



# SLOVENSKI STANDARD SIST EN 599-1:2004

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Durability of wood and wood-based products - Performance of preventive wood preservatives as determined by biological tests - Part 1: Specification according to hazard class

Dauerhaftigkeit von Holz und Holzprodukten - Anforderungen an Holzschutzmittel wie sie durch biologische Prüfungen ermittelt werden - Teil 1: Spezifikationen entsprechend der Gefährdungsklasse  
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Durabilité du bois et des matériaux dérivés du bois - Performances des produits préventifs de préservation du bois établies par des essais biologiques - Partie 1: Spécifications par classe de risque

**Ta slovenski standard je istoveten z: EN 599-1:1996**

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71.100.50 S^ { ä æ Å Á á æ ä Å • æ Wood-protecting chemicals

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EUROPEAN STANDARD

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Descriptors: wood, wood preservatives, durability, effectiveness, bio-assay, ageing: materials, biodegradability, hazards, pest control, classifications, specifications

English version

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Performance of preventive wood preservatives as  
determined by biological tests - Part 1:  
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## CEN

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 38 "Durability of wood and derived materials", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 1997, and conflicting national standards shall be withdrawn at the latest by March 1997.

The work has resulted in a European standard in two Parts:

- EN 599-1 Durability of wood and wood-based products - Performance of preventive wood preservatives as determined by biological tests - Part 1: Specification according to hazard class
- EN 599-2 Durability of wood and wood-based products - Performance of preventive wood preservatives as determined by biological tests - Part 2 : Classification and labelling

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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## Introduction

This Part of EN 599 is one of a series and should be used in conjunction with EN 599-2, with EN 335-1 and EN 335-2 which describe the service conditions for treated wood in terms of hazard classes, and with EN 351-1 which describes a classification system for preservative treated wood in terms of preservative penetration and gives guidance on classes for retentions. The need for wood preservatives depends in part on the natural durability of the wood and therefore this Part of EN 599 should be used also in conjunction with EN 350-1, EN 350-2 and EN 460.

## 1 Scope

This Part of EN 599 specifies for each of the five hazard classes defined in EN 335-1, the minimum performance requirements for wood preservatives for the preventive treatment of solid timber against biological deterioration. It specifies the biological tests with the minimum ageing tests required according to the hazard class, together with the performance criteria to be achieved in each test.

This Part of EN 599 is applicable to all wood preservative products supplied for application in liquid form for the preventive treatment of timbers (structural and non-structural) against wood-attacking fungi, wood-attacking insects and marine borers as described in HD 1001 and EN 335-1. However it is only applicable to products for preventive treatments against fungi causing disfigurement (blue stain) of wood in service if this forms part of the overall preventive effectiveness of the product.

This Part of EN 599 is not applicable to wood preservative products supplied for application as pastes, solids or in capsule form because they cannot be tested without modification of the biological tests demanded in this standard. It does not apply either to wood preservative products for remedial (curative) treatments, to those applied to prevent fungi causing sap stain on green (unseasoned) timber or to those applied solely to prevent fungi causing disfigurement (blue stain) of wood in service.

**NOTE 1 :** The nature of the laboratory and field tests required in this Part of EN 599 to demonstrate performance of a wood preservative are such that the time required to generate the data is many months or years, depending upon the properties of the wood preservative and the hazard class in which the treated wood is to be exposed.

Therefore, at the date of publication of this Part of EN 599, for many products covered under its scope already placed on the market and used lawfully in accordance with local technical traditions, the minimum data specified in this Part of EN 599 may not be available. Accordingly, for a period not exceeding six years from the date of publication of this Part of EN 599, national standards organisations, or an organisation nominated by them may declare interim critical values for use within their territories, to apply to products already placed on the market and used lawfully in accordance with local traditions at the date of publication of this Part of EN 599.

**NOTE 2 :** For re-testing after making variations in product formulation, guidance is given in Annex A.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- EN 20-1 Wood preservatives - Determination of the protective effectiveness against *Lyctus brunneus* (Stephens) - Part 1 : Application by surface treatment (Laboratory method)
- EN 20-2 Wood preservatives - Determination of the protective effectiveness against *Lyctus brunneus* (Stephens) - Part 2 : Application by impregnation (Laboratory method)
- EN 46 Wood preservatives - Determination of the preventive action against recently hatched larvae of *Hylotrupes bajulus* (Linnaeus) (Laboratory method)
- EN 47 Wood preservatives - Determination of the toxic values against larvae of *Hylotrupes bajulus* (Linnaeus) (Laboratory method)
- EN 49-1 Wood preservatives - Determination of the protective effectiveness against *Anobium punctatum* (De Geer) by egg-laying and larval survival Part 1 : Application by surface treatment (Laboratory method)
- EN 49-2 Wood preservatives - Determination of the protective effectiveness against *Anobium punctatum* (De Geer) by egg-laying and larval survival Part 2: Application by impregnation (Laboratory method)
- EN 73 Wood preservatives - Accelerated ageing of treated wood prior to biological testing - Evaporative ageing procedure.
- EN 84 Wood preservatives - Accelerated ageing of treated wood prior to biological testing - Leaching procedure
- EN 113:1) Wood preservatives - Determination of toxic values of wood preservatives against wood destroying basidiomycetes cultured on an agar medium
- EN 117 Wood preservatives - Determination of toxic values against *Reticulitermes santonensis* de Feytaud (Laboratory method)
- EN 118 Test methods for wood preservatives - Determination of preventive action against *Reticulitermes santonensis* de Feytaud (Laboratory method)

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1) Under revision

EN 152-1	Test methods for wood preservatives - Laboratory method for determining the preventive effectiveness of a preservative treatment against blue stain in service - Part 1 : Brushing procedure
EN 152-2	Test methods for wood preservatives - Laboratory method for determining the protective effectiveness of a preservative treatment against blue stain in service - Part 2 : Application by methods other than brushing
EN 252	Field test method for determining the relative protective effectiveness of a wood preservative in ground contact
EN 275	Wood preservatives - Determination of the protective effectiveness against marine borers
EN 330	Wood preservatives - Field test method for determining the relative protective effectiveness of a wood preservative for use under a coating and exposed out of ground contact: L-joint method
EN 335-1	Durability of wood and wood-based products - Definition of hazard classes of biological attack - Part 1: General
EN 351-1	Durability of wood and wood-based products - Preservative-treated solid wood - Part 1: Classification of preservative penetration and retention
EN 599-2	Durability of wood and wood-based products - Performance of preventive wood preservatives as determined by biological tests - Part 2: Classification and labelling
ENV 807	Wood preservatives - Determination of the toxic effectiveness against soft rotting micro-fungi and other soil inhabiting micro-organisms
ENV 839	Wood preservatives - Determination of the preventive efficacy against wood destroying basidiomycete fungi
EN ISO 9002	Quality systems - Model for quality assurance in production and installation
HD 1001	General introductory document on European (or CEN) methods of test for wood preservatives

### 3 Definitions

#### 3.1 Terminology

For the purposes of this standard, the following definitions apply:

##### 3.1.1 active ingredient(s) (a.i.)

The individual chemical compound or compounds included in the wood preservative product to give it specific activity against the particular biological agencies of deterioration.



### 3.1.2 analytical zone (*a.z.*)

That part of the treated wood which is analysed for assessing the 'retention requirement' (*r.r.*).

NOTE : The analytical zone is taken from the lateral surfaces of the treated wood. The depth to which sampling is required will depend upon the species of wood being analysed and the treatment level concerned.

### 3.1.3 biological reference value (*b.r.v.*)

Amount in grams per square metre or kilograms per cubic metre of the wood preservative product found to be effective in test in preventing attack by the particular biological agency being tested.

### 3.1.4 critical value (*c.v.*)

Value equivalent to the highest *b.r.v.* (in grams per square metre or kilograms per cubic metre) obtained from all the biological tests carried out in accordance with this Part of EN 599 for any given hazard class. It is the minimum amount of the product required for effectiveness for that hazard class according to the tests carried out.

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### 3.1.5 co-formulant (standards.iteh.ai)

Any ingredient (other than an active ingredient) in a formulated wood preservative product.

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### 3.1.6 manufacturer's proposed recommended loading (*m.r.l.*)

Amount of wood preservative in the test specimen corresponding to the mean loading which the manufacturer recommends as necessary and achievable in practice in the analytical zone(s).

### 3.1.7 maximum application limit (*m.a.l.*)

Maximum amount in grams per square metre or kilograms per cubic metre of the wood preservative product permitted for application to the wood specimens in the particular biological test.

### 3.1.8 mid toxic value (*m.t.v.*)

Arithmetic mean of the upper and lower toxic values as defined in the relevant European standard biological test.

### 3.1.9 nominal effective retention (*n.e.r.*)

Retention of test product calculated to give the performance specified in ENV 807 test I and test II equivalent to the relevant target retention of the reference preservative.

### 3.1.10 penetrating treatment process

Process which includes features or procedures intended to overcome the natural resistance of wood to penetration by a wood preservative product in its ready for use form.

NOTE : Such processes include for example currently practised technologies of diffusion treatments, double-vacuum and vacuum-pressure methods.

### 3.1.11 performance

Behaviour of the wood preservative product in terms of its effectiveness in test.

NOTE : The term 'performance' applies also to its behaviour in terms of its effectiveness in practice against the individual or collective effects of particular biological agencies of deterioration.

### 3.1.12 product

Formulated wood preservative product in the form as supplied for sale by the manufacturer.

### 3.1.13 retention requirement (*r.r.*)

Amount (loading) of the wood preservative product that is required in the analytical zone.

NOTE : *r.r.* is expressed in grams of product per square metre for superficial application processes and kilograms of product per cubic metre for penetrating treatment processes. It is derived from the critical value in different ways depending upon the particular test involved.

### 3.1.14 superficial application process

Process which does not include particular features or procedures intended to overcome the natural resistance of wood to penetration by a wood preservative product in its ready for use form.

NOTE : Such processes include for example brush and spray techniques and short-term immersion (dipping) processes in which wood normally has only a few minutes contact time with the preservative.

### 3.1.15 target retention (*t.r.*)

Retention of reference preservative deemed to provide an adequate level of protection against attack by soft rot organisms in ENV 807.

### 3.1.16 wood preservative

Active ingredient(s) or preparations containing active ingredient(s) in the form in which they are placed on the market, and which are, on the basis of the properties of their active ingredient(s), intended to prevent wood-destroying and/or wood-disfiguring organisms (fungi, insects and marine borers) from attacking wood and wood-based products.

## 3.2 Symbols and abbreviations

### 3.2.1 $u.t.v.$

The upper toxic value as defined in the relevant European standard biological test.

### 3.2.2 $V^n$

Nominal mean rating of replicates for non-destructive assessment in EN 330.

### 3.2.3 $V^e$

Nominal mean rating for external surfaces and those visible within the joint of replicates for destructive assessment in EN 330.

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### 3.2.4 $V^j$

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Nominal mean rating for surfaces created by sawing of replicates for destructive assessment in EN 330.

### 3.2.5 $R2^{TP}$

Number of replicates treated with the wood preservative product with a rating of 2 or above in EN 330.

### 3.2.6 $R2^R$

Number of replicates treated with the reference preservative with a rating of 2 or above in EN 330.

### 3.2.7 spp

Species.

### 3.2.8 *nrP*

Nominal retention of the wood preservative product.

### 3.2.9 *nrR*

Nominal retention of the reference preservative.

### 3.2.10 *unrP*

Upper nominal retention of the wood preservative product.

### 3.2.11 *lnrP*

Lower nominal retention of the wood preservative product.

### 3.2.12 CAS number

Chemical Abstracts Service registry number.

### 3.2.13 EINECS number (standards.iteh.ai)

European Inventory of Existing Commercial Chemical Substances registry number.

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### 3.2.14 ELINCS number 5bfa55185981/sist-en-599-1-2004

European List of Notified Chemical Substances registry number.

## 4 Assignment to hazard class(es)

The wood preservative product shall be designated by a specific class number or numbers as being suitable for use in one (or more) of the hazard classes described in EN 335-1.

## 5 Performance

### 5.1 Principal requirements

5.1.1 The wood preservative product shall be tested in accordance with the tests specified in tables 1 to 5, taking into consideration the following :

- a) the relevant hazard class (see clause 6) ;
- b) the method of application ;

NOTE 1: see Annex B.

- c) the type of wood to which it is intended to be applied ;