcing authority for fire safety. Individual occupiers are normally responsible for the signs necessary within their part of the building.
101. Your enforcing authority for fire safety may, in addition to the fire safety signs referred to in these Regulations, require provision of certain supplementary signs to aid the effective and efficient use of the escape routes provided. For instance, where there is a danger that a door which is a fire exit may become obstructed (because its importance is not appreciated) such as a final exit door opening into a car park or storage yard, or a seldom used intercommunicating or bypass door between rooms, a conspicuous 'Fire Escape – Keep Clear' sign should be shown on the appropriate faces of the door. Check with your enforcing authority if you have any doubts.
102. If the level of natural light is poor, then adequate illumination (which includes emergency lighting) will be required. Signs incorporating photoluminescent materials may also have a role in poor light conditions.

Marking and identifying firefighting equipment

103. Table 3 highlights the requirement for use of the colour red to indicate the location of firefighting equipment. The location will normally be indicated through use of a signboard, or by colouring the background behind the equipment red. Where the equipment itself is predominantly red there may be no need to colour the background red as well. The signboard must be sufficiently large to allow the location of the firefighting equipment to be easily determined. Further information on the intrinsic features of signboards and what they look like is given above. These Regulations do not cover the colour coding of equipment such as fire extinguishers, although advice on this can be found in BS 7863:2009 *Recommendations for colour coding to indicate the extinguishing media contained in portable fire extinguishers*.

104. If for any reason firefighting equipment is placed in a position hidden from direct view, indicate its location using appropriate directional arrows, together with the relevant firefighting equipment sign. Care should be taken to avoid confusion by ensuring these do not contradict the escape route direction.

Enforcing authority for fire safety

105. Further advice on the application of these Regulations to fire safety signs can be obtained:
- from your enforcing authority for fire safety; that is, from fire officers;
 - from environmental health officers or building control officers of local authorities;
 - in cases where the Regulatory Reform (Fire Safety) Order 2005 applies,* from HSE inspectors.

* ie premises for which a licence or permit is required under the Nuclear Installations Act 1965; a ship in the course of construction, reconstruction or conversion or repair by persons who include persons other than the Master and crew of the ship and, where certain conditions apply, construction sites. fire-warning system (eg conforming to BS 5839-1:2013 *Fire detection and fire alarm systems for buildings*).

106. The Regulations permit incorporation of a public address system with the warning signal, which may also be accompanied by an illuminated sign (eg a flashing light).
107. Experience has shown that good information is a particularly effective aid to safe and speedy evacuation. Therefore, in workplaces where members of the public are present, it can be a significant help if the warning signal for evacuation is supplemented by use of the public address system to give clear and concise instructions. To be effective, messages should normally be prepared in advance and, in some cases, in appropriate languages. The fire warning system should activate this message. Ideally, this will cancel any amplified music, soundtrack or other announcements. Similarly, if a public address system is used to transmit the alarm signal, or can be incorporated with the signal, it must take priority and override other facilities of the system. Further information is given in BS 5839-1:2013, BS 5839-8:2013 and in BS EN 60849:1998, IEC 60849:1998 *Sound systems for emergency purposes*.
108. Ensure that a sounder, or loudspeaker of a public address system, is not located in such a position that communication with the Fire and Rescue Service is hindered, eg too near a reception area from which the emergency call may be made.
109. Many fire warning systems are single stage, ie when the alarm sounds simultaneous evacuation takes place. However, some large workplaces may have a two-stage warning system. In these systems, a continuous evacuation signal is given in certain parts of the workplace, ie those near the origin of the fire, while an intermittent or alert signal meaning 'stand-by' is received elsewhere. These systems allow a progressive or phased evacuation of the workplace so that congestion along emergency escape routes is minimised.
110. If a staged fire warning system is being considered it is advisable to check with your enforcing authority for fire safety before installation.

111. Your enforcing authority for fire safety may specify certain maintenance requirements for your fire warning system but, in general, all fire alarms must be regularly maintained. This is necessary to ensure they work properly and can be heard throughout the workplace. For manually-operated sounders this is a relatively simple task where the necessary general skills could well be 'in-house'. With respect to electrical fire warning systems, however, it is important that they are serviced by someone who is competent to carry out the work; that is, someone with the appropriate skills, qualifications and/or experience.
112. Your installer may be able to advise about necessary maintenance; alternatively, contact your enforcing authority for fire safety.

Information, instruction and training

113. Ensure that your employees fully understand the meaning of fire safety signs in the workplace and how to give warning in case of fire. Supervisors, and others who have been given particular responsibility in an emergency, must be clear about the action to take if the fire alarm is sounded.

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