BS 9251:2014

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# Fire sprinkler systems for domestic and residential occupancies – Code of practice

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## Publishing and copyright information



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# Contents



**Summary of pages**

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 38, an inside back cover and a back cover.

# Foreword

## Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 October 2014. It was prepared by Subcommittee FSH/18/2, *Sprinkler systems*, under the authority of Technical Committee FSH/18, *Fixed fire fighting systems*. A list of organizations represented on this committee can be obtained on request to its secretary.

## Supersession

This British Standard supersedes BS 9251:2005, which is withdrawn.

## Relationship with other publications

Attention is drawn to the requirements of BS EN 806, with particular regard to backflow prevention, to BS EN 805 where appropriate, and to BS 1710 for guidance on identification and marking of pipework.

Sprinkler protection for industrial premises and commercial buildings other than those listed in this standard is specified in BS EN 12845. Where sprinklers are not installed primarily for life protection in domestic and residential occupancies, sprinkler installations conforming to BS EN 12845 might be more appropriate than those conforming to BS 9251.

Guidance on the application of sprinkler systems is given in BS 9991, BS 9999, the Building Regulations 2010, Approved Document B for use in England [1], [2], Wales [3], [4] and its equivalents in Scotland [5] and Northern Ireland [6].

## Information about this document

This is a full revision of the standard, and introduces the following principal changes:

- introduction of building categorization based on occupancy risk;
- change of building height limit;
- variation in sprinkler head design density;
- increase in sprinkler head spacing;
- expanded guidance on preliminary work and consultation;
- expanded guidance on water supplies;
- additional measures for vulnerable people and multi-occupancy premises.

This British Standard is intended for the use of designers, engineers, architects, surveyors, contractors, installers and authorities having jurisdiction.

**Product certification/inspection/testing**. Users of this British Standard are advised to consider the desirability of third-party certification/inspection/testing of system conformity with this British Standard. Appropriate conformity attestation arrangements are described in BS EN ISO 9001. Users seeking assistance in identifying appropriate conformity assessment bodies or schemes may ask BSI to forward their enquiries to the relevant association.

Fire sprinkler systems for domestic and residential applications are designed and installed as a measure in the protection of life in the event of fire. This British Standard presumes that the sprinkler protection will form part of an integrated fire safety system as part of the building design.

The recommendations contained in this British Standard result from the best technical information available to the committee at the time of writing. Firefighting and life protection encompasses a wide field of endeavour and as such it is impracticable to cover every possible factor or circumstance that might affect implementation of this British Standard.

## Use of this document

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations.

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

## Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is "should".

*Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.*

## Contractual and legal considerations

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

**Compliance with a British Standard cannot confer immunity from legal obligations.**

Particular attention is drawn to the Water Supply (Water Fittings) Regulations 1999 [7], the Water Supply (Water Fittings) (Scotland) Byelaws 2014 [8] and the Water Regulations (Northern Ireland) 2006 [9] in respect of requirements for any fire sprinkler system which conveys, or is likely to convey, water supplied by a water undertaker or licensed water supplier.

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# Introduction

Sprinkler systems have demonstrated their value in protecting life and property in industrial and commercial applications for many years. The advent of sprinklers that operate at an earlier stage in the development of a fire, plus the recognition that the largest numbers of deaths from fire occur in the home, have led to the introduction of sprinkler systems specifically designed for domestic and residential occupancies.

A correctly designed and installed sprinkler system can detect and control a fire at an early stage of development and activate an alarm. Operation of the system rapidly reduces the rate of production of heat and smoke, allowing more time for the occupants to escape to safety or be rescued.

This British Standard accordingly covers design, installation, components, water supplies, maintenance and testing of residential sprinkler systems installed for the purpose of reducing risk to life.

In classifying the design of the system for any occupancy, care needs to be taken when considering the fire loading such that it does not exceed that which would normally be expected in that occupancy.

Residential sprinkler systems consist of a water supply, backflow prevention device (e.g. check valve), stop valve, priority demand valve (where required), automatic alarm system and pipework to sprinkler heads. The sprinklers are fitted at specified locations, the appropriate sprinkler type being used for each location. The main elements of a typical residential sprinkler system are shown in Annex A.

Sprinklers operate at a predetermined temperature to discharge water over a known area below. The flow of water thus initiated causes the actuation of an alarm. Only those sprinklers operate which are individually heated above their operating temperature by the heat from the fire.

The provision of a sprinkler system does not negate the need for other fire precautions or practical measures, which can include structural fire resistance, escape routes, fire detectors and good fire safety management practices. Even with the installation of a sprinkler system, normal actions on the discovery of a fire need to be taken, such as immediate evacuation and the calling of the fire service. The sprinkler system is normally only to be turned off following liaison with the fire and rescue service and when it is deemed safe to do so.

Sprinkler system maintenance is not complex but is essential (see Clause **7**). It is important that owners and occupiers are provided with adequate information.

Systems installed in accordance with this standard are primarily for the purpose of reducing risk to life, and are expected to prevent flashover (i.e. total involvement) in the room of origin of the fire and thus provide increased time for occupants to escape or be rescued.

# 1 Scope

This British Standard gives recommendations for the design, installation, components, water supplies and backflow protection, commissioning, maintenance and testing of fire sprinkler systems in domestic and residential occupancies. These systems are primarily intended for the protection of life in case of fire and have additional benefits for property protection, environmental protection, sustainability of buildings and continuity of use, and firefighter safety.

The recommendations of this British Standard are also applicable to any addition, extension, repair or other modification to a residential sprinkler system.