

Buildings and structures for agriculture —

**Part 70: Code of practice for design and
construction of ventilated on floor
stores for combinable crops**

Confirmed
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Committees responsible for this British Standard

The preparation of this British Standard was undertaken by Technical Committee B/549, upon which the following bodies were represented:

- British Cement Association
- British Commercial Glasshouse Manufacturers' Association
- British Precast Concrete Federation Ltd.
- British Veterinary Association
- Department of Agriculture Northern Ireland
- Farm and Rural Buildings Centre
- Farm Buildings Association
- Health and Safety Executive
- Institution of Civil Engineers
- 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
- Transport and General Workers' Union
- Water Services Association of England and Wales

This British Standard, having been prepared under the direction of the Technical Sector Board for Building and Civil Engineering (B/-), was published under the authority of the Standards Board and comes into effect on 31 January 1992

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Foreword

This Part of BS 5502 has been prepared under the direction of the Technical Sector Board for Building and Civil Engineering. It comprises a partial revision to BS 5502-2.3 which will be amended on publication of this Part.

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 crop building series will comprise:

- *Part 60: Code of practice for design and construction of buildings for mushrooms;*
- *Part 65: Code of practice for design and construction of crop processing buildings;*
- *Part 66: Code of practice for design and construction of chitting houses;*
- *Part 70: Code of practice for design and construction of ventilated on floor stores for combinable crops;*
- *Part 71: Code of practice for design and construction of ventilated stores for potatoes and onions;*
- *Part 72: Code of practice for design and construction of controlled environment stores for vegetables, fruit and flowers;*
- *Part 74: Code of practice for design and construction of bins and silos for combinable crops.*

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 10, 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 for the design and construction of ventilated on floor stores for combinable crops.

NOTE 1 For bin and silo storage see BS 5502-74.

NOTE 2 The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this standard, the definitions given in BS 6100 apply.

3 General

3.1 Storage

The function of crop storage buildings and structures is maintenance of crop quality by control and retardation of the natural biological processes of the crop. The quality is maintained by controlling storage temperatures and relative humidity.

Drying usually precedes storage by the application of heat from a continuous flow or batch bin drier. Alternatively, drying can take place on the floor storage area. For small quantities of grains and herbage seeds, sack drying and storage may be considered.

3.2 Siting

Consideration should be given to the siting of crop stores (see BS 5502-20). In particular, consideration should be given to the following:

- a) choosing a level site where there is no risk of flooding;
- b) choosing ground with adequate bearing capacity;
- c) ease of access for large transport;
- d) availability of services;
- e) nuisance arising from transport, machinery noise and the creation of dust;
- f) allowing for future expansion.

3.3 Type of store

3.3.1 The design of the store will be determined by the following factors:

- a) type of produce stored;
- b) storage duration;
- c) drying system employed;
- d) sophistication of the mechanical handling.

3.3.2 Crops may be either:

- a) pre-dried and stored simply in a weatherproof, structurally sound building with sufficient ventilation to keep the crop conditioned;

- b) dried in a store consisting of a building fitted with a ducted air system comprising a fan house, main duct and lateral ducts, or a prefabricated drying floor system.

3.3.3 The handling system may range from the basic tipping trailer/mobile elevator/auger through to the complete fully automated mechanical system of reception pit, elevators and high- and low-level conveyors in and out of store.

4 Design, materials and construction

4.1 General

4.1.1 The design, choice of materials and construction of ventilated crop stores should be in accordance with BS 5502-20, BS 5502-21, BS 5502-22, BS 5502-23 and BS 5502-25.

4.1.2 Foundations, support structures and retaining walls for stores should be designed and constructed to withstand loads from the stored crops and mechanical transport in accordance with BS 5502-22.

4.1.3 Structures should be designed to minimize differential settlement, deflection and structural movement that could cause fracturing of surfaces and permit moisture ingress or infestation, so putting the stored products at risk.

4.1.4 Store interiors require cleaning or fumigation after the storage period and this should be considered in the choice of materials.

4.1.5 Materials and treatments used in the construction should not impart odour or taint to the crop.

4.1.6 All parts of the structure should be constructed in accordance with the recommendations given in BS 8000.

4.2 Floors

4.2.1 General

Floors should be level with an even surface. Floors should be designed and constructed to withstand the load from the crops as well as dynamic loads from mechanical transport, plant and equipment. The surface should be hard wearing, capable of being cleaned and not susceptible to cracking or crazing. To prevent moisture ingress to the crop, the floor should be impervious or a damp-proof membrane should be provided. Thermal and shrinkage movement should be minimized by the correct placing of construction, expansion and contraction joints.