

Buildings and structures for agriculture

Part 23. Code of practice for fire precautions

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Farm and Horticultural Buildings Standards Policy Committee (FHB/-) to Technical Committee FHB/1, upon which the following bodies were represented:

AFRC Institute of Engineering Research
Aggregate Concrete Block Association
Brick Development Association
British Cement Association
British Commercial Glasshouse Manufacturers' Association
British Constructional Steelwork Association Ltd
British Poultry Federation Limited
British Precast Concrete Federation Ltd
British Veterinary Association
British Wood Preserving Association
British Woodworking Federation
Cold Rolled Sections Association
Department of Agriculture and Fisheries for Scotland
Department of Agriculture Northern Ireland
Electricity Supply Industry in England and Wales
Farm and Rural Buildings Centre
Farm Buildings Association
Fibre Cement Manufacturers' Association Limited
Health and Safety Executive
Institution of Civil Engineers
Local Authority Organizations
Ministry of Agriculture, Fisheries and Food
National Farmers' Union
Royal Institute of British Architects
Royal Institution of Chartered Surveyors
Steel Construction Institute
Timber Research and Development Association

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Foreword

This Part of BS 5502 has been prepared under the direction of the Farm and Horticultural Buildings Standards Policy Committee and comprises a revision of BS 5502 : Section 1.3 which is now withdrawn.

This code of practice is primarily concerned with the safety of persons and livestock, but also includes provisions for the protection of property. It is intended for use for buildings excluded from building regulations. However, where the technical provisions of this Part of BS 5502 are higher than those of regulations, consideration should be given to the use of these recommendations.

This revision takes account of the new and updated fire tests on building materials and structures described in BS 476 and the concept of limited combustibility introduced in building regulations.

While BS 5502 is being revised and added to, the opportunity is being taken to restructure the standard into the following broad subject areas.

Part 0	Introduction and consolidated index
Parts 10 to 19	Reference information and legislation
Parts 20 to 39	General design
Parts 40 to 59	Livestock buildings
Parts 60 to 79	Crop buildings
Parts 80 to 99	Ancillary buildings

More specifically, the general design series will comprise:

Part 20	Code of practice for general design considerations
Part 21	Code of practice for selection and use of construction materials
Part 22	Code of practice for design, construction and loading
Part 23	Code of practice for fire precautions
Part 24	Code of practice for energy management
Part 25	Code of practice for design and installation of services and facilities
Part 30	Code of practice for control of infestation
Part 31	Guide to waste management
Part 32	Guide to noise attenuation
Part 33	Guide to control of odour pollution
Part 34	Guide to control of dust
Part 35	Guide to control of gases and vapours

A more detailed description of the new structure of BS 5502 is given in Part 0.

The object of introducing the new structure is to allow subject areas to be broadly characterized, and related subject matter, whether in the form of recommendations, guidance or supporting data, to be rationalized and brought together. It will also allow sufficient flexibility to enable BS 5502 to be expanded and developed in a logical way in the future. Parts 20 to 39 relating to general design will follow broadly the existing structure of BS 5502 : Sections 1.0 to 1.7.

It has been assumed in the drafting of this Part of BS 5502 that the execution of its provisions is entrusted to appropriately qualified and experienced people.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Code of practice

1 Scope

This Part of BS 5502 gives recommendations for the fire precautions for single storey agricultural buildings and structures which are exempted under building regulations, and which are used for the purposes of horticulture, crop and livestock farming. This Part is not applicable to those buildings used for the storage of explosives or commercial quantities of chemicals.

NOTE. The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this Part of BS 5502, the following definitions apply.

2.1 area of any part of a roof

The area normal to the slope.

2.2 area of any storey of a building

The total area bounded by the inner finished surfaces of the enclosing wall or, on any side where there is no enclosing wall, by the outermost edge of the floor on that side.

2.3 boundary

The boundary between land under the same occupation as the building and land under a different occupation.

NOTE. Where a building faces a farm dwelling a notional boundary is assumed to pass between them, so situated as to enable adjacent sides and external walls of both buildings to comply with the recommendations of this Part or the Building Regulations as applicable.

2.4 cavity

Any concealed space or hidden void within a building which could provide a ready route for smoke or fire spread e.g. spaces in roof construction and cavities in walls.

2.5 cavity barrier

A physical barrier or seal designed to restrict the passage of smoke and/or the spread of fire.

2.6 compartment wall

A wall constructed to achieve a stated period of fire resistance and which is imperforate, except for openings fitted with a self-closing door or shutter having the same period of fire resistance as is achieved by the wall.

2.7 element of structure

Any member of a structural frame, external wall, separating wall, compartment wall, loadbearing wall, gallery, in relation to structural stability.

2.8 fire hazard

A physical situation with a potential for harm to persons and livestock, or damage to property, or both, from the effects of fire.

2.9 fire risk

The probability that a damaging fire will occur as the result of the existence of a fire hazard.

2.10 fire stop

A seal provided to close an imperfection of fit between elements, components or construction in a building, or any joint, so as to restrict penetration of smoke and flame through that imperfection or joint.

2.11 height of a building, for the purpose of fire considerations

The vertical height from the ground level to half the height of the roof in a pitched roof building, or to the top of the roof or parapet (whichever is the higher) in a flat roof building.

2.12 protected area

Those parts of the external walls constructed to achieve the required period of fire resistance.

3 Legislation

3.1 Building Regulations

3.1.1 General

Clause 3.1 draws attention to building regulations in the United Kingdom. It is not intended to provide an interpretation of the regulations, which is a matter for the relevant Government Department or Local Authority.

NOTE. Building regulations are primarily concerned with safety of life, but this code of practice also includes provisions for the protection of property.

3.1.2 England and Wales

In England and Wales exempted classes of buildings are given in Schedule 3 of the Building Regulations 1985.

3.1.3 Northern Ireland

In Northern Ireland exempted classes of buildings are given in Regulations A5 of the Building Regulations (NI) 1989.

3.1.4 Scotland

In Scotland exempted classes of buildings are given in Schedule 4 of the Building Standards (Scotland) Regulations 1981 to 1986.

3.2 Fire precautions

Advice on the applicability of the Fire Precautions Act 1971 particularly with respect to means of escape for humans, should be sought from the local fire authority.

4 Fire hazard

4.1 General

Fire hazard and means of escape should be assessed during the early stages of the building design process, as remedial action can be difficult to achieve. In order to protect persons and livestock in or about agricultural buildings, to limit the extent of fire spread both within a building and to adjacent buildings, and to preserve buildings and their contents, the factors that should be considered in relation to fire hazard are:

- (a) general design of the building;
- (b) type and quantity of materials used in the construction;
- (c) the level of workmanship achieved;
- (d) the intended uses and contents of the building;
- (e) the activities likely to take place in the building;
- (f) any fire precautions that may have been taken.

An alteration in the use of a building may change its potential fire hazard.

NOTE. For further information on fire hazard see BS 6336.

4.2 Hay and straw storage

Hay and straw are highly combustible materials when dry, but are so commonplace in many farm situations that the fire hazards they pose tend to be ignored or forgotten. The heat radiation from burning hay or straw in bulk is very intense and can ignite combustible materials some distance away.

5 General fire precautions

5.1 Access for fire fighting

The name board of the farm should be clearly displayed beside the nearest public access road so that the fire brigade can find it easily in an emergency. Gateways should not be less than 3.1 m wide. There should be good access for fire fighting appliances to all main entrances to all buildings (particularly livestock), hydrants and other water sources via roads not less than 3.7 m wide. More detailed specification of access requirements for fire fighters and fire fighting vehicles are given in Approved document B5, Section 16 of the Building Regulations 1991 and for Scotland in Technical standard E9.1 of the Technical standards for compliance with the Building Standards (Scotland) Regulations 1990.

5.2 Separation and compartmentation

Consideration should be given to the siting of new farm buildings at suitable distances from other buildings and, where appropriate, to the compartmentation of new, or 'as existing' buildings, where a change of use is being considered, so as to limit the spread of fire from

one building or compartment to another, in particular where livestock accommodation is concerned.

Where practicable, the floor area of any mechanically ventilated compartment intended to house livestock on combustible bedding should not exceed 500 m². Where larger compartments are planned, the possible consequences of a fire should be fully considered and the appropriate fire authority and insurance company should be consulted at an early stage in the planning. In no case should the compartment floor area exceed 1800 m².

5.3 Emergency escape for livestock

Emergency escape routes should be provided for all housed livestock. The total length of the escape route for any animal in the building should not be greater than 30 m. As far as possible without compromising security, all doors on the escape routes should be fitted with quick release mechanisms that allow rapid opening in emergency. Where animals are tethered the tethers should also be fitted with quick release mechanisms. Pen doors should be so arranged that livestock can be evacuated quickly, and acute turns, obstructions and ramps in the escape routes should be avoided as far as possible. In buildings exceeding 30 m in length or where more than 100 livestock are housed, at least two exits should be provided.

5.4 Smoke venting

Smoke is a major hazard in case of fire, both to humans and animals seeking escape and to fire fighters. Intensive livestock buildings should be equipped with a smoke venting system designed in accordance with BS 5502 : Part 52. Consideration should be given at the design stage to smoke venting for all large farm buildings.

NOTE 1. When selecting insulating materials, a balance needs to be achieved between cost savings and the fire hazards involved. This balance can be particularly difficult to attain because of the following:

- in uninsulated buildings there is an increased tendency to house livestock under straw covered kennels with a corresponding increase in fire hazard;
- if insulating foams are used in a building, increased quality of electrical installation may be required.

NOTE 2. Advice on the design and siting of smoke ventilators may be obtained from the appropriate fire authority.

5.5 Use of flammable building materials

Building materials which are highly flammable or which produce dense smoke or toxic fumes during combustion should not be used in a structure in such a way that they constitute a major safety hazard in the building concerned. (See also BS 5502 : Part 81 for chemical stores.)