

Recommendations for preservation of timber

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Committees responsible for this Draft for Development

The preparation of this Draft for Development was entrusted to Technical Committee B/515, Wood preservation, upon which the following bodies were represented:

- British Telecommunications plc
- British Wood Preserving and Damp-proofing Association
- Chemical Industries Association
- Creosote Council
- Department of the Environment, Transport and the Regions (Building Research Establishment)
- Timber Research and Development Association
- Timber Trade Federation
- Wood Panel Industries Federation

The following bodies were also represented in the drafting of this Draft for Development, through subcommittees and panels:

- Association of Consulting Scientists
- British Railways Board
- British Wood-working Federation
- Forestry Commission

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Foreword

This Draft for Development has been prepared by Technical Committee B/515.

This Draft for Development provides recommendations for specifying timber treated with preservatives conforming to BS EN 599-1:1997, in accordance with the penetration and retention guidance given in BS EN 351-1:1996 to give a desired service life in the selected hazard class as defined in BS EN 335-1:1992. It should be used together with BS 1282:1998, which gives guidance on the selection of appropriate wood preservatives and the methods of treating timber, including preparation of timber for treatment.

BS 5268-5:1989 and BS 5589:1989 are British Standards for preservation of timber using wood preservatives covered by BS 144, BS 4072-1 and BS 5707. In BS 5268-5:1989 and BS 5589:1989 the treatment processes are described in terms of preparation of the timber for treatment and the precise treatment process to achieve a specific performance in particular service environments. This Draft for Development does not include precise treatment parameters to achieve the recommended penetrations and retentions; it is the responsibility of the treater to use an appropriate treatment schedule to achieve the recommended values.

This Draft for Development gives proposals for guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Annex A is normative. Annex B and annex C are informative.

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature. It should be applied on this provisional basis, so that information and experience of its practical application may be obtained.

A review of this Draft for Development will be carried out no later than 2 years after its publication. Notification of the start of the review period, with a request for the submission of comments from users of this Draft for Development, will be made in an announcement in the appropriate issue of *Update Standards*.

According to the replies received, the responsible BSI committee will judge whether the Draft for Development can be converted into a British Standard or what other action should be taken.

Observations which it is felt should receive attention before the official call for comments will be welcomed.

These should be sent to the Secretary of BSI Technical Committee B/515 at British Standards House, 389 Chiswick High Road, London W4 4AL.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 14, an inside back cover and a back cover.



Introduction

This Draft for Development is one of a group of documents dealing with the preservative treatment of timber. It has been prepared to provide information for the specifier or purchaser of treated timber, relevant to the United Kingdom, using the principles given in the new British Standards BS EN 599-1:1997, BS EN 351-1:1996 and BS EN 335-1:1992, prepared by the European Committee for Standardization (CEN) in reaction to the Construction Products Directive [1].

In the preparation of this Draft for Development it has been the intention that the traditional commercial practices of wood preservation to meet existing British Standards, by defining specific treatment schedules, should not change through the introduction of new ways of defining treated timber by preservative penetration and retention. The preservative penetration and retention figures recommended in this Draft for Development are intended to be the same as those achieved by current treatment processes used to meet existing British Standards BS 5268-5:1989 and BS 5589:1989.

The penetration and retentions in Tables 4 to 7 (and, by extension, the values in Table 9) have been derived from data generated from the commercial treatment of various softwoods by processes defined in current standards. These data cannot easily be applied directly to the treatment of hardwoods because commercial species currently in use are less permeable — leading to lesser penetrations when treated by established techniques — and retain lower loadings in the treated zones. It is intended that during the life of this Draft for Development, proposals will be formulated on how this deficiency is best dealt with.

1 Scope

This Draft for Development gives information and guidance for specifying treated timber to provide protection against biodeterioration in certain specified end-use situations in the United Kingdom.

It recommends levels of penetration and retention of preservative, from the classes defined in BS EN 351-1, for different timber components and takes into account the natural durability and treatability of the timber employed, the biological hazard class and the desired service life.

This Draft for Development applies only to solid wood, including glued laminated timber. It does not apply to panel products, as no European Standards have been published on the preservation of these products.

NOTE 1 Guidance on the preservation of plywood is contained in BS 6566-7:1985.

This Draft for Development does not apply to treatments regarded as remedial in nature or to those primarily designed to influence the performance of timber in fire.

NOTE 2 In the United Kingdom only preservatives approved under the Control of Pesticides Regulations 1986 [2] are permitted to treat timber.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this Draft for Development. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 144:1997, *Specification for coal tar creosote for wood preservation*.

BS 1282:1998, *Guide to the choice, use and application of wood preservatives*.

BS 4072-1:1987, *Wood preservation by means of copper/chromium/arsenic compositions — Part 1: Specification for preservatives*.

BS 5707:1997, *Specification for preparations of wood preservatives in organic solvents*.

BS EN 335-1:1992, *Hazard classes of wood and wood-based products against biological attack — Part 1: Classification of hazard classes*.

BS EN 350-1:1994, *Durability of wood and wood-based products — Natural durability of solid wood — Part 1: Guide to the principles of testing and classification of the natural durability of wood*.

BS EN 350-2:1994, *Durability of wood and wood-based products — Natural durability of solid wood — Part 2: Guide to natural durability and treatability of selected wood species of importance in Europe*.

BS EN 351-1:1996, *Durability of wood and wood-based products — Preservative treated solid wood — Part 1: Classification of preservative penetration and retention*.

BS EN 599-1:1997, *Durability of wood and wood-based products — Performance of preventive wood preservatives as determined by biological tests — Part 1: Specification according to hazard class*.

3 Terms and definitions

For the purposes of this Draft for Development the terms and definitions given in BS EN 351-1 and the following apply.

3.1

preservative penetration

minimum depth to which the active ingredients of the preservative formulation penetrate the wood

NOTE This penetration is determined from measurements obtained from samples of treated timber taken at random from the batch under examination. The number of samples to be taken should be decided either through an agreed scheme between purchaser and producer or according to ISO 2859-1.

BS EN 351-1 requires that the value for the maximum number of non-conforming units in the batch, calculated from the measurements, does not exceed 10 % for permeable timbers and 25 % for resistant timbers. Lower percentages for non-conforming units may be agreed between the purchaser and the producer.

3.2

preservative retention

minimum amount of preservative required to be present in the analytical zones of the pieces sampled in a charge of treated timber

3.3

critical value (CV)

highest biological reference value derived from biological tests carried out in accordance with BS EN 599-1 for any given hazard class, to be used as the basis for specifying loadings in the analytical zone of treated timber in the hazard class for which the preservative has been tested

3.4

interim critical value

the amount of preservative product derived from commercial experience and other data which should be used as the critical value (see 3.3) during the period of six years following the publication of BS EN 599-1

NOTE This relates to preservatives currently in use as specified in BS 144, BS 4072-1, BS 5707, and boron diffusion and aqueous boron treatment of dry timber, as defined in the BWPDA Manual [3].

4 Use of these recommendations

4.1 General

In deriving a specification which will ensure that the required durability of a timber component is achieved, all the recommendations included in this document should be addressed. The position and structural importance of the component within the building, and the ease of replacement or maintenance can be indicated by service factors (see Table 1). These factors summarize the need to specify a preservative treatment or a class of natural durability based upon safety and economic considerations.

The service environment of the component, defined using the hazard class system, will dictate the type of preservative to be used. The need for treatment and the most appropriate method of treatment will depend upon the desired service life of the component within the hazard class and the natural durability of the selected timber. These considerations are explained in more detail in 4.2 to 4.7 where references to Table 2 (for natural durability), Table 3 and Tables 4 to 9 (for preservation with various preservatives) are included. Tables 4, 5 and 6 give recommendations for preservatives covered by existing British Standard specifications, Tables 7 and 8 give recommendations for preservatives covered by the BWPDA Manual [3]. Table 9 gives recommendations for preservatives tested according to BS EN 599-1 requirements.

4.2 Component

Column 1 of Table 2 lists timber components in broad groups which can be related to different service environments. Where a particular component is not listed in column 1 of Table 2 reference should be made to annex A for more detailed guidance.

4.3 Hazard class

The hazard class system is a means of defining different service environments in which wood and wood-based products are used. Reference should be made to the classifications defined in detail in BS EN 335-1.

As different biological agencies of timber deterioration occur in different hazard classes, it is essential that timber, in a particular hazard class, has a durability appropriate to that hazard class. If durability is achieved by preservative treatment, the assignment of a preservative for use in a particular hazard class should be made by reference to BS EN 599-1. Column 2 of Table 2 identifies the appropriate hazard class for the components listed.

The assignment of a particular hazard class to a component assumes good design and maintenance of the construction. If conditions arise during the service life of the component which result in unexpected wetting of the timber, for example as a result of design faults, condensation, failure of other materials, poor workmanship or lack of maintenance, the hazard class assigned to the component can change and therefore the recommendations for preservation can change.