United Kingdom

For England and Wales the code relating to fire safety is Approved Document B (ADB) of the Building Regulations. This document was last updated in 2025. Volume one is for dwellings and volume two for other buildings. Wales published its own version of the document in 2015 to include its requirements for sprinklers in all residential buildings. ADB does not address schools, shopping centres or healthcare facilities; these are covered by other documents. Both volumes of ADB are on this web site.

Below is an overview of the requirements for fire sprinklers. These are listed in Appendix E of ADB.

Approved Document B 2025 Volume 1 Dwellings

Where this document calls for sprinklers it states that they should be designed to BS 9251, the British standard for residential and domestic sprinkler systems.

2.6 In houses of four or more storeys a sprinkler system can be fitted as an alternative to a second, protected staircase.

2.23 Where a loft is converted into an additional storey and the ground floor is open plan a sprinkler system may be fitted instead of enclosing the escape route.

3.21 For multi-storey apartments, a sprinkler system is an alternative to an exit on each storey.

Table B4 shows that an apartment building with a floor above 11 m is not permitted unless it is protected with a sprinkler system.

7.4 States that an apartment building with a floor above 11 m should be sprinklered.

11.21 Boundary distances between buildings may be halved or the amount of unprotected external area doubled if a building is fitted with a sprinkler system.

15.7 If sprinklers are fitted, the distance from a fire hose connection to every point in a building may be 60 m instead of 45 m. This can reduce the number of risers.

16.11 If a basement is fitted with sprinklers, mechanical smoke extraction can be provided as an alternative to natural venting.

ADB Volume 1 - Wales

B1 Section 2

2.2 Regulation 37A brought in a mandatory requirement for automatic fire suppression systems in all new premises of Purpose Groups 1a, 1b, 1c, 2a and 2b constructed in Wales with the exception of rooms for residential purposes in a hostel, hotel, prison or hospital.

An excerpt from Table D1 clarifies the scope of Regulation 37A.

Excerpt from Table D1

Table D1 Classification of Purpose Groups		
Title	**Group**	**Purpose for which the building or compartment of a building is intended to be used**
Residential (dwellings)	1(a)*	Flat
	1(b)†	Dwellinghouse which contains a habitable storey with a floor level which is more than 4.5m above ground level.
	1(c)†	Dwellinghouse which does not contain a habitable storey with a floor level which is more than 4.5m above ground level.
Residential (Institutional)	2(a)	Hospital, home, school or other similar establishment used as living accommodation for, or for the treatment, care or maintenance of persons suffering from disabilities due to illness or old age or other physical or mental incapacity, or under the age of 5 years, or place of lawful detention, where such persons sleep on the premises.
(Other)	2(b)	Hotel, boarding house, residential college, hall of residence, hostel, and any other residential purpose not described above.

* Includes live/work units that meet the provisions of paragraph 3.52 of Volume 2.

† Includes any surgeries, consulting rooms, offices or other accommodation, not exceeding 50 m^2 in total, forming part of a dwelling and used by an occupant of the dwelling in a professional or business capacity.

ADB Volume 2 Buildings other than dwellings

2.46 Care homes should be fitted with a sprinkler system throughout the building in accordance with Appendix E.

3.21d If a building has a floor above 30 m and is designed for phased evacuation, it must be sprinklered.

5.46 Fully enclosed walk-in storerooms that negatively affect the means of escape do not need to be separated from retail areas with fire-resisting construction if they are protected with sprinklers.

7.7h If a single-storey warehouse has a single mezzanine floor there are no limits to the area of that mezzanine floor if the building is sprinklered. Otherwise it must not be more than 10 m in width or length.

Table 8.1 permits single-storey shops to have fire compartments larger than 2,000 m^2 if sprinklers are fitted. For most multi-storey buildings it also permits larger compartments or storey areas if the building is sprinklered. In Table 0.1, shop and commercial is defined as:

Shops or premises used for either of the following.

- A retail trade or business (including selling food or drink to the public for immediate consumption, retail by auction, self-selection and over-the-counter wholesale trading, the business of lending books or periodicals for gain, the business of a barber or hairdresser, and the rental of storage space to the public).
- Premises to which the public are invited either:
  - to deliver or collect goods in connection with their hire, repair or other treatment
  - (except in the case or repair of motor vehicles) where the public themselves may carry out such repairs or other treatments.

This inclusion of ‘rental of storage space to the public’ in Table 8.1 means that these facilities must have sprinklers if they have a compartment larger than 2,000 m^2.

Table 8.1 Maximum dimensions of building or compartment (non-residential buildings)

Purpose Group of building or part	Height of floor of top storey above ground level (m)	Maximum floor area of any one storey in the building or any one storey in a compartment (m^2)	
		Single storey buildings	Multi-storey buildings
Office	No limit [1]	No limit	No limit
Assembly and recreation Shop and commercial:			
a. Shops - without sprinkler system	No limit [1]	2000	2000
Shops – with sprinkler system [2]	No limit	No limit	4000
b. Elsewhere – without sprinkler system	No limit [1]	No limit	2000
Elsewhere – with sprinkler system [2]	No limit	No limit	4000
Industrial [3]			
Without sprinkler system [1]	Not more than 18 More than 18	No limit N/A	7000 2000 [4]
With sprinkler system [2]	Not more than 18 More than 18	No limit N/A	14000 4000 [4]

	Height of floor of top storey above ground level (m)	Maximum floor area (m^2)	Maximum height (m) [5]	Maximum compartment volume (m^3)
		Single storey buildings		Multi-storey buildings
Storage [3] and other non-residential:				
a: Car park for light vehicles	No limit	No limit	No limit	No limit
b: Any other building or part:				
Without sprinkler system [1]	Not more than 18 More than 18	20,000 N/A	18 N/A	20,000 4000 [4]
With sprinkler system [2]	Not more than 18 More than 18	No limit	No limit	40,000 8000 [4]

NOTES:

This table recommends that where the maximum size limitations placed on a building without a sprinkler system are exceeded, a sprinkler system in accordance with Appendix E should be provided.

1. See Appendix B, Table B4 for sprinkler system height requirements.

2. 'With sprinkler system' means that the building is fitted throughout with an automatic sprinkler system in accordance with Appendix E.

3. In certain industrial and storage uses that are subject to other legislation, for example the storage of LPG and certain chemicals, additional limitations on floor area and/or additional sprinkler provisions may apply.

4. This reduced limit applies only to storeys that are a minimum of 18m above ground level. Below this height the higher limit applies.

5. Compartment height is measured from finished floor level to the underside of the roof or ceiling.

Table B.4 offers reductions in 30 minutes in fire resistance in many cases if sprinklers are fitted.

Table B4 Minimum periods of fire resistance

Purpose group of building	Minimum periods of fire resistance [1] (minutes) in a:						
	Basement storey* including floor over			Ground or upper storey			
	Depth (m) of the lowest basement			Height (m) of top floor above ground, in a building or separated part of a building			
	More than 10	Up to 10	Up to 5	Up to 11	Up to 18	Up to 30	More than 30
1. Residential:							
a. Block of flats							
- without sprinkler system	90 min	60 min	30 min†	60 min+§	Not permitted(2)	Not permitted(2)	Not permitted(2)
- with sprinkler system	90 min	60 min	30†	60 min+§	60 min+§	90 min+	120 min+
b. and c. Dwellinghouse	Not applicable (4)	30 min*†	30†	60 min (5)	60 min (5)	Not applicable(4)	Not applicable(4)
2. Residential							
a. Institutional	90 min	60 min	30 min†	60 min	60 min	90 min	120 min‡
b. Other residential	90 min	60 min	30 min†	60 min	60 min	90 min	120 min‡
3. Office							
- without sprinkler system	90 min	60 min	30 min†	60 min	60 min	90 min	Not permitted(6)
- with sprinkler system (3)	60 min	60 min	30 min†	30 min†	30 min†	60 min	120 min‡
4. Shop and commercial:							
- without sprinkler system	90 min	60 min	60 min	60 min	60 min	90 min	Not permitted
- with sprinkler system (3)	60 min	60 min	30 min†	60 min	60 min	60 min	120 min‡
5. Assembly and recreation:							
- without sprinkler system	90 min	60 min	60 min	60 min	60 min	90 min	Not permitted
- with sprinkler system (3)	60 min	60 min	30 min†	60 min	60 min	60 min	120 min‡
6. Industrial:							
- without sprinkler system	120 min	90 min	60 min	90 min	90 min	120 min	Not permitted
- with sprinkler system (3)	90 min	60 min	30 min†	60 min	60 min	90 min	120 min‡
7. Storage & other non-residential:							
a. any building or part not described elsewhere:							
- without sprinkler system	120 min	90 min	60 min	90 min	90 min	120 min	Not permitted
- with sprinkler system (3)	90 min	60 min	30 min†	60 min	60 min	90 min	120 min‡
b. car park for light vehicles:							
i. open-sided car park (7)	Not applicable	Not applicable	15 min†#	15 min†#(8)	15 min†#(8)	15 min†#(8)	60 min
ii. any other car park	90 min	60 min	30 min†	60 min	60 min	90 min	120 min‡

NOTES

For single storey buildings, the periods under the heading ‘up to 5’ apply. If single storey buildings have basements, for the basement storeys the period appropriate to their depth applies.

* For the floor over a basement or, if there is more than one basement, the floor over the topmost basement, the higher of the period for basement storey and the period for the ground or upper storey applies.

† For compartment walls that separate buildings, the period is increased to a minimum of 60 minutes.

\+ For any floor that does not contribute to the support of the building within a flat of more than one storey, the period is reduced to 30 minutes.

§ For flat conversions, refer to paragraphs 6.5 and 6.7 of Approved Document B Volume 1 regarding the acceptability of 30 minutes.

‡ For elements that do not form part of the structural frame, the period is reduced to 90 minutes.

\# For elements that protect the means of escape, the period is increased to 30 minutes.

1. Refer to note 1, Table B3 for the specific provisions of test.
2. Blocks of flats with a floor more than 11 m above ground level should be fitted with a sprinkler system in accordance with Appendix E.
   NOTE: Sprinklers only need to be provided within the individual flats, they are not required in the common areas such as stairs, corridors or landings when these areas are fire sterile.

3. ‘With sprinkler system’ means that the building is fitted throughout with an automatic sprinkler system in accordance with Appendix E.
4. Very large (over 18 m in height or with a 10 m deep basement) or unusual dwellinghouses are outside the scope of the guidance provided with regard to dwellinghouses.
5. A minimum of 30 minutes in the case of three storey dwellinghouses, increased to 60 minutes minimum for compartment walls separating buildings.
6. Buildings within the ‘office’, ‘shop and commercial’, ‘assembly and recreation’, ‘industrial’ and ‘storage and other non-residential’ (except car parks for light vehicles) purpose groups (purpose groups 3 to 7(a)) require sprinklers where there is a top storey above 30 m. The sprinkler system should be provided in accordance with Appendix E.
7. The car park should comply with the relevant provisions in the guidance on requirement B3, section 11.
8. For the purposes of meeting the Building Regulations, the following types of steel elements are deemed to have satisfied the minimum period of fire resistance of 15 minutes when tested to the European test method:
   i) Beams supporting concrete floors maximum $Hp/A=230m^{-1}$ operating under full design load.
   ii) Free-standing columns, maximum $Hp/A=180m^{-1}$ operating under full design load.
   iii) Wind bracing and struts, maximum $Hp/A=210m^{-1}$, operating under full design load.
   Guidance is also available in **BS EN 1993-1-2**.

8.14. Buildings within the ‘office’, ‘shop and commercial’, ‘assembly and recreation’, ‘industrial’ and ‘storage and other non-residential’ (except car parks for light vehicles) purpose groups (purpose groups 3 to 7(a)) require sprinklers where there is a top storey above 30 m. The sprinkler system should be provided in accordance with Appendix E.

13.16 Portal Frames

NOTE: The recommendations in the SCI publication for designing the foundation to resist overturning do not need to be followed if the building is fitted with a sprinkler system in accordance with Appendix E.

Table 13.1 sets out the combinations of boundary distances and maximum total unprotected areas of the building wall facing the boundary.

13.22 If a building is fitted throughout with a sprinkler system in accordance with Appendix E, either of the following is permitted.

a. The boundary distance can be halved, to a minimum distance of 1m.
b. The amount of unprotected area can be doubled.

17.8 In any building, the hose laying distance should meet all of the following conditions.

a. A maximum of 60 m from the fire outlet in a firefighting shaft (see Diagram 17.3)
b. Additionally, where sprinklers have not been provided in accordance with Appendix E, the hose laying distance should be a maximum of 45 m from a fire main outlet in a protected shaft (although this does not imply that the protected shaft needs to be designed as a firefighting shaft (see Diagram 17.3)).

This means that with sprinklers there can be greater distances from fire outlets which may mean it is possible to reduce the number of risers in a building, as is shown in Diagram 17.3.

18.11 If basement storeys are fitted with a sprinkler system in accordance with Appendix E, a mechanical smoke extraction system may be provided as an alternative to natural venting. Sprinklers do not need to be installed on the other storeys unless needed for other reasons.

Hospitals

As well as Approved Document B, there is guidance from the Department of Health and Social Care for hospitals: Health Technical Memorandum 05-02:2015. This document calls for sprinklers to be fitted in high fire risk areas, such as the boiler room and laundry, and in lesser fire risk areas, such as medical records, if they are accessible to patients with a very high dependency.

The fire resistance of compartments is 60 minutes but may be reduced to 30 minutes on floors up to 12m above ground level if sprinklers are fitted. For buildings with storeys above 12m up to 30m the

compartment fire resistance may be reduced from 90 minutes to 60 minutes and in buildings with floors of 30m of more in height it may be reduced from 120 minutes to 90 minutes.

Table 5 on fire resistance of structure makes clear that unsprinklered healthcare buildings higher than 30 m are not permitted. This is confirmed in 5.68

"5.68 With the exception of buildings over 30m in height, the guidance in this document does not require the installation of sprinklers in patient care areas of healthcare buildings. However, the design team is expected to consider the advantages that might be gained by installing life-safety sprinklers throughout the building or to specific areas. Where specific hazards are identified in the building, it may be more appropriate to consider the application of an alternative fire suppression system, such as high pressure water mist technologies."

Scotland – Building standards technical handbook 2020

2.15 Automatic fire suppression systems

Mandatory Standard

Standard 2.15

Every building must be designed and constructed in such a way that, in the event of an outbreak of fire within the building, fire growth will be inhibited by the operation of an automatic fire suppression system.

Limitation:

This standard only applies to a building which:

a. is an enclosed shopping centre
b. is a residential care building
c. [SSI deletes text but does not amend letters assigned to following categories]
d. forms the whole or part of a sheltered housing complex
e. is a school building other than a building forming part of an existing school or an extension to a school building where it is not reasonably practical to install an automatic fire suppression system in that building or extension
f. is a building containing a flat or maisonette
g. is a social housing dwelling
h. is a shared multi-occupancy residential building.

2.15.3 Building Containing Flats and Maisonettes

Research and statistics shows that occupants in flats and maisonettes would benefit from automatic fire suppression systems. Whilst fire statistics also show that fire spread beyond the dwelling of origin is a rare occurrence, fire dynamics suggest that any outbreak of fire through an external window or door opening is more likely to spread vertically than horizontally.

Therefore, in order to protect occupants and to contain fire in buildings containing flats and maisonettes, every flat and maisonette and any ancillary room should be provided with an automatic fire suppression system.

A fire sprinkler system in a flat or maisonette should be designed and installed in accordance with BS 9251:2014.

2.15.4 Social Housing Dwellings

Statistics indicate that there is a greater prevalence of fire in social housing dwellings. In order to help contain a fire and to protect occupants, every house, flat and maisonette that is a social housing dwelling should be fitted with an automatic fire suppression system.

A fire sprinkler system in a social housing dwelling should be designed and installed in accordance with BS 9251:2014.

UK Overview by Building Occupancy

Schools

Scotland and Wales require sprinklers to be fitted in all new schools. In England the government has issued guidance through Building Bulletin 100, which strongly recommends sprinklers in all but a few low risk schools.

Care Homes

The entire United Kingdom requires sprinklers in all new care homes.

High Rise Buildings

Scotland and Wales require sprinklers in all new high-rise residential buildings. In England and Northern Ireland the height threshold for residential buildings is 11m. England and Wales require sprinklers in offices higher than 30m, while in Scotland the height threshold is 25 m.

Social Housing

Scotland and Wales require sprinklers in all new social housing.

Single-family houses

Wales requires sprinklers in all new housing, including single-family houses.

Open-Plan Apartment Buildings

Scotland allows open-plan apartment buildings if sprinklers are fitted. See 2.9.10 of Scottish Building Standards for domestic fire safety and the table in 2.9.2. In England and Wales, Approved Document B calls for a corridor from the front door of an apartment to every room in it. Open-plan apartments are not considered but they are covered by BS 9991, see below.

British Standards Codes of Practice

These are alternative approaches to fire safety that are intended to achieve at least the same level as required by ADB in England.

BS 9999: Code of practice for fire safety in the design, management and use of buildings

Approved Document B is prescriptive, statutory guidance, while PD 7974 provides guidance for fire safety engineered designs. BS 9999 lies in between the two approaches. It is written as clear guidance but its contents are based on fire safety engineering analyses. While it does not have the same status as the statutory guidance in Approved Document B, government representatives attended every drafting meeting for this standard and did not raise any objections to it.

BS 9999 introduces risk profiles for the different types of occupant and potential fire growth rates in buildings. If sprinklers are fitted the fire growth rate is assumed to be one category slower, which allows longer travel distances and narrower escape routes.

BS 9991: Code of practice for fire safety in the design, management and use of residential buildings

Complementing BS 9999, it contains many design freedoms for sprinklers. The two most important are flexibility in the internal layout of flats, which may be open-plan, and increased travel distances in corridors. In addition, reduced fire brigade access is accepted.

BS 9992 Fire safety in the design, management and use of rail infrastructure – Code of practice

This standard contains significant incentives to fit sprinklers. As with BS 9999, the fire growth rate with sprinklers is one level slower, allowing for longer and narrower escape routes. If sprinklers are fitted in sub-surface stations the reaction-to-fire performance when tested in accordance with EN 13501-1 can be relaxed to the values for surface stations, i.e. for materials used in the construction of internal walls and ceilings from A2-s1, d0 to A2-s3, d2 and for surface finishes in walls and ceilings from B-s1, d0 to B-s3, d2.

The standard also requires sprinklers in habitable machinery spaces in sub-surface stations if they contain machinery or electrical switchgear, cannot practicably be fire-separated from the public areas of the station and are located on escape routes.