

British Automatic Fire Sprinkler Association

bafsa



bafsa
LEVEL 2
QCF

Level 2 Qualification

Unit 5 – Awareness of Regulations in the Fire Sprinkler Industry

Protecting people, property, the environment and firefighters

**Put a firefighter
in every room ...**

British Automatic Fire Sprinkler Association

bafsa

Install sprinklers



Since the invention of the fire sprinkler head in the late nineteenth century, it has delivered many benefits. Fire sprinkler systems have saved lives, quelled countless fires, boosted economic growth, increased flexibility of building design and given firefighters deserved relief. No wonder people look to the fire sprinkler as ‘the firefighter in every room’, which is changing the way modern buildings are constructed and used.



INTRODUCTION

DEVELOPMENT

RECOGNITION

CAREER

**ADDITIONAL
QUALIFICATION**

FUNCTION

IQ LEVEL 2
CERTIFICATE
IN FIRE SPRINKLER
INSTALLATION

TRAINING AND
EXPERIENCE WITH
EMPLOYER

CRAFT
or SKILLED
OPERATIVE

INDEPENDENT
TECHNICAL
MANAGEMENT

PROFESSIONAL
COMPETENCE

FITTER

ADVANCED
FITTER

SUPERVISOR OR
FOREMAN

SERVICE ENGINEER

COMMISSIONING
ENGINEER

LABOUR
MANAGER

OFFICE BASED ROLES

DESIGNER

CONTRACT
ENGINEER

PROJECT
ENGINEER

MANAGER

L3 FIRE SPRINKLER
INSTALLATION
QUALIFICATION
(TO BE DEVELOPED)

LOSS PREVENTION
CERTIFICATION BOARD
(LPBC)

TEST & COMM EXAM

LOSS PREVENTION
CERTIFICATION BOARD
(LPBC)

BASIC

INTERMEDIATE
FULLY HYDRAULIC
CALCULATION

COMPETENCE
& CRAFT SKILLS

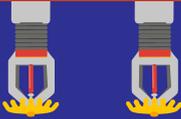
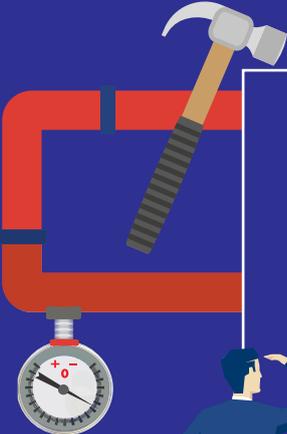
SUPERVISORY
& TECHNICAL
RESPONSIBILITY

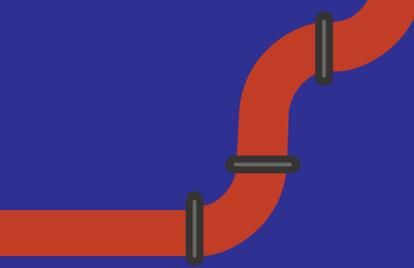
HIGH LEVEL OF
COMPETENCE

HIGH LEVEL OF
PROFESSIONAL
JUDGEMENT &
RESPONSIBILITY



bafsa
LEVEL 2
QCF





THE IQ LEVEL 2 FIRE SPRINKLER INSTALLATION CERTIFICATE

This qualification is intended for new recruits, and those who work in installing fire sprinklers to develop the knowledge and competencies necessary to meet the industry standards for the installation role. There are no formal entry requirements although learners should be able to work at level 2 or above and they must be able to work at heights.

Assessment for all units in this qualification is through a portfolio of evidence (internally set and marked and quality assured by IQ) which demonstrates the learner's knowledge and understanding or consistent performance in the workplace as indicated in the unit specifications. Assessment must meet the requirements of the principles of the BAFSA strategy (available on BAFSA website, bafsa.org.uk/skills-qualifications).

To achieve the IQ
Level 2 Certificate
in Fire Sprinkler
Installation (QCF)
the learner must
achieve seven
mandatory units

**COMMUNICATE
EFFECTIVELY
IN THE
WORKPLACE**

**ESTABLISH
EFFECTIVE
WORKING
RELATIONSHIPS**

**MANAGE OWN
RESOURCES**

**HEALTH
AND
SAFETY**

**AWARENESS
OF
REGULATIONS
IN THE FIRE
SPRINKLER
INDUSTRY**

**FIRE
SPRINKLER
INSTALLATION
AND
HANDOVER**

**UNDERSTANDING
THE FIRE
SPRINKLER
INDUSTRY**



AWARENESS OF REGULATIONS IN THE FIRE SPRINKLER INDUSTRY

- 1.1 UK fire safety legislation and Building Regulations in relation to the fire sprinkler industry
- 1.2 How the different statutory bodies and legislation interact
- 1.3 An overview of the standards for fire sprinkler systems



UK FIRE SAFETY LEGISLATION AND BUILDING REGULATIONS IN RELATION TO THE FIRE SPRINKLER INDUSTRY

A BRIEF HISTORY

There has been some form of building control throughout the whole period of the recorded history of human settlements. In Babylon King Hammurabi had building regulations during his reign in 1750BC.

He ensured compliance by imposing the death-penalty on any builders whose work had been so seriously at fault as to cause the collapse of a house or the death of its owner!



THE BEGINNINGS OF

UK FIRE LAW

In 1666 The Great Fire of London gave rise to the first London Building Act which was enacted by the King in 1667. The key aim being to stop fires spreading from one property to another. This remains the B4 requirement of current Building Regulations for England & Wales (2.2 in Scottish Technical Standards).

GREAT FIRE OF TOOLEY STREET

The large warehouses in this area, stacked with combustible materials, were always vulnerable to fire. Hay's Wharf was one of the earliest complexes to incorporate fireproofing, using incombustible floors of brick arches on cast iron beams. Despite this Hay's Wharf was destroyed in the great fire of Tooley Street of 1861, London's biggest fire since the Great Fire in 1666.

And it claimed more lives. It raged for two weeks and killed, among others, the superintendent of the London Fire Engine Establishment, James Braidwood, when a warehouse exploded.

UK FIRE LAW CONTINUES TO EVOLVE

Throughout the Victorian period and early part of the 20th Century, fire laws evolved piecemeal via local by-laws and were primarily concerned with property but following the 'Tooley Street' warehouse fire in London, the London Fire Brigade was formed in 1886 replacing the insurance brigade.

With the introduction of more modern fire safety rules and guidance and following the Theatre Royal fire in Exeter in 1887, automatic fire sprinklers were required above stages in certain theatres

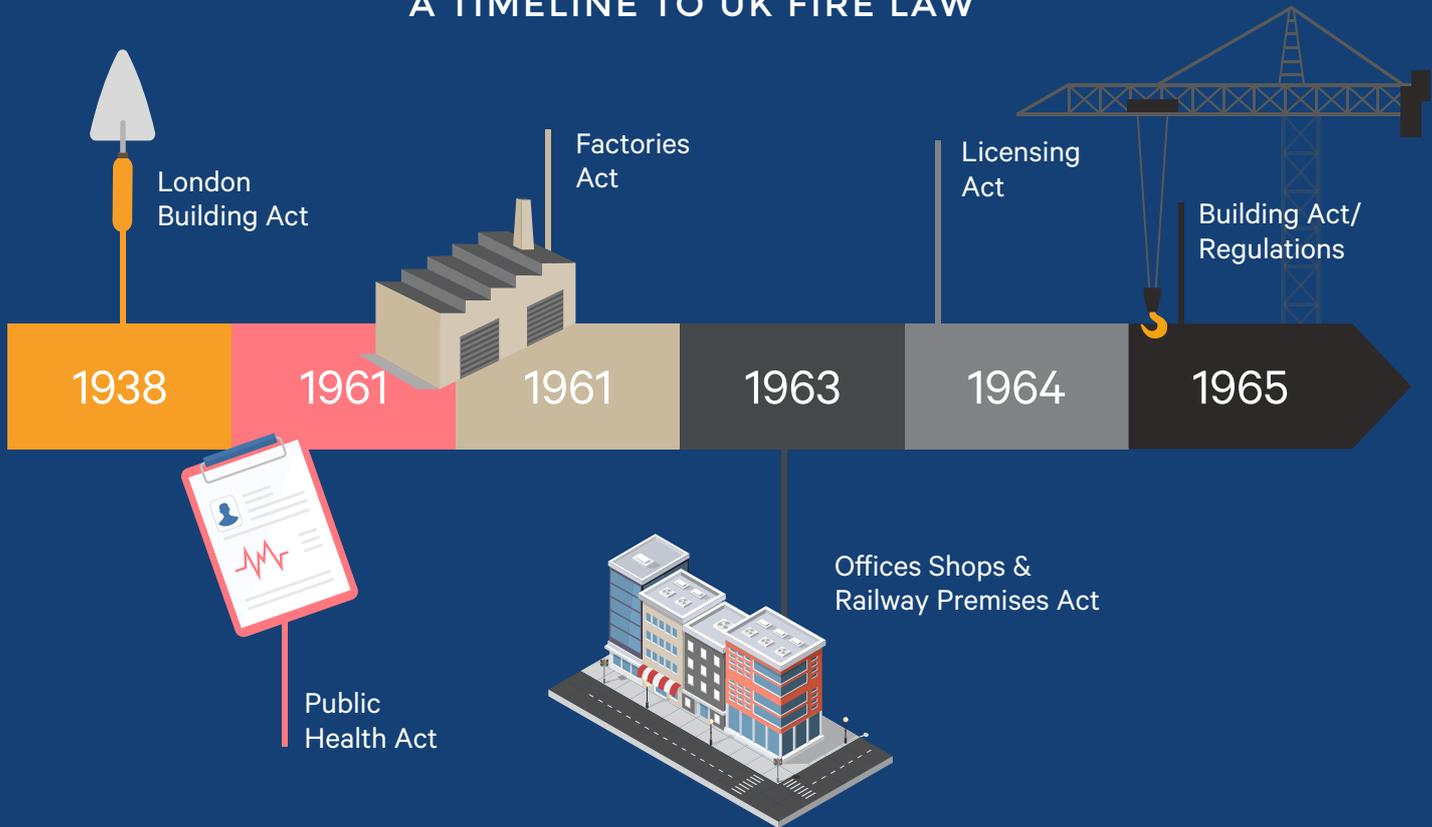
The emphasis of fire brigades also became more on saving life and property.

FOCUS OF UK FIRE SAFETY LAWS : WHAT DO THEY AIM TO ACHIEVE?

- Ensure safe evacuation of all occupants from a building; and safety of persons in and around a building* on fire
- Reasonable facilities to assist the fire service in carrying out their duties to save life
- The prevention of widespread conflagration involving buildings beyond the one on fire

* The application to persons 'around a building' insofar as fire safety, only came into being in 2007

A TIMELINE TO UK FIRE LAW





THE HOLROYD REPORT

The Holroyd Report of 1970 separated Building Control and Fire Service enforcement

Building Regulations:

- New build
- Change of use, refurbishment, extension
- Conception to handover

Fire Safety Order:

- During occupation
- Assess hazards, risks, relevant persons
- Ongoing and dynamic

The Building Regulations are solely for the protection of life - not property and are continually changing.

The general rule is that the Building Regulations are not retrospective, and will not apply to any work completed before the operative date, or, with proposals deposited with the local authority before the operative

date; such schemes being dealt with under the building regulations in force at the relevant time.

Note: Building Regulations struggle to deal with the ongoing ‘management’ of buildings and are more concerned with ‘structural’ matters.

BUILDING ACT 1984 : ENGLAND & WALES

s.1 Power to make Building Regulations

- Building Regulations 2010 (as amended)
- Reg. 8 - “health and safety of persons in or about buildings”

s. 6/7 Approved Documents

- Approved Document B (Fire safety)
- A guidance document which shows some of the ways in which the fire safety requirements of the Building Regulations can be met.

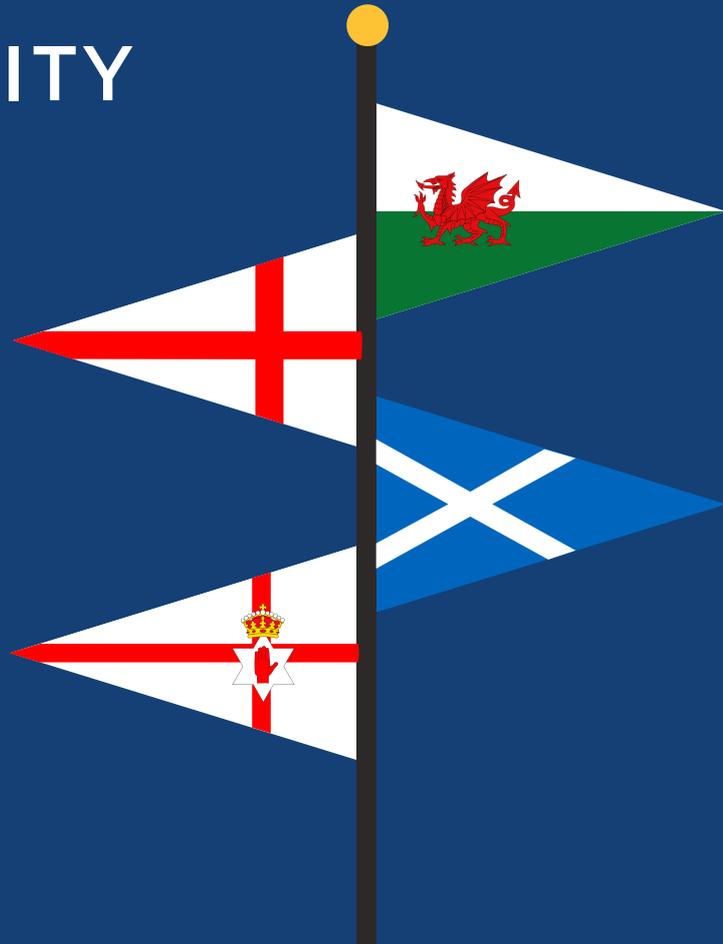


RESPONSIBILITY

The primary responsibility for achieving compliance with the regulations rests with the person carrying out the building work... So if you are carrying out the work personally the responsibility will be yours.

If you are employing a builder the responsibility will usually be theirs – but you should confirm this position at the very beginning.

You should also bear in mind that if you are the owner of the building, it is ultimately you who may be served with an enforcement notice if the work does not comply with the regulations.





ENGLAND & WALES

Anyone wanting to carry out building work which is subject to the Building Regulations is required by law to make sure it complies with the regulations and (with some exceptions) to use one of the two types of Building Control Service available, i.e: the Building Control Service provided by your local authority or the Building Control Service provided by approved inspectors.

There are many large private companies who now provide 'Approved Inspector' services.

SCOTLAND & NORTHERN IRELAND

Only local authority building control can confirm compliance as no privatisation of building control has taken place in Scotland & Northern Ireland!

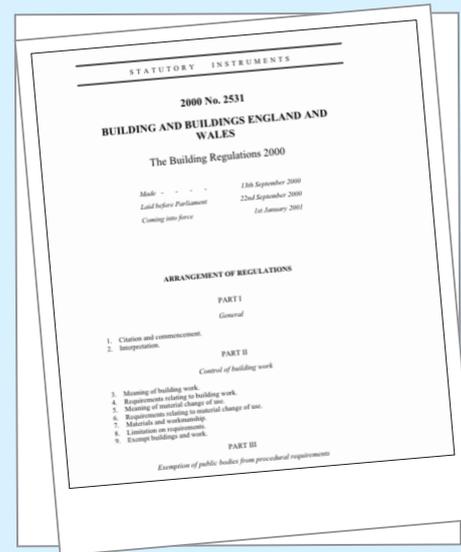
BUILDING REGULATIONS (PART B) ENGLAND & WALES AND THE EQUIVALENT IN SCOTLAND & NORTHERN IRELAND

- B1) Means of giving warning in the event of a fire & means of escape
- B2) Inhibiting the spread of fire across the internal linings
- B3) Structural stability of the building in the event of a fire and the internal spread of fire through a building and between adjacent buildings
- B4) The external spread of fire across a building and between adjacent buildings
- B5) Facilities to assist with the access for firefighting up to and through a building

Amended Requirement B3(3) – part of ‘Internal fire spread (Structure)’

Where reasonably necessary to inhibit the spread of fire within the building, measures shall be taken, to an extent appropriate to the size and intended use of the building, comprising either or both of the following:

- (a) sub-division of the building with fire-resisting construction;
- (b) installation of suitable automatic fire suppression systems.



The Bradford City stadium fire occurred on 11 May 1985, killing 56 and injuring at least 265.

The Valley Parade stadium was known for its antiquated design and facilities, including the wooden roof of the main stand. Warnings had been given about a major build-up of litter just below the seats and the stand had been officially condemned and was due for demolition.

At 1540 a small fire was reported and in less than four minutes, in windy conditions, it had engulfed the whole stand, trapping some people in their seats. In the panic that ensued, fleeing crowds had to break down locked exits to escape, and many were burnt to death at the turnstiles, which were also locked. The disaster led to new safety standards in UK football grounds, including the banning of new wooden grandstands.

The disaster also led to changes to the Fire Precautions Act 1971 enabling fire sprinklers to be acceptable for life safety as a way of complying with legislation in many different kinds of buildings.



FIRE PRECAUTIONS ACT 1971 : APPLIED THROUGHOUT THE UK

- Hotels & Boarding Houses
- Offices
- Shops
- Railway Premises
- Factories

Any building where ‘dangerous conditions’ were present – requiring the immediate prohibition/ restriction of use.

The principal form of control being by ‘certification’, with Fire Certificates issued by the fire brigades.

However, the 1971 Act did not generally apply to any residential accommodation e.g. flats, sheltered housing, care homes etc. and Fire Certificates were never issued to these premises.

‘Workplace Regulations’ only applied to workplaces/ employees/employers and this legislation ran in tandem with the 1971 Act.

However the ‘Workplace regulation” included reference to ‘automatic firefighting equipment’ Automatic fire suppression systems can satisfy the fire-fighting requirements of the:

- Regulatory Reform (Fire Safety) Order 2005
- Fire Safety Regulations (Northern Ireland) 2010 and Fire (Scotland) Act 2005

The Fire Precautions Act originally did not recognise automatic systems such as sprinklers. However, following the Bradford City FC fire in 1985 this was amended in 1993.

The Regulatory Reform (Fire Safety) Order 2005 consolidated over 100 different fire safety laws into one piece of legislation.

WHEN DO WE NEED TO INSTALL SPRINKLERS?

Both Building Regulations & Fire Safety Order are supported by ‘guidance’ documents i.e: Approved Documents, Technical Handbooks and British Standards.

There are three different approaches to how the regulations can be complied with :

- General (using Approved Documents/Technical Handbooks) ... The approach taken for most buildings
- Advanced – BS9999
- Fire Safety Engineering – BS 7974 ... The approach taken for the most complex/innovative buildings

ADVANCES MADE IN RECENT YEARS - GUIDANCE TO THE BUILDING REGULATIONS ETC

- Increasing recognition of automatic fire suppression in building standards and legislation e.g. Domestic Fire Safety (Wales) Regulations 2013
- Design guidance such as BS 9999 & 9991; Scottish Technical Handbook and Approved Documents 'B'
- In England and Wales single storey warehouses up to 20,000m² are permitted to be built under Building Regulations – without sprinkler protection. However, for retail premises, the limit is 2,000m² which is much smaller. This is because shops are open to the general public and therefore the risk to life is considered much greater.



APPROVED DOCUMENT B (ADB) VOLUME 2 – FLATS (APPLICABLE TO ENGLAND & WALES)

Residential Sprinkler Protection for flats:

- Sprinklers to be provided within ‘individual flats’ in blocks over 11m in height.*
- No longer strictly relevant to Wales as all flats must now be protected with sprinklers
- The Grenfell Enquiry & Hackitt Report has undoubtedly influenced the recent reduction in height threshold from 30m to 11m and may bring further changes

*However, this ‘guidance’ often allows ‘common parts’ i.e. stairways and corridors NOT to be protected.

The Domestic Fire Safety (Wales) Regulations 2013

- The Regulations requires the provision of automatic fire suppression systems (such as a fire sprinkler system) compulsory in all new and converted ‘residential’ properties and enables Welsh Ministers to introduce regulations setting out the requirements for such systems.
- Therefore all new homes in Wales must have a sprinkler system

Sprinklers in Scotland

Sprinklers must be provided in all new or refurbished:

- All residential care and children’s homes
- All blocks of flats over 18m tall
- Sheltered Housing
- Schools
- Covered shopping centres
- Warehouses with undivided spaces > 8000 m²

Sprinklers for Safer Living

The benefits of automatic fire suppression systems in residential care premises



A Report by Arup Fire

Sprinklers for Safety : Uses and Benefits of Incorporating Sprinklers in Buildings and Structures
A report by BAFSA and Arup Fire – 2006 referred to in both AD-B and BB100 and DCFS Standard Sprinkler Specification

British Automatic Sprinkler Association

BS100, provided by the Department for Education and Skills, sets out the minimum fire safety design guidance for new school buildings. The Fire Safety design guidance for new school buildings document which has removed specific references to BS100, is currently under consultation in August 2006 and it is expected that a revised document will be issued in a satisfactory design.

A review of the BS100 consultation document has been completed and the following points have an impact:

Access:
In areas where access is a regular occurrence (subject to the outcome of a risk assessment)

Structural fire resistance:
For schools with the highest occupancy, the fire resistance of the structure may be reduced from 2 hours to 1 hour.

Compartmentation:
Maximum compartment areas can be increased from 800m² to 2000m² if sprinklers are fitted.

3.3.3 Joint Code of Practice:
The Joint Code of Practice for fire safety in schools is a new code of practice solution to promote the incorporation of fire safety systems into the design of school buildings. The code was developed by 25 fire safety experts and the basis of fire safety systems. The document details the requirements for fire safety systems in schools. There is also a separate code of practice for fire safety in schools. Even when fire safety systems are not fitted, the code of practice provides a good level of fire safety. The code of practice provides a good level of fire safety. The code of practice provides a good level of fire safety.

British Automatic Sprinkler Association

Use and Benefits of Incorporating Sprinklers in Buildings and Structures

BAFSA for Education and Skills, is intended to form the main source of fire safety references to school buildings. The document was issued for consultation in August 2006 and it is expected that a revised document will be issued in a satisfactory design.

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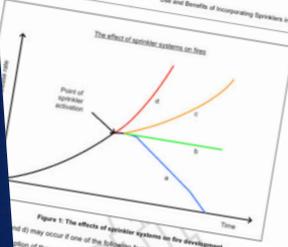


Figure 1: The effects of sprinkler systems on fire

The effect of sprinkler systems on fire is to reduce the fire growth rate, the fire spread rate and the fire damage rate. The graph shows that the fire is still in its early stages when the sprinkler system is activated, which means that the fire is easier to control and the damage is reduced.

British Automatic Sprinkler Association

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Technical Memoranda

It is intended that the current recommendations and trade-offs in the new documents.

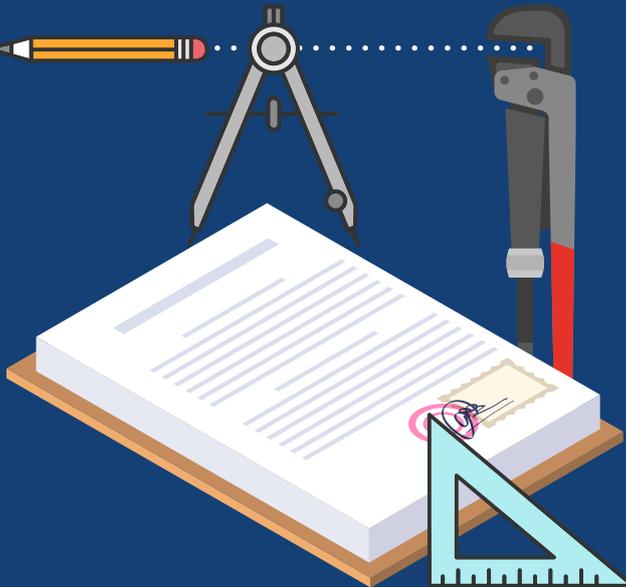
DESIGN FREEDOMS

With sprinklers in a building, it may be possible to achieve any of the following :-

- Doubling of compartment size
- Doubling travel distance
- Increasing dead end distances
- Relaxations in cases of 'rooms within rooms'
- Elimination of a second/third staircase
- Reductions in compartmentation
- Reduction in class of linings for internal fire spread
- Innovative designs including atria

ADVANCED APPROACH

This is the level for which BS 9999 is provided, giving a more transparent and flexible approach to fire safety design. It uses a structured approach to risk-based design where designers can take account of varying physical and human factors.



BS 9999 RISK PROFILES

| Table 4 Risk profiles | | | |
|---|--|------------|--------------|
| Occupancy characteristic From table 2 | Fire growth rate | | Risk profile |
| A (Occupants who are awake and familiar with the building) | 1 | Slow | A1 |
| | 2 | Medium | A2 |
| | 3 | Fast | A3 |
| | 4 | Ultra-fast | A4 A) |
| B (Occupants who are awake and unfamiliar with the building) | 1 | Slow | B1 |
| | 2 | Medium | B2 |
| | 3 | Fast | B3 |
| | 4 | Ultra-fast | B4 A) |
| C (Occupants who are likely to be asleep) | 1 | Slow | C1 B) |
| | 2 | Medium | C2 B) |
| | 3 | Fast | C3 B), C) |
| | 4 | Ultra-fast | C4 A), B) |
| A) | These categories are unacceptable within the scope of BS 9999. | | |
| B) | Addition of an effective localized suppression system or sprinklers will reduce the fire growth rate and consequently change the category (see 6.5). | | |
| C) | Risk profile C may be divided into sub-categories, viz. Ci1, Ci1, Ciii1, etc. | | |
| | Risk profile C3 will be unacceptable under many circumstances unless special precautions are taken. | | |

See Note A and the importance of sprinklers in a building where there would be ultra-fast spread of fire

FIRE SAFETY ENGINEERING

Fire Safety Engineering provides an alternative approach to fire safety and can be the only practical way to achieve a satisfactory standard of fire safety in some large and complex buildings. Detailed guidance on fire safety engineering is given in BS 7974. But it can be expensive.

OCCUPANT BEHAVIOUR

- Smoke can travel at speeds over 2m/s
- Some people may only travel at speeds of 1 – 2m/s
- Available safe egress time: ASET
- BS PD 7974: 2019 The application of fire safety engineering principles to fire safety design of buildings

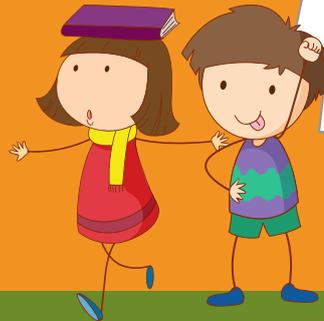


BB 100 DESIGN FOR FIRE SAFETY IN SCHOOLS

BB100 was published September 2007 and intended to be risk-based with prescriptive-style guidance

It proposed alternative measures and the package of measures included:

- Detection and alarm
- Fire suppression based on risk assessment
- Effective means of escape
- Appropriate signage
- Selection of robust materials
- Compartmentation
- Effective security







EXPLAIN HOW THE DIFFERENT STATUTORY BODIES AND LEGISLATION INTERACT



DUTY TO CONSULT

Fire Safety Order

Article 45. —

- (1) Where it is proposed to erect a building, or to make any extension of, or structural alteration to, a building and, in connection with the proposals, plans are, in accordance with building regulations, deposited with a local authority, the local authority must, subject to paragraph (3),* consult the enforcing authority before passing those plans.
- (2) Where it is proposed to change the use to which a building or part of a building is put and, in connection with that proposal, plans are, in accordance with building regulations, deposited with a local authority, the authority must, subject to paragraph (3), consult with the enforcing authority before passing the plans.

* Where the 'Fire Safety Order' applies.

Procedural Guidance

New guidance is now prepared:

- 'Preliminary' [fire] risk assessment
- When consulted, a Fire Authority should make its comments to building control body within 15 working days

FIRE RISK ASSESSMENT

Once a building is occupied, the person responsible must ensure that a fire risk assessment is carried out. However, as time goes on, it must be periodically reviewed – especially if there are changes to either the building or 'risk'.

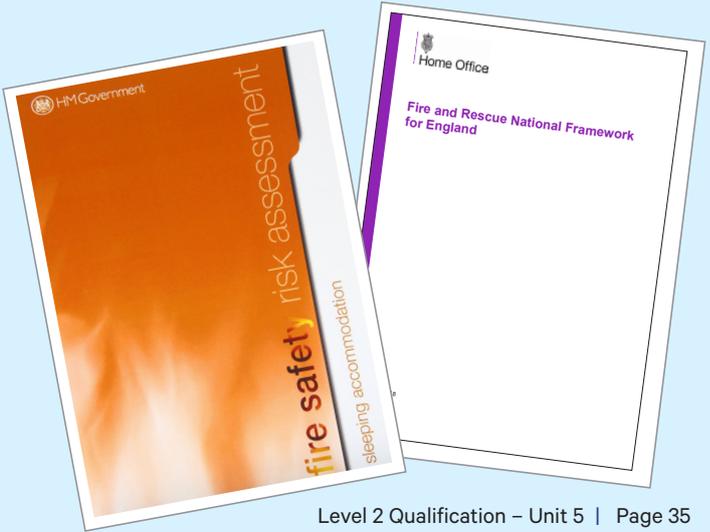
“A fire safety risk assessment is an organised and methodical look at the premises, the activities within the premises, the potential for a fire to occur and the harm it could cause to the people in and around the premises.



FIRE RISK ASSESSORS

- Fire Risk Assessments can be conducted by in-house staff.
- To assist with this, guidance has been produced for various types of premises
- However, the legislation has spawned a new industry of fire consultants/assessors
- As yet it is unregulated but changes are expected

The existing fire safety measures are evaluated and kept under review to establish whether they are adequate or if more requires to be done.”



ENFORCEMENT IS BY FIRE & RESCUE AUTHORITIES

Fire Officers can use a number of legal methods to ensure that buildings are safe : -

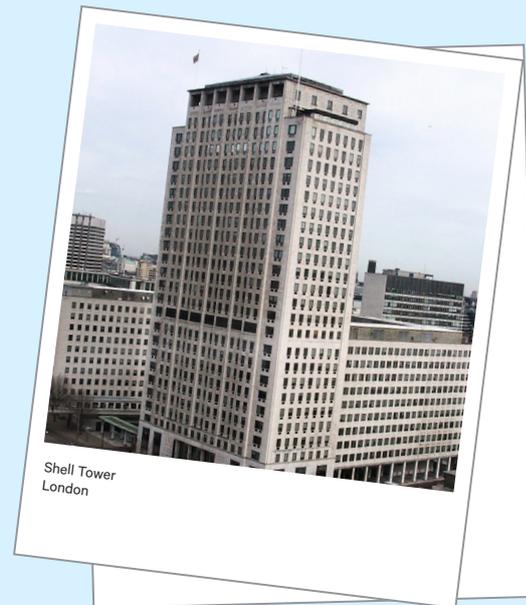
- Enforcement notice
- Prohibition or restriction notices
- Alterations' notice

PROSECUTION JUNE 2009

London Fire Brigade took action following two small fires in area undergoing refurbishment in the Shell Tower.

The company responsible pleaded guilty to three offences under the Regulatory Reform (Fire Safety) Order 2005 :

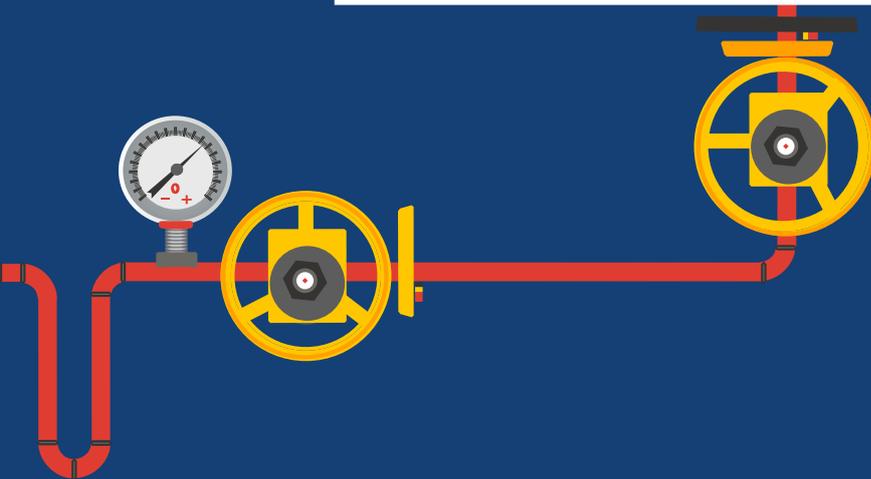
- Failing to review the fire risk assessment
- Two doors not having smoke seals
- This resulted in the court awarding a £300,000 fine with £45,000 costs







GIVE AN OVERVIEW OF THE STANDARDS FOR FIRE SPRINKLER SYSTEMS



TYPES OF SPRINKLER SYSTEMS



WET

Wet systems are preferable for life safety

DRY

Dry systems for where there is a risk of freezing

ALTERNATE WET & DRY

Requires changeover twice a year

Relies on a secondary means of fire detection

PRE ACTION

DELUGE

As water will flow from all heads, a large water supply will be needed



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See BAFSA Information File No 15 for more information

SPRINKLER DESIGN STANDARDS IN UK

- BS EN 12845 – Commercial and Industrial premises
- FM Global Fire Protection Standards
- BS 9251 - Residential and domestic only
- BS EN 16925 – Residential and domestic only*
- NFPA 13R - Sprinklers in residential properties
- NFPA 13D - Sprinklers in domestic properties

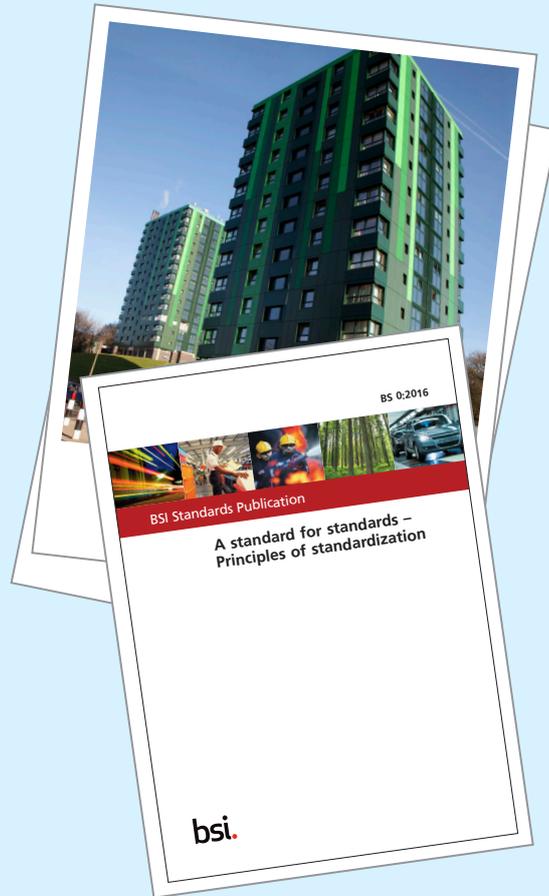
*This standard is limited to low rise buildings

BS EN 12845

Property protection:

- Light Hazard
- Ordinary Hazard Group: 1, 2, 3 & 4
- High Hazard: storage or process

Life safety



LPC RULES

- The LPC Rules are produced by the Fire Protection Association
- They include the full text of the BS EN 12845
- Plus Technical Bulletins and supporting documents
- They are mandated by insurers for certain buildings (e.g.TB221 for schools)
- Significant insurance premium discounts can follow





SPRINKLER SYSTEMS APPLICATIONS

BS EN 12845 SYSTEMS

Property Protection & Life Safety

Most appropriate for:

- Warehouses
- Factories
- Offices
- Hospitals
- Schools
- Car Parks
- Hotels
- Shops and Shopping Centres



BS 9251 AND BS EN 16925 SPRINKLER SYSTEMS

In addition to our well established British standard there is now a 'European' standard.

In both cases residential and domestic occupancies generally include the following types of premises; however, sprinkler design and installation standards now apply a risk rating to the range of properties covered in the form of 'System Category' (BS 9251) or 'System Type' (BS EN 16925).

Application

- One or two-family dwelling / house
- Pre-fabricated house
- Bed and breakfast
- Apartment building
- House with multiple households sharing facilities
- Small care home
- Child or adult day-care centre
- Student accommodation

- Large care home
- Small hotels or hostels

It is also important to note that BS EN 16925 is limited to buildings of four storeys or 18m in height.



WATERMIST SYSTEMS

- Watermist is becoming increasingly popular - particularly effective for fast growing fires in confined spaces
- These systems use less water which may be a benefit
- As stand-alone systems, there may be cost savings regarding water supplies + tanks and pumps
- However, unlike sprinklers, we have limited historical data on the effectiveness of mist
- Slow growing fires may prove a challenge
- Not always popular with insurers!



REFERENCES

P16 **Fire safety: Approved Document B**
Building regulation in England covering fire safety matters within and around buildings.
<https://goo.gl/PcVdTy>

Building Act 1984
Chapter 55

An Act to consolidate certain enactments concerning building and buildings and related matters.
<https://goo.gl/qWcbjC>

P21 **Fire Precautions Act 1971**
<https://goo.gl/ucoud7>

P22 **Regulatory Reform, England and Wales The Regulatory Reform (Fire Safety) Order 2005**
<https://goo.gl/vPqB8L>

The Fire Safety Regulations (Northern Ireland) 2010
<https://goo.gl/aW2Wz4>
Fire (Scotland) Act 2005
<https://goo.gl/bRgjiN>

P23 **BS 9999:2017** Code of practice for fire safety in the design, management and use of buildings

What is BS 9999?

BS 9999 gives recommendations and guidance on the design, management and use of buildings to achieve reasonable standards of fire safety for all people in and around them. It also provides guidance on the on-going management of fire safety within a building throughout its entire life cycle, including guidance for designers to ensure that the overall design of a building assists and enhances the management of fire safety.

This British Standard is applicable to the design of new buildings, and to alterations, extensions and changes of use of an existing building. It can be used as a tool for assessing existing buildings, although fundamental change in line with the guidelines might well be limited or not practicable. The recommendations and guidance given in this British Standard are

intended to safeguard the lives of building occupants and firefighters. Whilst some of the recommendations and guidance might also assist in the achievement of other fire safety objectives – such as protection of property, the environment, communities and business/service viability – additional measures might be necessary which are outside the scope of this British Standard. It is not applicable to individual dwelling-houses, and might have only limited applicability to certain specialist buildings and areas of buildings (e.g. hospitals and areas of lawful detention).
<https://goo.gl/sNHWo1>

BS 7974

Application of fire safety engineering principles to the design of buildings. Code of practice

This British Standard provides a framework for an engineering approach to the achievement of fire safety in buildings by giving recommendations and guidance on the application of scientific

and engineering principles to the protection of people, property and the environment from fire. It also provides a framework for developing a rational methodology for the design of buildings.

This standard applies to the design of new buildings and the appraisal of existing buildings.

The use of this standard will facilitate the practice of fire safety engineering and in particular it will:

- a) provide the designer with a disciplined approach to fire safety design;
- b) allow the safety levels for alternative designs to be compared;
- c) provide a basis for selection of appropriate fire protection systems;
- d) provide opportunities for innovative design;
- e) provide information on the management of fire safety for a building.

This standard does not provide specific guidance on buildings used for the bulk storage or processing of flammable liquids or explosive

materials. The intrinsic risks associated with such buildings will often necessitate special consideration, which is beyond the scope of this document.

<https://goo.gl/22J1qu>

Domestic Fire Safety (Wales) Regulations 2013

The National Assembly for Wales require the provision of automatic fire suppression systems in new residential premises in Wales.

<https://goo.gl/CtAHnw>

BS 9991:2015 Fire safety in the design, management and use of residential buildings. Code of practice

BS 9991 exists to help people put adequate fire safety measures in place in residential buildings. This includes fire detection and alarm systems and fixed fire-fighting systems. The 2015 revision provides a full technical update, to take into account new and revised standards published since its last publication, in 2011.

<https://goo.gl/y5tDyh>

Scottish Technical Handbook – Domestic

<https://goo.gl/MU8np0>

Fire Safety Approved Document B Volume 1 – Dwelling Houses

<https://goo.gl/MDZAYY>

Volume 2 – Buildings other than Dwelling Houses

<https://goo.gl/F56DUu>

P25 A report by BAFSA and Arup Fire - 2006

<https://goo.gl/LdDGpE>

DCFS Standard Sprinkler Specification

<https://goo.gl/qSjdK4>

P30 Building Bulletin 100: design for fire safety in schools

<https://goo.gl/oSo1Jh>

P41 BAFSA Information File 15 : Types of Sprinklers Systems

<https://goo.gl/uu5JBX>

FM Global Fire Protection Standards

<https://goo.gl/PgNfBX>

BS 9251: 2014

Fire sprinkler systems for domestic and residential occupancies. Code of practice

<https://goo.gl/J8BbWL>

NFPA 13R

A residential sprinkler design standard focused on low-rise residential occupancies. The Standard's intent is to provide a sprinkler system that aids in the control of residential fires and provides improved protection against injury and life loss in multi-family dwellings.

<https://goo.gl/vFo9d1>

NFPA 13D

NFPA 13D is a residential sprinkler design standard focused on one- and two- family dwellings and manufactured homes. The intent is to provide an affordable sprinkler system in homes while maintaining a high level of life safety.

<https://goo.gl/yDhDRS>

P42 BS EN 12845:2015

Outlines recommendations for the purchase, design, installation, operation and maintenance of automatic sprinkler systems in buildings and industrial plants.

<https://goo.gl/QnaqQc>

P43 LPC Rules

The LPC Rules, the UK's most significant sprinkler installation standard, has been re-published in order to incorporate the amended version of BS EN 12845 and related Technical Bulletins.

<https://goo.gl/Soq9Tz>

P45 BS 8458:2015

Fixed fire protection systems. Residential and domestic watermist systems. Code of practice for design and installation

<https://goo.gl/7TBwiH>

BS EN 16925

Fixed firefighting systems - Automatic residential sprinkler systems - Design, installation and maintenance



The British Automatic Fire Sprinkler Association (BAFSA) is the UK's leading professional trade association for the fire sprinkler industry and will celebrate 50th birthday in 2024.

BAFSA's members install more than 85% of the sprinkler and watermist installations in the UK and include a significant majority of third-party certified sprinkler installers as well as manufacturers; suppliers; contractors; insurers; the fire and rescue services and others with an interest in the field. Increasingly the association has offered a home to smaller companies just entering the market and now represents a large number of companies offering the installation of domestic and residential fire sprinkler systems. Many of the association's members also design and install watermist systems.

BAFSA is dedicated to making sure that sprinkler systems are installed to the highest professional standards.

BAFSA's primary objectives include providing authoritative information on the benefits of sprinkler systems and how sprinklers can play a significant role in saving life and property from the devastating effects of fire. To this end, BAFSA works closely with the government, fire and rescue service, building control officers, insurers, architects and town planners.

bafsa.org.uk

British Automatic Fire Sprinkler Association

bafsa