

Buildings and structures for agriculture —

**Part 51: Code of practice for design and
construction of slatted, perforated and
mesh floors for livestock**

Confirmed December 2009

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 and Damp-proofing Association
- Cold Rolled Sections Association
- Department of Agriculture Northern Ireland
- Electricity Supply Industry in United Kingdom
- 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
- Scottish Office (Agriculture and Fisheries Department)
- Steel Construction Institute

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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 new Part to BS 5502.

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 livestock building series will comprise:

- Part 40: *Code of practice for design and construction of cattle buildings;*
- Part 41: *Code of practice for design and construction of sheep buildings and pens;*
- Part 42: *Code of practice for design and construction of pig buildings;*
- Part 43: *Code of practice for design and construction of poultry buildings;*
- Part 49: *Code of practice for design and construction of milking parlours;*
- Part 50: *Code of practice for design, construction and use of storage tanks and reception pits for livestock slurry;*
- Part 51: *Code of practice for design and construction of slatted, perforated and mesh floors for livestock;*
- Part 52: *Code of practice for design and construction of emergency ventilation systems for livestock buildings.*

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.

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, for whose guidance it has been prepared.

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.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Part of BS 5502 gives recommendations on the design and construction of slatted, perforated and mesh floors used for the housing of cattle, pigs and sheep so as to provide self-cleaning by allowing animal waste to pass through the voids.

The recommendations are applicable specifically to the housing of:

- a) cattle (see notes 1 and 2);
- b) pigs (see notes 1 and 2);
- c) sheep (see notes 1 and 2).

NOTE 1 Loading data in BS 5502-22 limits upper bound.

NOTE 2 Flooring may not be suitable for certain types of stock, see 8.1, 9.1 and 10.1.

The recommendations given on welfare considerations, materials, general design and installation are applicable to other types of livestock provided that additional consideration is given to the particular needs of the livestock being housed. These recommendations are not applicable to poultry.

NOTE 3 The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions and symbols

2.1 Definitions

For the purposes of this standard, the definitions given in BS 6100 and BS 5502-10 apply together with the following.

2.1.1 slat

individual solid longitudinal floor member between two supports

2.1.2 multiple slat

prefabricated unit consisting of a number of parallel spaced slats, or a voided panel where the ratio of the length to the width of the hole exceeds 3 : 2

2.1.3 perforated panel

preformed panel supported on two or more sides with a regular pattern of holes

2.1.4 mesh panel

expanded, woven or welded mesh supported on two or more sides with a regular pattern of holes

2.1.5 void ratio

floor area unobstructed to the passage of waste in a slatted, perforated or mesh floor divided by total floor area excluding solid areas at edges, over supports or areas used as spacers

2.1.6 service life

period of time during which no excessive expenditure is required on operation, maintenance or repair of a component or construction

2.1.7 design life

period of time during which a component or construction is intended by the designer to perform its required function

2.2 Symbols

For the purposes of this Part of BS 5502, the following symbols, illustrated in Figure 1, apply.

- s spacing/clear distance between solid portions of slats, multiple slats, perforated and mesh panels (in mm).
- w width of a single slat or solid portion between voids in a multiple slat (in mm).
- a radius of arrises between top and side faces of solid portions of a slat, multiple slat, perforated or mesh panel (in mm).
- α relief angle of side face of solid portion of slat, multiple slat, perforated or mesh panel (in degrees).
- d depth of a slat, multiple slat unit, perforated or mesh panel (in mm).
- L overall length of a slat, multiple slat unit, perforated or mesh panel (in mm).
- x supported length of a slat, multiple slat unit, perforated or mesh panel (in mm).
- W_p overall width of a single slat, multiple slat, perforated or mesh panel (in mm).
- b dung-break-off edge (in mm).

3 Animal welfare considerations

3.1 When designing or constructing flooring for animals, consideration should be given to the current editions of Codes of recommendations for the welfare of livestock¹⁾. Within these codes guidance is given on the type of floors suitable for stock. These codes are regularly revised and the latest version should always be consulted.

¹⁾ Published by the Ministry of Agriculture, Fisheries and Food (MAFF), Department of Agriculture and Fisheries for Scotland and the Department of Agriculture for Northern Ireland.