

# RC33: Recommendations for the selection and risk management of portable accommodation units



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# Summary of key points

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<b>Fire risk assessment</b>	The fire risk assessment undertaken in compliance with the Regulatory Reform (Fire Safety) Order 2005 (or equivalent legislation in Scotland or Northern Ireland) should include all portable accommodation units whether attached to the main building or located as detached buildings within the boundaries of the site. (5.1.2)
<b>Fire safety management</b>	The management regime for portable accommodation should follow the procedures and routines that have been established for the permanent structures on the site. (5.3.7)
	Where the floor of portable accommodation is raised above ground level, the space beneath must be enclosed to prevent accumulation of rubbish whilst still allowing underfloor ventilation. (5.3.12)
	Accommodation units should not be positioned so as to obstruct external escape routes from other buildings. (5.3.6)
	Rows of temporary buildings should be separated to provide a fire break of at least 10m between adjacent structures. (5.6.7)
<b>Fire resistance</b>	Insulating materials between inner and outer skins of panels should preferably be non combustible. (5.4.5)
<b>Maintenance</b>	Portable accommodation units should be inspected regularly for damage or unauthorised alterations (5.3.8)
<b>Fire protection</b>	Shipping containers used for the storage of combustible or hazardous materials should be provided with an automatic fire detection system as determined by risk assessment. (5.7.3)

## Symbols used in this guide



# 1 Introduction

The use of portable accommodation units is widespread, and has become recognised as offering a cost effective means of providing additional space quickly, so as to allow organisations to continue normal working operations in an acceptable, socially distancing environment.

Many of the portable units currently being introduced are likely to be medium or long term solutions to the workspace rather than temporary accommodation, and thus require to be installed, equipped with fire protection provisions and managed in an equivalent manner to the permanent structures on site. This is the case whether the accommodation is intended for use as an office or for other purposes.

In recent years, many designs of accommodation have become available that allow units to be interlinked to provide flexible layouts. Whereas many forms of portable accommodation used to be formed of flatpacked arrangements that were constructed on site, most are now delivered partially or completely built – many with fully fitted kitchens and toilets where required – and are interlinked on site as necessary. These modern buildings are manufactured to a high standard using durable materials, and are intended for long term use.

In many cases portable accommodation units are integrated with the main buildings, and may introduce additional fire hazards that need to be addressed in the fire risk assessment for the premises. Experience has shown that such units can present a significant fire exposure to insurers if adequate measures are not taken in their design, specification, positioning and management. Portable accommodation has to be selected with care in relation to the intended function to which it is to be used, and linked to necessary services with the same attention to detail as permanent facilities.

# 2 Scope

These recommendations focus on the key aspects of life safety and property protection related to the use of portable accommodation units. Guidance is provided on the selection, positioning and management of such units to protect life, minimise the risk of fire and prevent fire spread to adjacent buildings and structures.

This document also addresses portable accommodation introduced within existing buildings and facilities that are of multiple storeys or consist of stacked units or pods.

These recommendations relate to portable buildings provided for use as offices, classrooms, storage and similar commercial facilities, and do not relate to temporary buildings provided on construction sites. Guidance for the latter is set out in the FPA's *Joint Code of Practice for Fire Prevention on Construction Sites* (Ref. 1). Temporary structures formed of air supported structures, tents, marquees and the like are also outside the scope of the guidance presented in this document.

These recommendations do not apply to caravans, mobile homes, marquees, other tents or canvas structures.

# 3 Synopsis

These recommendations summarise best practice to be considered when introducing additional portable accommodation onto a site. The sections address the form of construction of the units, their arrangement on site and their management. It is emphasised that even where portable accommodation units are brought onto a site to form a short term solution to a problem, they should be managed and maintained following the policies already adopted for all other structures on site.

**Euroclasses**

The Euroclass system is a classification system for building products based on their reaction to fire performance, and defines the test methods to which construction products are categorised. Different properties of materials are tested according to various harmonised European test methods.

**Fire propagation index**

This is a term that relates to the ease of ignition, heat release rate and time to flashover of a material. Fire propagation indices are determined by a method specified in BS 476-6 (ref. 2).

**Limited combustibility**

- any non combustible material
- any material of density 300kg/m<sup>3</sup> or more which, when tested to BS 476: Part 11 (ref. 3), does not flame and for which the rise in temperature on the furnace thermocouple is not more than 20°C
- any material with a non combustible core at least 8mm thick having combustible facings (on one or both sides) not more than 0.5mm thick (where a flame spread rating is specified, these materials should also meet the appropriate test requirements)
- any material of density less than 300kg/m<sup>3</sup>, which when tested to BS 476: Part 11 (ref. 3) does not flame for more than 10 seconds and for which the rise in temperature on the centre (specimen) thermocouple is not more than 35°C (and on the furnace thermocouple is not more than 25°C)

**Non combustible**

Material that meets the requirements of BS 476: part 4 (ref. 4).

**Portable accommodation unit**

A factory produced portable unit or pod used to provide high quality accommodation, often at short notice.

**5.1 Compliance with fire safety legislation**

- 5.1.1 All portable accommodation must comply with appropriate Building Regulations requirements.
- 5.1.2 A suitable and sufficient fire risk assessment should be undertaken by a competent person for all premises to which the Regulatory Reform (Fire Safety) Order 2005 (ref. 5) or equivalent legislation in Scotland and Northern Ireland (refs. 6-9) applies. The assessment should include all portable accommodation units, whether attached to the main building or located as detached buildings within the curtilage of the site.
- 5.1.3 The fire risk assessment should consider the good practice set out in these recommendations together with the potential for deliberate fire-setting from sources within or outside the business. Where necessary, suitable preventive or protective actions should be identified that are proportional to the risk, and implemented to protect both the main premises together with the portable accommodation provided on site.
- 5.1.4 The fire risk assessment should be reviewed periodically by a competent person.

- 5.1.5 If portable accommodation units are used for the storage or handling of hazardous substances, an assessment should also be undertaken in accordance with the Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) (ref. 10).
- 5.1.6 The response by fire and rescue services to 999/112 calls and signals routed via fire alarm monitoring organisations varies widely throughout the UK, and differs from day to night. Competent persons should refer to relevant fire and rescue service websites to make themselves aware of the levels of response in the areas in which their premises are located, and consider this information when undertaking and reviewing fire risk assessments.

## 5.2 Business continuity

- 5.2.1 Even a small fire can have a disproportionate effect on a business if it occurs in a critical area. It is important that the degree of security and fire protection provision provided in portable accommodation therefore reflects those in the main buildings on site.
- 5.2.2 All businesses should take steps to ensure the continued smooth running of their business by making a suitable emergency plan. Guidance for this is set out in *Business resilience: A guide to protecting your business and its people* (ref. 11). The emergency plan should address the implications of a fire, flood or other perceived disaster on all facets of the business model. It should indicate the lines of communication that should be followed and the contact details for specialist assistance, including the providers of the portable accommodation on site, suppliers of component pods and alternative suppliers if necessary.
- 5.2.3 Consideration may be given to applying commercially available computer programmes, such as the ROBUST software (Resilient Business Software Toolkit) that is available free of charge (ref. 12) or another appropriate product, to develop and check the adequacy of the plan. Consideration should also be given to utilising the free online RISC Authority *Supply Chain Risk Management Toolkit* (ref. 13). Reference should be made to the RISC Authority document *A simple guide to supply chain management for small and medium-sized businesses* (ref. 14) which is available from the RISC Authority website.



- What are the hazards that threaten new portable accommodation introduced onto the site? (5.3.1)



- What factors should be considered to ensure that new portable accommodation may be used safely by people of all abilities? (5.3.2)

## 5.3 Fire safety management

- 5.3.1 All portable accommodation units should be installed in accordance with the manufacturer's instructions. They should be located on solid foundations away from low lying areas of ground where there may be a risk of flooding. Advice should be sought where accommodation may be exposed to wind or placed in positions that may threaten structural stability. Particular caution should be exercised where accommodation is to be placed on top of other units further information is being prepared in new recommendations expected to be published in 2022.
- 5.3.2 Portable accommodation should be accessible to staff and visitors of all abilities. Requirements for ramped access, and provisions to allow the fire alarm to be identified by people with limited sight or hearing, should therefore be considered at the planning stage.
- 5.3.3 Where multiple units are brought onto the premises, any interlinking arrangements should follow the manufacturer's or supplier's recommendations, especially in respect of multi storey arrangements of units.
- 5.3.4 Wherever possible, accommodation units should be sited on hard standing. All areas surrounding and underneath portable accommodation units should be kept clear of tall grass and other vegetation. All undergrowth should be controlled, but not by burning or the use of weed killers that aid combustion such as sodium chlorate. Using weed control membrane and gravel will help inhibit growth.
- 5.3.5 The provisions for means of escape and fire compartmentation should follow those applicable to the occupancy for which they are to be used.



- Portable accommodation units should be inspected regularly for damage or unauthorised alterations (5.3.8)

- 5.3.6 Accommodation units should not be positioned so as to obstruct external escape routes from other buildings. Care also needs to be given to avoid presenting an obstruction to air intakes, exhausts from ventilation systems and explosion relief venting of existing facilities.
- 5.3.7 The management regime for new accommodation should follow the procedures and routines that have been established for the permanent structures. For example, the arrangements for weekly fire alarm tests, monthly checking of the fire extinguishers and fire doors and the monthly functional testing of the emergency lighting should be integrated into the existing routines and recordkeeping.
- 5.3.8 Portable accommodation units should be inspected regularly for damage or unauthorised alterations. Necessary repairs and maintenance should be carried out strictly in accordance with the manufacturer's instructions.
- 5.3.9 Where appropriate, emergency lighting should be installed in accordance with BS 5266 (ref. 15). It should be tested monthly, with records being kept and maintained in accordance with BS 5266 by a competent electrician.
- 5.3.10 Heaters should be fixed in position, preferably above floor level and maintained in sound condition. Sufficient ventilation should be provided for heating appliances.
- 5.3.11 Where cooking is required to be undertaken in portable accommodation units, the recommendations for fire safety in catering establishments (ref. 16) should be adopted.
- 5.3.12 Where the floor of portable accommodation is raised above ground level, the space beneath must be enclosed to prevent accumulation of rubbish whilst still allowing underfloor ventilation. Any void beneath stacked units at upper levels should also be protected in this manner. No combustible materials should be stored beneath any form of portable accommodation unit.
- 5.3.13 Smoking should not be permitted within 10m of portable buildings.

#### 5.4 Fire resistance

- 5.4.1 The walls and roof of portable accommodation units should achieve 30 minutes fire resistance from inside to out (integrity and insulation) as defined in BS 476 parts 20 and 22 (refs. 17 and 18), or BS EN 1363-1 (ref 19)/BS EN 1363-2 (ref 27) and BS EN 1364-2 (ref 29). The windows should achieve 30 minutes fire resistance (integrity) to BS 476 parts 20 and 22 (refs. 17 and 18), or BS EN 1363-1 (ref 19)/BS EN 1363-2 (ref 27) and BS EN 1364-1 (ref 28), and be securely closed when the area is unoccupied.
- 5.4.2 Doors to portable accommodation units should provide at least 30 minutes fire resistance (integrity and insulation) as set out in the standards in paragraph 5.4.1, and be fitted with appropriate intumescent strips and smoke seals. They should also be equipped with self closers capable of shutting the door against the latch, and be securely closed when the area is unoccupied.
- 5.4.3 All openings for services should be fire-stopped to provide at least 30 minutes fire resistance in terms of integrity.
- 5.4.4 Where portable accommodation units are stacked vertically, the roof/floor assembly and elements of construction supporting them should provide at least 30 minutes fire resistance (integrity, insulation and load-bearing capacity) as defined in BS 476 parts 20 and 22 (refs. 17 and 18), or in BS EN 1363-1 (ref 19), BS EN 1363-2 (ref 27) and BS EN 1365-2 (ref 30). They should also comply with relevant Building Regulations requirements where necessary.
- 5.4.5 Insulating materials between inner and outer skins of panels should preferably be non combustible.

#### 5.5 Surface spread of flame

- 5.5.1 Internal and external walls should be manufactured from non combustible materials or those of limited combustibility – that is to say, materials meeting Euroclass A1 or A2 respectively when tested in accordance with BS EN ISO 1182 (ref. 31).



- Where multiple portable accommodation units are interlinked on site to form a large structure, care should be taken not to introduce hidden voids. (5.6.2)



- Where portable accommodation is separated from established buildings, a fire break as wide as possible – ideally at least 10m – should be provided. (5.6.4)

## FAQ

- In what circumstances concerning new portable accommodation should I contact my insurers? (5.6.5)

## FAQ

- In what circumstances should I consult my local fire and rescue service if I am planning to introduce new portable accommodation? (5.6.6)

5.5.2 The external surface of the roof should meet the EXT F.AA level of performance set out in BS 476-3 (ref. 22) or Broof-(t4) when tested in accordance with BS EN 13501-5 (ref. 23).

## 5.6 Site layout

5.6.1 Portable accommodation should be located so as to provide ease of access for the fire and rescue service. Any accommodation introduced to a site must not obstruct access for firefighting vehicles to other parts of the site. In all cases clear access must be available to hydrants and access points for other critical services.

5.6.2 Where multiple portable accommodation units are interlinked on site to form a large structure, care should be taken not to introduce hidden voids.

5.6.3 Escape routes should be provided from all forms of portable accommodation to a place of safety away from the building; the provision and protection of these should be as in the case of an equivalent permanent facility. Appropriate fire compartmentation should also form part of the structure.

5.6.4 Where portable accommodation is separated from established buildings, a fire break as wide as possible – ideally at least 10m – should be provided. It is recognised that this may not be practicable on city centre and similar sites where space is at a premium.

5.6.5 Where portable accommodation is to be directly linked to a permanent building or located within an existing structure, the insurers of the property should be consulted at the planning stage.

5.6.6 Where portable accommodation is to be located at a raised height in excess of 7.5m from fire service access level or at basement level, the fire and rescue service should be consulted prior to work commencing.

5.6.7 Rows of temporary buildings should be separated to provide a fire break of at least 10m between adjacent structures. Where this is not practicable, windows facing the fire break should be fixed shut and the glazing designed to provide at least 30 minutes fire resistance.

5.6.8 Shipping containers used on site for storage should be located at least 10m from permanent structures, with the doors kept closed when not in use. Unenclosed storage should be no closer than 10m from portable accommodation units.

5.6.9 Where accommodation units are stacked, stairways should be provided and protected as in the case of an equivalent permanent structure. Particular care should be taken in the case of external stairways to ensure that glazing in doors and windows (other than toilet windows), within 1.8m horizontally and 9m vertically below the stairs, should provide at least 30 minutes fire resistance (ref. 32).

5.6.10 Ideally external stairways should be enclosed, but where this is not practicable management procedures should be put in place to ensure that the stairs are maintained and regularly cleaned.

## 5.7 Fire protection

5.7.1 Portable accommodation with a permanent link to an existing building, or within 10m of an existing structure, should be provided with an automatic fire detection and alarm (AFD) system of the same category, as defined in BS 5839-1 (ref. 24), as the main building. The installation should be linked to the main indicator and control panel to allow it to be monitored remotely (where applicable), and tested at the same time each week as the existing facilities.

5.7.2 Portable accommodation on other parts of the site should be provided with an AFD system as determined by a fire risk assessment. The systems should be managed as for other installations on the premises.

5.7.3 Shipping containers used for the storage of combustible or hazardous materials should be provided with an AFD system as determined by a fire risk assessment.

- 5.7.4 A suitable number of appropriate portable fire extinguishers should be available and immediately accessible in the case of a fire. Such portable extinguishers should be approved and certificated by an independent, third party certification body and be installed in accordance with BS 5306-8 (ref. 25), and inspected and maintained in compliance with BS 5306-3 (ref. 26).
- 5.7.5 All portable firefighting equipment should be easily and safely accessible.

## 6 Checklist

This checklist is based on the guidance and certain recommendations made in RC33: *Recommendations for the selection and risk management of portable accommodation units*, and designed for use by premises operators and in particular members of the maintenance or facilities team – as an audit tool for use on site. It is recommended that an audit using this checklist be undertaken at least every six months.

The checklist can be printed and a hard copy used, or completed electronically and printed off (if needed): checklists created electronically will be saved with the document on closing as a digital record. The references with each question below and shown in brackets relate to the relevant sections of RC33.

Additional blank copies of the checklist may be created as required for printing or electronic completion.

		Yes	No	N/A	Action required	Due date	Sign on completion
<b>6.1</b>	<b>Compliance with fire safety legislation (section 5.1)</b>						
6.1.1	Has a suitable and sufficient fire risk assessment been undertaken by a competent person for all parts of the premises, to which the Regulatory Reform (Fire Safety) Order 2005 or equivalent legislation in Scotland and Northern Ireland applies? (5.1.1)						
6.1.2	Does the fire risk assessment address the possibility of deliberate fire setting? (5.1.2)						
6.1.3	Where appropriate, has a separate assessment been carried out in accordance with the DSEAR Regulations? (5.15)						
<b>6.2</b>	<b>Business continuity (section 5.2)</b>						
6.2.1	Has a suitable emergency plan been prepared to address the implications?						
<b>6.3</b>	<b>Fire safety management (section 5.3)</b>						
6.3.1	Are all portable accommodation units installed in accordance with the manufacturer's instructions? (5.3.1)						
6.3.2	Does portable accommodation remain accessible to staff and visitors of all abilities? (5.3.2)						
6.3.3	Do interlinking arrangements between multiple units follow the manufacturer's or supplier's recommendations, especially in respect of multi storey arrangements of units? (5.3.3)						
6.3.4	Are all areas surrounding and underneath portable accommodation units kept clear of tall grass and other vegetation? (5.3.4)						
6.3.5	Following the introduction of new accommodation, do external escape routes from other buildings – and air intakes and exhausts from ventilation systems of existing facilities – remain free of obstructions? (5.3.6)						
6.3.6	Are the arrangements for weekly fire alarm tests, monthly checking of fire doors and functional tests of the emergency lighting for the portable accommodation units integrated into the existing routines and recordkeeping? (5.3.7)						
6.3.7	Are portable accommodation units inspected regularly for damage or unauthorised alterations, with any necessary repairs and maintenance carried out in accordance with the manufacturer's instructions? (5.3.8)						
6.3.8	Are fixed heaters maintained in sound condition? (5.3.19)						

		Yes	No	N/A	Action required	Due date	Sign on completion
6.3.9	Do voids beneath portable accommodation units remain enclosed with a caged skirt, and are these kept free of accumulations of combustible materials? (5.3.12)						
6.3.10	Are areas within 10m of portable buildings free of evidence of smoking? (5.3.13)						
<b>6.4 Fire resistance (section 5.4)</b>							
6.4.1	Do the walls (including windows) and roof of portable accommodation units continue to provide 30 minutes fire resistance from inside to out, as defined in BS 476 parts 20 and 22? (5.4.1)						
6.4.2	Do doors to portable accommodation units provide at least 30 minutes fire resistance (integrity and insulation), and are they fitted with appropriate intumescent strips and smoke seals as well as a self closer capable of shutting the door against the latch? (5.4.2)						
6.4.3	Are all openings for services fire-stopped to provide at least 30 minutes fire resistance in terms of integrity? (5.4.3)						
6.4.4	Where portable accommodation units are stacked vertically, do the roof/floor assembly and elements of construction supporting them continue to provide at least 30 minutes fire resistance? (5.4.4)						
<b>6.5 Surface spread of flame (section 5.5)</b>							
6.5.1	Are internal and external walls free of modifications that may prevent them continuing to meet the requirements of Euroclass A1 or A2, when tested in accordance with BS EN ISO 1182? (5.5.1)						
6.5.2	Is the external surface of the roof free of modifications, such that it will continue to meet the original specification of the building? (5.5.2)						
<b>6.6 Site layout (section 5.6)</b>							
6.6.1	Is there clear access for firefighting vehicles to all parts of the site, including clear access to hydrants and other critical services? (5.6.1)						
6.6.2	Are clear escape routes provided from all forms of portable accommodation to a place of safety away from the buildings? (5.6.3)						
6.6.3	Where it is not practicable to provide a fire break of at least 10m between rows of temporary buildings, are windows facing the fire break fixed shut, and is the glazing designed to provide at least 30 minutes fire resistance? (5.6.7)						
6.6.4	Are the doors of shipping containers used for storage, and located at least 8m from permanent structures, kept closed when not in use? (5.6.8)						
6.6.5	Is all unenclosed storage no closer than 10m from portable accommodation units? (5.6.8)						
6.6.6	Are external stairways maintained and regularly cleaned? (5.6.10)						
<b>6.7 Fire protection (section 5.7)</b>							
6.7.1	Is portable accommodation with a permanent link to an existing building (or within 10m of an existing structure) provided with an automatic fire detection and alarm (AFD) system of the same category as the main building; and linked to the main indicator and control panel to allow it to be monitored remotely and tested at the same time each week as the existing facilities? (5.7.1)						
6.7.2	Are AFD systems provided in portable accommodation further than 10m from existing accommodation managed as for other installations on the premises? (5.7.2)						
6.7.3	Are automatic fire detectors in shipping containers managed as for other installations on the premises? (5.7.3)						

		Yes	No	N/A	Action required	Due date	Sign on completion
6.7.4	Are a suitable number of appropriate portable fire extinguishers available and immediately accessible in the case of fire? (5.7.4)						
6.7.5	Is all portable firefighting equipment easily and safely accessible? (5.7.5)						

Signature ..... Name ..... Date .....

1. *Fire Prevention on Construction Sites: The joint code of practice on the protection from fire of construction sites and buildings undergoing refurbishment, ninth edition*, 2015, Fire Protection Association.
2. BS 476-6: 1989 + A1 2009: 1987: *Fire tests on building materials and structures. Method of test for fire propagation for products*, British Standards Institution.
3. BS 476-11: 1982: *Fire tests on building materials and structures. Method for assessing the heat emission from building materials*, British Standards Institution.
4. BS 476-4: 1970: *Fire tests on building materials and structures. Non-combustibility test for materials*, British Standards Institution.
5. Regulatory Reform (Fire Safety) Order 2005, SI 2005 No 1541, The Stationery Office.
6. The Fire (Scotland) Act 2005, asp 5, The Stationery Office.
7. Fire Safety (Scotland) Regulations 2006, Scottish SI 2006 No 456, The Stationery Office.
8. Fire and Rescue Services (Northern Ireland) Order 2006, SI 2006 No 1254 (NI9), The Stationery Office.
9. Fire Safety Regulations (Northern Ireland) 2010, SI 2010 No 325 (N.I.), The Stationery Office.
10. Dangerous Substances and Explosive Atmospheres Regulations (DSEAR), 2002, SI 2002 No 2776, The Stationery Office.
11. *Business Resilience: A Guide to protecting Your Business and its People*, 2005, Fire Protection Association.
12. The ROBUST software (Resilient Business Software Toolkit) may be found at <https://robust.riscauthority.co.uk>
13. The Supply Chain Risk Management Toolkit may be found at <https://www.riscauthoritysupplychain.com>
14. *A simple guide to supply chain management for small and medium-sized businesses*, 2019, Fire Protection Association.
15. BS 5266: *Emergency escape lighting systems*, British Standards Institution.
16. RC68: *Recommendations for fire safety in catering establishments*, 2020, Fire Protection Association.
17. BS 476-20: 1987: *Fire tests on building materials and structures. Method of the determination of the fire resistance of elements of construction (general principles)*, British Standards Institution.
18. BS 476-22: 1987: *Fire tests on building materials and structures. Method of the determination of the fire resistance of non-loadbearing elements of construction*, British Standards Institution.
19. BS EN 1363-1: 2012: *Fire resistance tests: General requirements*, British Standards Institution.
20. BS 476-7: 1997: *Fire tests on building materials and structures. Method of test to determine the classification of the surface spread of flame of products*, British Standards Institution.
21. BS EN 13501-1: 2018: *Fire classification of construction products and building elements. Classification using reaction to fire tests*, British Standards Institution.
22. BS 476-3: 2004: *Fire tests on building materials and structures. Classification and method of test for external fire exposure to roofs*, British Standards Institution.
23. BS EN 13501-5: 2016: *Fire classification of construction products and building elements. Classification using data from external fire exposure to roofs tests*, British Standards Institution.

24. BS 5839-1: 2017: *Fire detection and alarm systems for buildings. Code of practice for design, commissioning and maintenance of systems in non-domestic premises*, British Standards Institution.
25. BS 5306-8: 2012: *Fire extinguishing installations and equipment on premises. Selection and positioning of portable fire extinguishers. Code of practice*, British Standards Institution.
26. BS 5306-3: 2017: *Fire extinguishing installations and equipment on premises. Commissioning and maintenance of portable fire extinguishers. Code of Practice*, British Standards Institution.
27. BS EN 1363-2: 1999: *Fire resistance tests: Alternative and additional procedures*, British Standards Institution.
28. BS EN 1364-1: 2015: *Fire resistance tests for non-load bearing elements: Walls*, British Standards Institution.
29. BS EN 1364-2: 2018: *Fire resistance tests for non-load bearing elements: Ceilings*, British Standards Institution.
30. BS EN 1365-2: 2014: *Fire resistance tests for load bearing elements: Floors and roofs*, British Standards Institution.
31. BS EN ISO 1182: 2020: *Reaction to fire tests for products. Non-combustibility test*, British Standards Institution.
32. *Building Regulations 2010, Approved Document B: Fire Safety (Volume 2 – Buildings other than dwellinghouses) Incorporating Insurers' requirements for property protection*, 2015, Fire Protection Association.



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