

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**

The European Standard EN 350-1:1994 has the status of a
British Standard

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Cooperating organizations

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National foreword

This Part of BS EN 350 has been prepared under the direction of the Technical Sector Board for Building and Civil Engineering and is the English language version of 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*, published by the European Committee for Standardization (CEN). EN 350-1 was produced as a result of international discussion in which the United Kingdom took an active part.

It is intended that BS EN 350 will consist of the following Parts:

- *Part 1: Guide to the principles of testing and classification of the natural durability of wood;*
- *Part 2: Guide to natural durability and treatability of selected wood species of importance in Europe.*

BS EN 350-2:1994 is identical with EN 350-2:1994.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 12, 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.

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English version

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

Durabilité du bois et des matériaux dérivés du bois — Durabilité naturelle du bois massif — Partie 1: Guide des principes d'essai et de classification de la durabilité naturelle du bois

Dauerhaftigkeit von Holz und Holzprodukten — Natürliche Dauerhaftigkeit von Vollholz — Teil 1: Grundsätze für die Prüfung und Klassifikation der natürlichen Dauerhaftigkeit von Holz

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

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Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This Part of this European Standard has been drawn up by WG 2 “*Natural durability*” of the Technical Committee CEN/TC 38 “*Durability of wood and wood-based products*”, of which the Secretariat is held by AFNOR.

This European Standard is divided in two Parts; Part 1 gives guidance on the procedure of determining and classifying the comparative natural durability of an individual wood species, and Part 2 gives the natural durability and treatability of selected wood species of importance in Europe.

This Part of 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 November 1994, and conflicting national standards shall be withdrawn at the latest by December 1996.

This Part of this European Standard was adopted by CEN and in accordance with the Common CEN/CENELEC Rules, the following countries are bound to implement this Part of the European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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1 Scope

This Part of EN 350 gives guidance on methods for the determination of the natural durability of untreated solid wood to attack by

- wood-destroying fungi
- insects (beetles and termites)
- marine organisms

and the principles of classification of the wood species based on the results of these test methods.

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 20-1:1992, *Wood preservatives — Determination of the protective effectiveness against Lyctus brunneus (Stephens) — Part 1: Application by surface treatment (laboratory method)*.

EN 46:1988, *Wood preservatives — Determination of the preventive action against recently hatched larvae of Hylotrupes bajulus (Linnaeus) (laboratory method)*.

EN 49-1:1992, *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 113:1980, *Wood preservatives — Determination of toxic values of wood preservatives against wood destroying basidiomycetes cultured on an agar medium*.

EN 118:1990, *Wood preservatives — Determination of preventive action against Reticulitermes santonensis de Feytaud (laboratory method)*.

EN 252:1989, *Field test method for determining the relative protective effectiveness of wood preservative in ground contact*.

EN 275:1992, *Wood preservatives — Determination of the protective effectiveness against marine borers*.

ISO 3131:1975, *Wood — Determination of density for physical and mechanical tests*.

3 Definitions

For the purposes of this Part of EN 350, the following definitions apply.

3.1

natural durability

the inherent resistance of wood to attack by wood-destroying organisms

3.2

sapwood

outer zone of wood that, in the growing tree, contains living cells and conducts sap

NOTE Often distinguishable from heartwood by a lighter colour.

3.3

heartwood

inner zone of wood that, in the growing tree, has ceased to contain living cells or conduct sap

NOTE Often distinguishable from sapwood by a darker colour. Not every wood species contains heartwood.

3.4

transition wood

wood in a zone between the true sapwood and the true heartwood

NOTE This is only distinguishable in very few wood species for example *Lophira alata*. In general its durability is intermediate between that of sapwood and heartwood, whereas its treatability is similar to that of heartwood.

3.5

test wood species

the species which is tested to determine its durability

3.6

reference wood species

the species which is used in the test to be compared with the test wood species

NOTE Generally the sapwood of *Pinus sylvestris* and or *Fagus sylvatica* is used as a reference wood species.

4 Principle of classification

The durability of a wood species to various wood-destroying organisms is tested using methods based on relevant European Standards. The range of variation of properties within a species is taken into account by the use of replicate specimens. Results are compared with those of reference species.

Based on test results, the natural durability of the wood species to the various agencies of biological attack is classified within a five grade scale for fungal attack, a two grade scale for dry wood-destroying beetles and a three grade scale for termites and marine organisms.

5 Sampling of the wood to be tested

5.1 The origin of test specimens and the number of replicates is of great importance to the validity of the test result. The reliability of conclusions relating to the natural durability of a wood species increases with the number and diversity of growing sites from which trees are taken and the degree of replication of test specimens from those trees. The recommendations given in **5.2** to **5.6** should be regarded as minima.

NOTE Information on sampling plans is given in ISO 2859-2.

5.2 A log should be taken from each of at least three trees of the species which is to be tested (see Annex A).

Each log should be taken from the main trunk avoiding its extreme ends. Knots and other features which can influence durability should be avoided.

Each log should be of sufficient size to permit the required number of test specimens to be obtained from it. Dimensions for test specimens are given in the respective test methods (see clause 6).

5.3 Depending upon the part of the wood species which is to be tested the minimum number of test specimens which should be taken for each test variable, for example “test method” or “test organism”, is shown in Table 1.

5.4 Test specimens should be cut and allocated systematically for a test series in a way which will provide a uniform distribution to the tests to which they are to be exposed.

NOTE A scheme for this is shown in Annex A.

5.5 Additional specimens should be taken to determine the density of the wood species at 12 % (*m/m*) moisture content in accordance with ISO 3131.

NOTE For this purpose, the specimens mentioned in **5.6** may be used.

5.6 If the test method uses mass loss for assessing organism attack, a minimum of three additional specimens should be cut from each zone of each log from which test specimens have been taken, for the purpose of calculating theoretical dry-mass (**6.1.2**) before exposure.

6 Test methods and classification

6.1 General principles

6.1.1 In the absence of specific European Standard test methods to assess natural durability, test methods should be based on appropriate European Standard test methods designed for testing the effectiveness of wood preservatives.

NOTE 1 In EN 350-2 the natural durabilities of selected wood species are classified on the basis of general experience.

NOTE 2 In practice not all of the tests outlined in clause 6 need to be carried out. Only those tests which provide the data required to classify the natural durability of the test wood species to the organisms relevant to the intended end-use need to be undertaken.

Table 1 — Minimum sampling requirements

Part of log to be tested	Zone from which test specimens are to be taken	^a Minimum number of test specimens from each log	^a Minimum number of test specimens for the wood species for each test variable
Sapwood	Sapwood	5	15
Heartwood	The outer part of the heartwood as close as practicable to the sapwood.	5	30
	The inner part of the heartwood as close as practicable to the pith, but excluding the region within 3 cm of the pith.	5	
If heartwood and sapwood cannot clearly be distinguished	<i>Log diameter 500 mm or less</i>	5	30
	The outer part of the cross-section as close as practicable to the cambium.	5	
	The inner part of the cross-section as close as practicable to the pith, but excluding the region within 3 cm of the pith.	5	
	<i>Log diameter more than 500 mm</i>	15	45
	Sample as above + the part of the cross-section as close as practicable to the region 0,33 of the radius of the tree from the cambium.		
Transition wood	Transition zone	5	15

^a This does not include additional specimens that are required for the determination of density or oven-dry mass.

6.1.2 If a test procedure has mass loss as a criterion for assessing organism attack and if the respective standard requires oven-dry mass to be determined this operation should be performed as follows.

Before exposure, condition the test specimens and the oven-dry mass specimens (5.6) in a well-ventilated conditioning chamber controlled at (20 ± 2) °C and (65 ± 5) % relative humidity until constant mass is obtained. Weigh all specimens.

After conditioning:

a) expose the test specimens as given in the test method;

NOTE Test specimens to be used in biological tests should not be oven-dried prior to the test.

b) dry the oven-dry mass specimens (5.6) at (103 ± 2) °C until constant mass is obtained. Calculate the average percentage moisture content of the oven-dry mass specimens after conditioning (u);

c) calculate the theoretical oven-dry mass of each test specimen before test as follows:

$$M_{to} = 100 M_u / (100 + u)$$

where:

M_{to} is the theoretical oven-dry mass, expressed in grams, of test specimens;

M_u is the mass, expressed in grams, of test specimens after conditioning;

u is the average percentage moisture content of test specimens after conditioning.

After exposure oven dry all specimens at (103 ± 2) °C until constant mass is obtained.

The corrected mass loss is the difference between the calculated initial oven-dry mass (theoretical oven-dry mass) and the final oven-dry mass of each test specimen.

6.1.3 If the test method (6.1.1) on which the natural durability test is based requires the use of untreated control specimens, those wood species should be used as the reference species.

If several wood species are tested at the same time, one set of reference specimens is sufficient.

If laboratory test vessels are used reference specimens and test specimens should be tested in separate vessels.

6.1.4 The properties of the test specimen should, as far as possible, be representative for the wood species being tested even if this does not follow the instruction given on sample selection in the relevant test standard.

EXAMPLE 1: If the test method excludes the use of “wood of resinous appearance”, but the species to be tested normally has a naturally resinous appearance, this exclusion should be ignored.

EXAMPLE 2: If the test method requires a certain number of growth rings per centimetre this restriction should be ignored.

6.1.5 The sample selection requirement for reference specimens should follow the instructions of the relevant test method.

6.2 Natural durability to wood-destroying fungi

6.2.1 General

Natural durability to wood-destroying fungi can be assessed by either field tests (6.2.2) or laboratory tests (6.2.3).

If field test data from a temperate climate site are available, they should take precedence over the data from laboratory tests.

If no data from field tests are available, a provisional classification using the data from laboratory tests is possible.

6.2.2 Field test

The field test should be based on EN 252, but using an appropriate number of stakes of the test wood species (see clause 5) in place of the impregnated test stakes described in that standard. Reference stakes of *Pinus sylvestris* sapwood and *Fagus sylvatica* should be used throughout the test. They should be replaced as necessary when they fail.

Field tests for the natural durability should start in early spring (March/April). Inspections should be carried out twice a year in September/October and March/April.

The average life of the test stakes is expressed relative to the life of the reference stakes as given in Table 2.

Table 2 — Classes of natural durability of wood to fungal attack using field tests based on EN 252

Durability class	Description	Results of field tests expressed as x^a
1	Very durable	$x > 5,0$
2	Durable	$x > 3,0$ but $\leq 5,0$
3	Moderately durable	$x > 2,0$ but $\leq 3,0$
4	Slightly durable	$x > 1,2$ but $\leq 2,0$
5	Not durable	$x \leq 1,2$

^a $x = \frac{\text{average life of test stakes}}{\text{average life of the most durable set of reference stakes}}$

6.2.3 Laboratory test

6.2.3.1 Basidiomycetes test

The laboratory test should be based on EN 113, but using an appropriate number of specimens from the test wood species (see clause 5) in place of the preservative treated wood specimens in EN 113. Reference specimens from *Pinus sylvestris* sapwood should be used for testing softwoods and *Fagus sylvatica* for testing hardwoods.

The test fungi (strains according to EN 113) should be

for softwoods

Gloeophyllum trabeum

Serpula lacrymans

Poria placenta

for hardwoods

Gloeophyllum trabeum

Serpula lacrymans

Coriolus versicolor

For a test to be valid, reference specimens should show an average corrected mass loss as given in EN 113 for the respective test fungi.

The classification should be based on the results from the species of fungus causing the greatest average mass loss of the test specimens.

The natural durability of the wood species under test in the laboratory test should be classified in accordance with Table 3.

Table 3 — Classes of natural durability of wood to fungal attack using laboratory tests based on EN 113

Durability class	Description	Results of laboratory tests expressed as x^a
1	Very durable	$x \leq 0,15$
2	Durable	$x > 0,15$ but $\leq 0,30$
3	Moderately durable	$x > 0,30$ but $\leq 0,60$
4	Slightly durable	$x > 0,60$ but $\leq 0,90$
5	Not durable	$x > 0,90$

$$^a \text{ue } x = \frac{\text{average corrected mass loss of test specimens}}{\text{average mass loss of reference specimens}}$$

6.2.3.2 Soft rot test

A laboratory soft rot test should be used to evaluate the natural durability when a relevant European standard exists.

NOTE It is at present not possible to give any guidance on the interpretation of results obtained with ENV 807 in relation to natural durability.

6.3 Natural durability to larvae of dry wood-destroying beetles

The resistance of wood to attack by *Hylotrupes bajulus*¹⁾, *Anobium punctatum* and *Lyctus brunneus* should be tested using procedures based on those in EN 46, EN 49-1 and EN 20-1 respectively.

¹⁾ If durability to *Hesperophanes cinnereus* is required tests should be carried out as for *Hylotrupes bajulus*, but use *Fagus sylvatica* as reference species.

Specimens of the test wood species should be used in place of the preservative treated wood specimens mentioned in those standards.

A wood species is classified as “susceptible” to the insect species in question if it is attacked during the test. If not attacked and if in the same test the reference species is attacked, the test species is classified as “durable”.

6.4 Natural durability to termites

The resistance of wood to attack by termites should be tested using procedures based on EN 118.

Specimens of the test wood species should be used in place of the preservative treated wood specimens in EN 118.

The test procedures described in EN 118 result in attack ratings on a scale 0 – 4. The test should be considered valid if the reference species has a rating of 4 in the test.

The natural durability of the species under test should be classified in accordance with Table 4.

Table 4 — Classes of natural durability of wood to termite attack using tests based on EN 118

Durability class	Description	Average rating
D	Durable	0 – 1
M	Moderately durable	2
S	Susceptible	3 – 4

6.5 Natural durability to marine organisms

The resistance of wood to attack by marine organisms should be tested using procedures based on those in EN 275.

Specimens of the test wood species should be used in place of the preservative treated wood specimens in EN 275.

The reference specimens should be *Pinus sylvestris* sapwood. They should be replaced as necessary when they fail.

The test should be used to determine the time taken for the test specimens to fail.

The natural durability of the species under test should be classified in accordance with Table 5.

Table 5 — Classes of natural durability of wood to attack by marine organisms using tests based on EN 275

Durability class	Description	Results of field test expressed as x^a
D	Durable	$x > 3,0$
M	Moderately durable	$x > 1,2$ but $\leq 3,0$
S	Susceptible	$x \leq 1,2$

^a $lue\ x = \frac{\text{average life of test specimens}}{\text{average life of the most durable set of reference specimens}}$

7 Test report

The test report should include at least the following information for each type of organism tested (see Annex B for an example):

- a) the number and the date of this Part of this European Standard;
- b) the title of the test report should state the name of the wood species that has been tested, the part of the log (for example sapwood, heartwood, transition wood) from which the specimens tested were taken, and the organism against which the test was carried out;
- c) the scientific name and the trade name (if relevant in English, French, and German or the ATIBT name²⁾) of the wood species tested;
- d) the number of trees used in the test and details to characterize each tree as far as possible regarding its origin (for example plantation, cultivated or natural forest, climatic zone, altitude, time of felling and of cutting, age, part of the trunk from which logs for sampling were cut), its general characteristic (for example diameter of logs, density) and the drying conditions of the log and/or sawn wood (for example air drying or artificial drying and maximum temperature);
- e) the part of the logs from which the specimens were taken (for example sapwood or heartwood); whether sapwood and heartwood were clearly distinguished by colour, or by a chemical reagent (with the names of the reagents), and whether transition wood is present;
- f) the scientific name of the reference species;
- g) the kind of organisms against which the natural durability was tested;
- h) the number and the date of the European Standard on which the test procedure was based and the clauses and subclauses of that standard which were followed, and the variations from that standard which had to be made;

- i) the number of specimens tested;
 - j) if relevant, details of
 - the test organisms
 - the test site
 - the method of assessment of attack (for example mass loss based on the theoretical initial oven-dry mass, visual assessment)
 as required in the appropriate standard for the test procedure;
 - k) the dates of beginning and end of exposure to the test organisms;
 - l) the duration of test;
 - m) the average of the test results for the test specimens and of the reference specimens and, if relevant, the standard deviations of the test results;
 - n) the classification of the natural durability according to clause 6 of this Part of EN 350;
 - o) the name of the organization responsible for the test report and the date of issue;
 - p) the name and the signature of the officer(s) in charge of testing;
 - q) the following note in the relevant version:

If heartwood has been tested:

“As wood is a natural material its properties, including natural durability, can be very variable. The classification given in this test report is an average only for the actual material tested and refers only to the heartwood.”

If sapwood or sapwood and heartwood have been tested:

“As wood is a natural material its properties, including natural durability, can be very variable. The classification given in this test report is an average only for the actual material tested.”
- The report should also list any variation from the specified test method as well as any factors which may have influenced the results, for example, ageing of the specimens.

²⁾ Association Technique Internationale des Bois Tropicaux.

Annex A (informative)

Example of scheme for sampling the heartwood

A.1 Logs

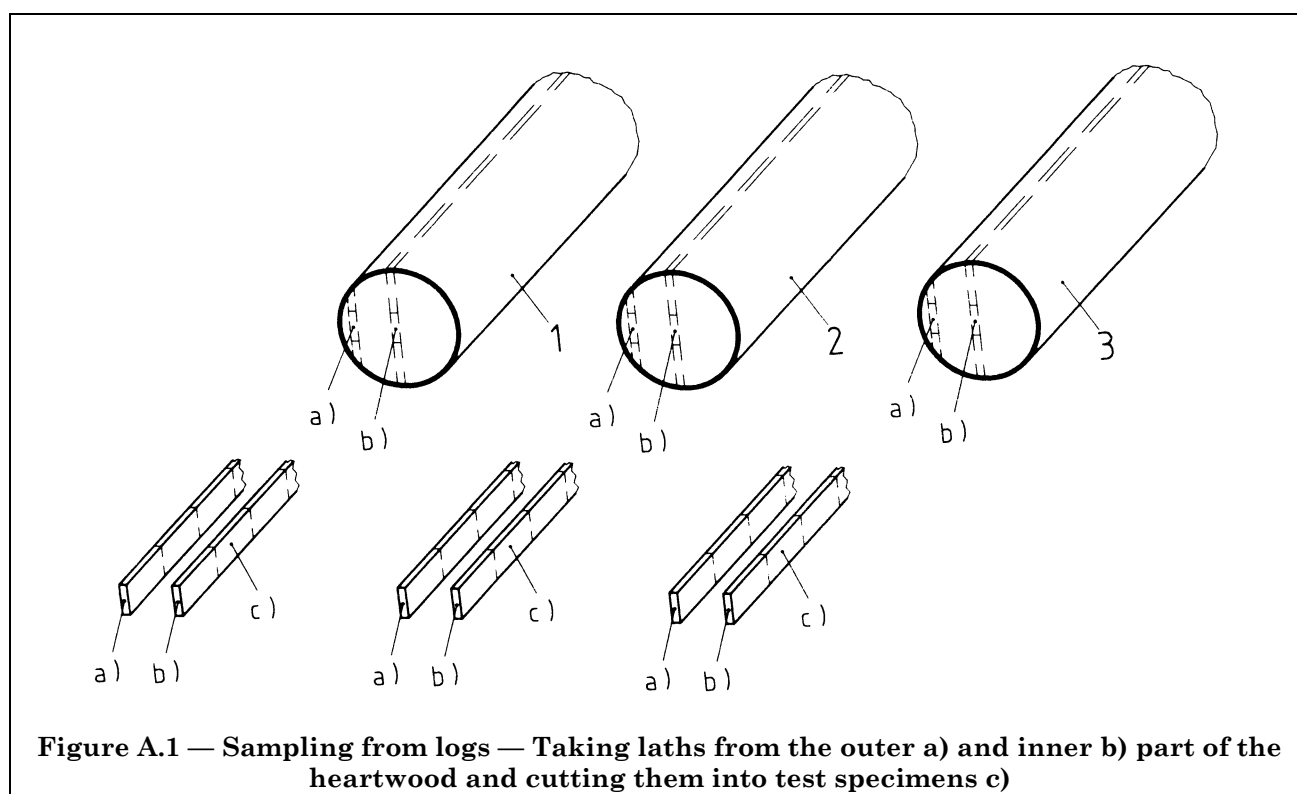
A scheme for the cutting of laths from logs to represent the outer and inner heartwood is illustrated in Figure A.1. This also shows the cutting of the laths into test specimens. The length of the logs necessary for sampling depends on the amount of specimens required for the relevant test procedure.

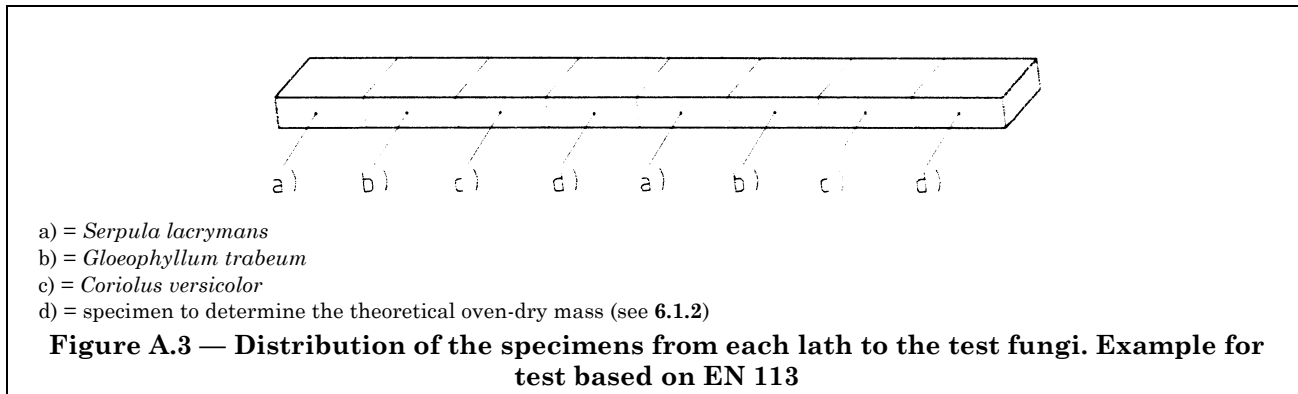
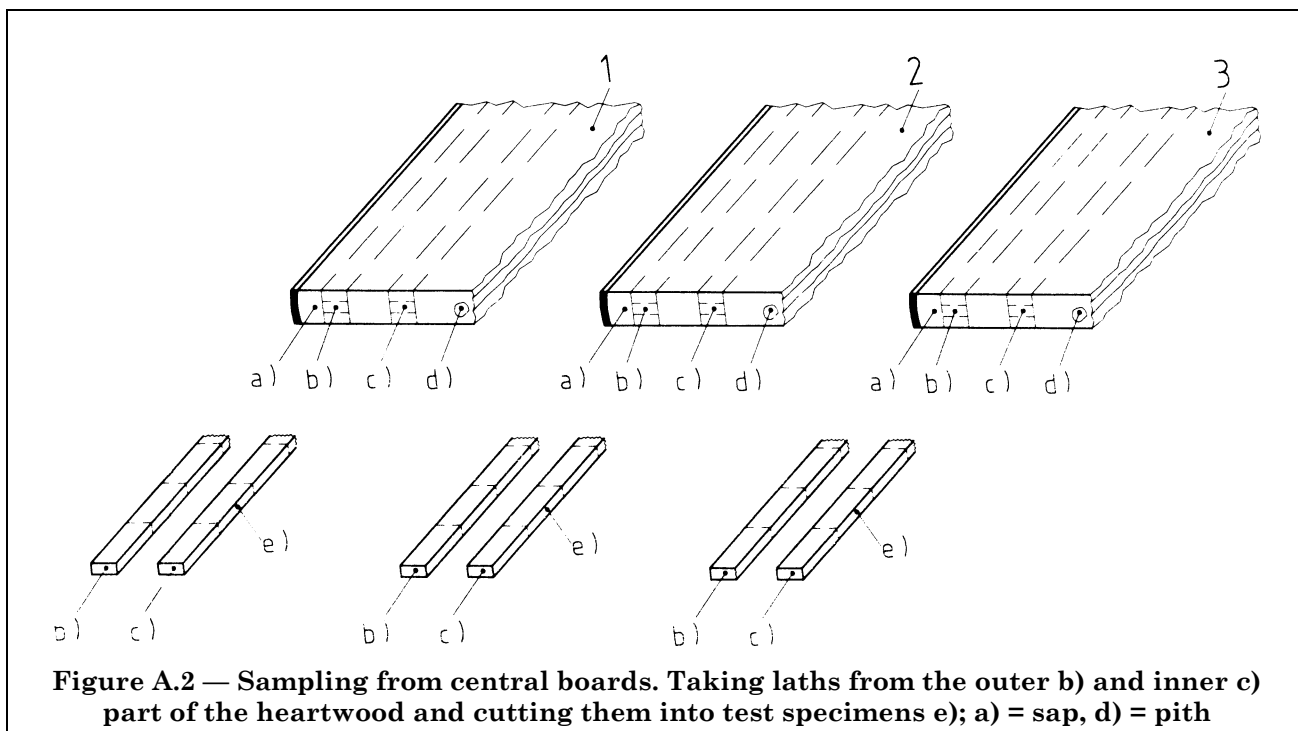
A.2 Central boards

A scheme for the cutting of laths from centrally cut boards to represent the outer and inner heartwood is illustrated in Figure A.2. This also shows the cutting of the laths into test specimens. The length of the boards necessary for sampling depends on the amount of specimens required for the relevant test procedure.

A.3 Distribution of specimens

The cutting and distribution of specimens based on EN 113 test is illustrated in Figure A.3.





Annex B (informative)

Example of a test report

Test report for the provisional classification of the natural durability of Sweet Chestnut heartwood to *Basidiomycetes*

Number and date of this Part of European Standard	EN 350-1:1994
Wood species tested	<i>Castanea sativa</i> Mill.: Sweet Chestnut, Châtaignier, Edelkastanie.
Number and origin of the trees used in the test	Three trees: 1: cultivated forest south-east of France, temperate climate, altitude 400 m, felled in November 1988, log cut between 2 m and 4 m from the butt end, 35 cm diameter, air dried, density at a moisture content of 12 % (m/m) 620 kg/m ³ . 2: cultivated forest, south-west Germany, temperate climate, altitude 150 m, felled in October 1988, log cut between 2 m and 4 m from the butt end, 30 cm diameter, air dried, density at a moisture content of 12 % (m/m) 650 kg/m ³ . 3: cultivated forest, central Italy, Mediterranean climate, altitude 600 m, felled in August 1988, log cut between 1.5 m and 4 m from the butt end, 30 cm diameter, air dried, density at a moisture content of 12 % (m/m) 670 kg/m ³ .
Part of the log from which the specimens have been taken	Outer and inner heartwood of each log, 2 m from the butt end and below the set of branches; sapwood and heartwood were clearly distinguished by colour.
Reference species	<i>Fagus sylvatica</i> L.
Kind of organisms to which the natural durability has been tested	<i>Basidiomycetes</i> .
Number and date of the European Standard on which the test procedure was based, the clauses and subclauses followed, and variations from the standard	EN 113:1980; A1:1981 and A2:1985 4.1.4; 4.2 except 4.2.2 (solvents); 4.3.1; 4.3.2; 4.3.9; 4.3.10; 6.2 except the instruction on the number of growth rings and latewood content for the specimens of the test species; 6.3; 6.4 except the instruction on density for the specimens of the test species; 7.2 having the wood species in test instead of "treated specimens", the specimens were conditioned at (20 ± 2) °C and relative humidity (65 ± 5) % before and after exposure to constant mass; 7.3; 7.4.1 except the detailed instructions referring to treated specimens. Any mass loss was calculated on the basis of the initial dry mass; Annex C, sterilization by steaming; Annex D; Annex E.
Number of specimens tested	3 × 10 per test fungus.

Species of fungi used	<i>Serpula lacrymans</i> (Schumacher ex Fries) S.F. Gray, strain BAM Ebw. 315; <i>Gloeophyllum trabeum</i> (Persoon ex Fries) Murill, strain BAM Ebw. 109; <i>Coriolus versicolor</i> (Linnaeus) Quélet, strain CTB 863A(2).		
Dates of beginning and end of exposure to the test organisms	1989-05-10 1989-08-30		
Duration of the test	16 weeks.		
Test result	See Table B.1.		
Average of the test result (percent mass loss)	<i>S. lacrymans:</i>	Chestnut	0,6 % (m/m)
		Beech	30,1 % (m/m)
	<i>G. trabeum:</i>	Chestnut	2,1 % (m/m)
		Beech	32,5 % (m/m)
	<i>C. versicolor:</i>	Chestnut	7,2 % (m/m)
		Beech	45,5 % (m/m)
Classification	Provisional classification according to laboratory test: Durable		

NOTE As wood is a natural material its properties, including natural durability, can be very variable. The classification given in this test report is an average only for the actual material and refers only to the heartwood.

Table B.1 — Summary of mean values and standard deviations of the test results

Tree	Part of cross-section	Number of specimens	Corrected mass loss in percent with the text fungus					
			<i>S.lacrymans</i>		<i>G.trabeum</i>		<i>C.versicolor</i>	
			Mean value	Standard deviation	Mean value	Standard deviation	Mean value	Standard deviation
<i>Castanea sativa</i>								
1	outer heartwood	5	0,1	0,1	1,7	0,2	5,5	0,8
	inner heartwood	5	0,4	0,1	2,3	0,8	6,3	1,1
2	outer heartwood	5	0,3	0,1	1,5	0,3	6,8	0,5
	inner heartwood	5	1,0	0,3	2,7	0,7	8,1	1,2
3	outer heartwood	5	0,3	0,1	1,3	0,3	7,1	1,5
	inner heartwood	5	1,5	0,3	2,9	0,8	9,5	1,3
Total mean			0,6	0,2	2,1	0,6	7,2	1,0
<i>Reference species</i>								
Beech, mean		10	30,1	5,1	32,5	4,8	45,5	5,3

Annex C (informative)

Bibliography

ENV 807:1993, *Wood preservatives — Determination of the toxic effectiveness against soft rotting micro-fungi and other soil inhabiting micro-organisms.*

ISO 2859-2:1985, *Sampling procedures for inspection by attributes — Part 2: Sampling plans indexed by limiting quality (LQ) for isolated lot inspection.*

National annex NA (informative)

Committees responsible

The United Kingdom participation in the preparation of this European Standard was entrusted by the Technical Sector Board for Building and Civil Engineering (B/-) to Technical Committee B/515, upon which the following bodies were represented:

British Telecommunications
 British Wood Preserving and Damp-proofing Association
 Chemical Industries' Association
 Creosote Council
 Department of the Environment (Building Research Establishment)
 Electricity Industry in United Kingdom
 Institute of Wood Science
 Timber Research and Development Association
 Timber Trade Federation
 Wood Panel Products Federation

National annex NB (informative)

Cross-references

Publication referred to	Corresponding British Standard
EN 20-1:1992	BS EN 20 <i>Wood preservatives — Determination of the protective effectiveness against Lyctus brunneus (Stephens)</i> Part 1:1992 <i>Application by surface treatment (laboratory method)</i>
EN 46:1988	BS 5434:1989 <i>Wood preservatives. Determination of the preventive action against recently hatched larvae of Hylotrupes bajulus (Linnaeus) (laboratory method)</i>
EN 49-1:1992	BS EN 49 <i>Wood preservatives — Determination of the protective effectiveness against Anobium punctatum (De Geer) by egg-laying and larval survival</i> Part 1:1992 <i>Application by surface treatment (laboratory method)</i>
EN 113:1980	BS 6009:1982 <i>Wood preservatives. Determination of the toxic values against wood destroying Basidiomycetes cultures on an agar medium</i>
EN 118:1990	BS 6240:1990 <i>Wood preservatives. Determination of preventive action against Reticulitermes santonensis de Feyteud (laboratory method)</i>
EN 252:1989	BS 7282:1990 <i>Field test method for determining the relative protective effectiveness of a wood preservative in ground contact</i>
EN 275:1992	BS EN 275:1992 <i>Wood preservatives — Determination of the protective effectiveness against marine borers</i>
ENV 807:1993	DD ENV 807:1993 <i>Wood preservatives — Determination of the toxic effectiveness against soft rotting micro-fungi and other soil inhabiting micro-organisms</i>
ISO 2859-2:1985	BS 6001 <i>Sampling procedures for inspection by attributes</i> Part 2:1993 <i>Specification for sampling plans indexed by limiting quality (LQ) for isolated lot inspection</i>

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