

Buildings and structures for agriculture —

Part 33: Guide to the control of odour pollution

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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 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

This British Standard, having been prepared under the direction of the Farm and Horticultural Buildings Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 31 July 1991

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The following BSI references relate to the work on this standard:
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Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
0 Introduction	1
1 Scope	1
2 Definitions	1
3 General	1
4 Sources of odour nuisance	2
5 Odour control	2
6 Chemical additives and masking agents	5
Appendix A Bibliography	6
Index	7
Publication(s) referred to	Inside back cover

Foreword

This Part of BS 5502 has been prepared under the direction of the Farm and Horticultural Buildings Standards Policy Committee and comprises of a new Part of 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 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 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 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 will follow broadly the existing structure of BS 5502-1.0 to BS 5502-1.7.

It has been assumed in the drafting of this British Standard 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.

0 Introduction

This Part of BS 5502 identifies those operations which occur during the normal use of agricultural buildings and structures, and give rise to odour pollution, and which can be mitigated against by good design in the building and structure.

To some extent the effects of odour pollution are subjective and depend upon the related environment. The aim of the guidance given in this Part of BS 5502 is to indicate to the designer ways in which the effects of such pollution can be reduced by the effective design and construction of a building and structure. In doing so, the assumption is made that use of the building will follow established agricultural practice and that equipment and machinery installed and/or used is of itself effective in minimizing pollution effects.

1 Scope

This Part of BS 5502 gives guidance on aspects of controlling odour pollution produced mainly as a result of livestock farming practices in relation to the design and construction of agricultural buildings and structures.

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 British Standard, the definitions given in BS 6100 apply.

NOTE Work has commenced on a further Part of BS 5502 (Part 10) which will be a glossary of terms used in BS 5502 for buildings and structures for agriculture.

3 General

3.1 Odour

The complexity of the human sense of smell together with the variation in the human response to odorants (i.e. chemical compounds which have an odour) make odour pollution and odour nuisance subjective and difficult subjects to deal with. Unpleasant smells do not necessarily present hazardous conditions to humans.

3.2 Odour measurement

Methods for evaluating odours have been researched for many years. The aim is to determine the nuisance value of the odour in a scientific and objective manner. At present, methods have been developed and approved by an expert group set up by the EEC to determine odour concentration. This measures the volume of clean odourless air which is required to dilute a known volume of odorous air to a point where 50 % of a panel (of selected people) can no longer detect the odour. The value is known as the 50 % threshold value and is determined by the use of an olfactometer. Odour concentration is used to determine the reduction in odour achieved by air cleaning treatment systems or waste treatment plants. The usual background odour concentration of air is 30 dilutions of odour-free air to one of odorous air. Intensive pig and poultry buildings often have an odour concentration from exhaust ventilation outlets in excess of 2 500 dilutions to one.

Many situations that give rise to odour pollution can be minimized by good farm management. This guide is mainly concerned with those aspects which relate to the building or structure.

NOTE For further information on farm management see Appendix A.

3.3 Toxicity

Gases arising from livestock wastes can be odorous and/or toxic. The characteristic odours of livestock wastes arise from the simultaneous presence, in the air around the waste, of a variety of different gases. Gases which contribute to livestock waste odours and which are also toxic when present above a certain concentration include hydrogen sulphide and ammonia. Hydrogen sulphide is particularly hazardous as the concentration above which it is toxic is extremely low, and, moreover, there are some concentrations of hydrogen sulphide in air at which it is not odorous, and at which therefore, its presence is not easily detected.

Gases which are toxic but not odorous include carbon dioxide and carbon monoxide. The former, particularly, can build up in confined spaces and thus cause a risk of asphyxiation.

3.4 Legislation

Nuisance laws exist under the Environmental Protection Act 1990. The public may complain about odour and, as a result, a local authority may initiate legal action through its Environmental Health Officer(s) to terminate the nuisance.

Alternatively, individuals may take action under common law to terminate nuisance.