

# Remaking the grades

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## A new standard for domestic fire detection and alarms aims to make the determination of appropriate systems clearer and easier, writes Simon Sandland-Taylor

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BSI has published a new standard, [BS 5839-6: 2019 Fire detection and fire alarm systems for buildings. Code of practice for the design, installation, commissioning and maintenance of fire alarm systems in domestic premises](#) .

This came into effect on 30 April and supersedes BS 5839-6: 2013, which is now withdrawn. This is a full revision of the standard, and takes into account the publication of [BS 5839-1: 2017](#) and other related standards.

The standard previously graded systems from A to F, with each letter outlining the level of protection appropriate for certain properties and associated risks, but it has been revised to make design specification easier and clearer in response to changes in the technology.

For instance, grade E detectors are no longer manufactured due to the advancement in grade F, which is now split into 2 subgrades; the same goes for grade D, which has 2 similar subgrades. Grade C has meanwhile been improved and is now a halfway house between the grade in a normal dwelling, D, and that you would find in a commercial installation, A, so there is no longer a need for grade B.

The breakdown of the new system is as follows:

- **grade A:** separate detectors, sounders and central control and indicating equipment designed and installed in accordance with the relevant recommendations of BS 5839-1: 2017, with back-up power supply that conforms to [BS EN 54](#) ;
- **grade C:** separate detectors and sounders that are mains-powered, with back-up power supply and central control equipment;
- **grade D1:** system of 1 or more mains-powered detectors, each with a tamper-proof, stand-by battery supply;
- **grade D2:** system of 1 or more mains-powered detectors, each with a stand-by replaceable battery supply;
- **grade F1:** system of 1 or more detectors powered by a tamper-proof battery or batteries; and
- **grade F2:** system of 1 or more detectors powered by a replaceable battery or batteries.

The standard of system category recommended for sheltered housing flats has also been increased from LD2 to LD1 (see Table 1), while the minimum grade and category of fire detection and alarm system for protection of life in a range of typical premises has been completely reworked and expanded to avoid the confusion and difficulties reported by users when attempting to determine the appropriate grade and category in the previous standard.

LD3	Systems incorporating detectors in all circulation areas that form part of the escape routes from the premises
LD2	Systems incorporating detectors in all circulation areas that form part of the escape routes from the premises, and in all specified rooms or areas that present a high fire risk to occupants, including any kitchen and the principal habitable room
LD1	System installed throughout the premises incorporating detectors in all circulation areas that form part of the escape routes from the premises and in all rooms and areas, other than those with negligible sources of ignition such as toilets, bathrooms and shower rooms

**Table 1: Categories for fire detection and alarm systems**

The range of domestic premises is divided into the following categories:

- a) designed for a single family;
- b) houses in multiple occupation consisting of several self-contained units, each designed to accommodate a single person or family;
- c) sheltered housing, including both the dwelling units and the common areas;
- d) self-catering premises, or premises with short-term paying guests; and
- e) supported housing.

Class (a) is in turn broken down into two separate and distinct subclasses as follows:

- single-family and shared houses with no floor greater than 200m<sup>2</sup> in area; and
- single-family and shared houses with 1 or more floors greater than 200m<sup>2</sup> in area.

Each class with the exception of (d) is further subdivided; the relevant grade and category for each is recommended according to whether premises are new or materially altered, or they already exist. The requirements for class (a) are reproduced in Table 2 for illustration.

Class of premises	Minimum grade and category of system for installation			
	New or materially altered premises		Existing premises	
	Grade	Category	Grade	Category
<b>Single-family dwellings and shared houses with no floor greater than 200m<sup>2</sup> in area</b>				
Owner-occupied bungalow, flat or other	D2	LD2	F2	LD3

single-storey unit				
Rented bungalow, flat or other single-storey unit	D1	LD2	D1	LD2
Owner-occupied maisonette with no floor higher than 4.5m from ground level or owner-occupied 2-storey house	D2	LD2	F2	LD3
Rented maisonette with no floor higher than 4.5m from ground level or rented 2-storey house	D1	LD2	D1	LD2
Rented maisonette with any floor higher than 4.5m from ground level and alternative means of escape	D1	LD2	D1	LD2
Any maisonette with any floor higher than 4.5m from ground level and no alternative means of escape	D1	LD1	D1	LD1
Owner-occupied 3-storey house	D2	LD2	F2	LD2
Rented 3-storey house	D1	LD2	D1	LD2
Owner-occupied house of 4 or more storeys	A	LD2	D2	LD2
Rented house of 4 or more storeys	A	LD1	D1	LD1
<b>Single-family dwellings and shared houses with 1 or more floors greater than 200m<sup>2</sup> in area</b>				
Owner-occupied				

bungalow, flat or other single-storey unit				
Rented bungalow, flat or other single-storey unit	D1	LD2	D1	LD2
Owner-occupied maisonette with no floor higher than 4.5m from ground level or owner-occupied 2-storey house	A	LD2	D2	LD3
Rented maisonette with no floor above 4.5m from ground level or rented 2-storey house	A	LD2	D1	LD2
Rented maisonette with any floor higher than 4.5m from ground level and alternative means of escape	A	LD2	D1	LD2
Any maisonette with any floor higher than 4.5m from ground level and no alternative means of escape	A	LD1	D1	LD1
Owner-occupied 3-storey house	A	LD2	D2	LD2
Rented 3-storey house	A	LD2	D1	LD2
Owner-occupied house of 4 or more storeys	A	LD2	A	LD2
Rented house of 4 or more storeys	A	LD1	A	LD1

**Table 2: BS 5839-6: 2019 requirements for single-family dwellings and shared houses**

The degree of compartmentation provided between purpose-built flats is normally sufficient to

ensure that a fire is contained in the dwelling of origin for a prolonged period, so during this time other occupants can remain in their own flats in reasonable safety. Accordingly, this part of BS 5839 does not recommend systems that incorporate fire detectors in the communal areas or ancillary accommodation in purpose-built flats.

Such systems are generally considered undesirable and can present a risk to occupants; for example, residents may exit into a single stairway filled with smoke when staying put in their flat would be preferable. However, if the provision of a fire detection and fire alarm system in these areas can be justified ? for example if there are concerns over the compartmentation or fire-stopping ? the recommendations in [BS 9991](#) and BS 5839-1 can be followed.

In response to the Grenfell Tower fire, several temporary alarm systems have been installed in blocks of flats where the cladding has failed to comply with the Building Regulations? requirements on fire spread over external walls. These temporary fire alarm systems should only remain in place until the cladding has been replaced or removed, and are outside the scope of BS 5839-6: 2019.

**Simon Sandland-Taylor FRICS is director and owner of [Sandland-Taylor Consultancy](#) and represented RICS in the preparation of BS 5839-6: 2019**

## Further information

- Table 2 sourced from [BS 5839-6: 2019](#) , Table 1
- Related competencies include: [Fire safety](#)
- This feature is taken from the RICS [Built Environment Journal](#) September/October 2019
- Related categories: [Fire and life safety](#)

### Fire safety conferences 2020

These two events will discuss the key fire safety considerations, latest legislation, building regulations, identify best practice and provide expert knowledge to remain at the forefront of your profession. They will be held on 11 February 2020 in [London](#) and on 17 March 2020 in [Manchester](#) .