DRAFT FOR DEVELOPMENT

DD CEN/TS
15083-1:2005

Durability of wood and wood-based products — Determination of the natural durability of solid wood against wood-destroying fungi, test methods —

Part 1: Basidiomycetes

ICS 79.040

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Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the European organization responsible for its conversion to a European standard. A review of this publication will be initiated 2 years after its publication by the European organization so that a decision can be taken on its status at the end of its 3-year life. Notification of the start of the review period will be made in an announcement in the appropriate issue of *Update Standards*.

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Summary of pages

This document comprises a front cover, an inside front cover, the CEN/TS title page, pages 2 to 20, an inside back cover and a back cover.

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Amendments issued since publication

Amd. No.	Date	Comments

This Draft for Development was published under the authority of the Standards Policy and Strategy Committee and comes into effect on 14 November 2005

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ISBN 0 580 46610 8

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 15083-1

July 2005

ICS 79.040

English version

Durability of wood and wood-based products - Determination of the natural durability of solid wood against wood-destroying fungi, test methods - Part 1: Basidiomycetes

Durabilité du bois et des matériaux dérivés du bois - Détermination de la durabilité naturelle du bois massif vis-à-vis des champignons lignivores, méthodes d'essai - Partie 1: Basidiomycètes

Dauerhaftigkeit von Holz und Holzprodukten - Bestimmung der natürlichen Dauerhaftigkeit von Vollholz gegen holzzerstörende Pilze, Prüfverfahren - Teil 1: Basidiomyceten

This Technical Specification (CEN/TS) was approved by CEN on 1 March 2005 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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Ref. No. CEN/TS 15083-1:2005: E

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Foreword

This document (CEN/TS 15083-1:2005) has been prepared by Technical Committee CEN/TC 38 “Durability of wood and wood-based products”, the secretariat of which is held by AFNOR.

This document consists of two parts. Part 1 is required to determine the natural durability of solid wood against wood destroying basidiomycetes fungi and Part 2 against soft rotting micro-fungi.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this CEN Technical Specification: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This CEN Technical Specification specifies a laboratory method of test which gives a basis for the assessment of the natural durability of a sample of timber against attack by wood-destroying basidiomycetes. The natural durability of a species of timber can vary depending on the conditions of growth such as climate and soil type. For this reason, the durability established using the method described in this document will relate only to the sample of timber tested. Guidance on sampling is given in Annex A.

This laboratory method provides one criterion by which the durability of the timber can be assessed. It is recommended that this information be supplemented by data from other relevant tests, for example CEN/TS 15083-2, and above all by practical experience.

The procedures described in this standard method are intended to be carried out by suitably trained and/or supervised specialists.

1 Scope

This CEN Technical Specification specifies a method of test for determining the natural durability of a timber against wood-destroying basidiomycetes cultured on an agar medium. The method is applicable to all timber species.

NOTE This method may be used in conjunction with an ageing procedure, for example EN 73 or EN 84.

2 Normative reference

The following referenced document is indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 3696, *Water for analytical laboratory use – Specification and test methods* (ISO 3696:1987)

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
supplier
sponsor of the test (person or company providing the sample of timber to be tested)

4 Principle

Test specimens prepared from the timber under test and reference timber test specimens are exposed to attack by pure cultures of wood-destroying basidiomycete fungi. After a prescribed period of incubation under defined conditions, the percentage loss in dry mass of the test specimens is used to estimate the resistance of the test timber to attack by the test fungi and as the basis of a provisional durability rating.

5 Test materials and apparatus

5.1 Biological material

5.1.1 Test fungi

The test fungi to be used are as follows.

5.1.1.1 Obligatory fungus in all cases: *Coniophora puteana* (Schumacher ex Fries) Karsten (BAM Ebw. 15).

Loss in mass of Scots pine sapwood in 16 weeks: minimum 30 %.

Loss in mass of beech in 16 weeks: minimum 30 %.

5.1.1.2 Obligatory fungi for particular timbers:

— *Poria placenta* (Fries) Cooke sensu J. Eriksson (FPRL 280) for soft woods.

Loss in mass of Scots pine sapwood in 16 weeks: minimum 20 %.

— *Coriolus versicolor* (Linnaeus) Quélet (CTB 863A) for hardwoods.

Loss in mass of beech in 16 weeks: minimum 20 %.

5.1.1.3 Maintenance of strains

The strains shall be maintained and treated (frequency of subculturing, alternation of culture media, etc.) in accordance with the instructions of their laboratory of origin (see B.2). The parent strain shall be maintained in the laboratory of its origin so as to conserve and to assure its vigour.

NOTE If tests are not undertaken regularly or if a strain shows signs of degeneration a new standard culture of the strain should be obtained from the laboratory of its origin for each test (see B.2).

When new strains are received, the virulence shall be tested to ensure the strain can achieve the minimum loss in mass (see 5.1.1.1 and 5.1.1.2).

5.1.2 Reference timbers

5.1.2.1 Species used for the tests:

— Scots pine sapwood (*Pinus sylvestris* Linnaeus) for tests with softwoods;

— beech (*Fagus sylvatica* Linnaeus) for tests with hardwoods.

5.1.2.2 Wood quality

The wood shall be free from cracks, stain, decay, insect damage or other defects. The wood shall not have been water-stored, floated, chemically treated or steamed.

NOTE Wood that has been kiln dried at temperatures below 60 °C can be used.

The Scots pine shall be exclusively sapwood containing little resin and having between 2,5 and 8 annual growth rings per 10 mm. The proportion of latewood in the annual rings shall not exceed 30 % of the whole.

The beech shall be even-grained, free from tyloses and discolouration. It shall have between 2 and 6 annual growth rings per 10 mm.

5.1.2.3 Provision of reference timber test specimens

Prepare planed strips having a cross-section of (25 ± 0,5) mm x (15 ± 0,5) mm. The longitudinal faces shall be parallel to the direction of the grain. The annual rings shall not be parallel to the broad faces (contact angle to be greater than 5) but otherwise may run in any direction. Make transverse cuts, neatly to give sharp edges and a fine-sawn finish to the end-grain surfaces, to give reference timber test specimens (50 ± 0,5) mm long.

The test specimens shall originate from a minimum of three trees or shall be taken from a stock originally of more than 500 test specimens and originating from at least five planks.

5.1.2.4 Dimensions and density of reference timber test specimens

The dimensions of each reference timber test specimen at a mass fraction of (12 ± 2) % moisture content shall be (50 ± 0,5) x (25 ± 0,5) mm x (15 ± 0,5) mm.

NOTE A moisture meter of the two-pronged electrical conductivity type is suitable for assessing moisture content.

In a batch of test specimens, the density of an individual is permitted to differ from the mean value of the batch by ± 10 %.

5.1.2.5 Number and distribution of reference timber test specimens

Use at least 10 reference timber test specimens for each test fungus. Mark each test specimen so that it can be identified throughout the test.

5.2 Products and reagents

5.2.1 Culture medium

The culture medium shall be a malt agar medium with the following composition:

— malt extract:

  in concentrated form: (50 ± 0,5) g;

  in powder form: (40 ± 0,5) g.

— agar causing no inhibition of growth of fungi:

  (20 ± 0,5) g to (30 ± 0,5) g.

— water conforming to grade 3 of EN ISO 3696:

  quantity to make up to 1 000 ml.

Prepare this medium by warming the mixture in a boiling water bath or steam bath, stirring until completely dissolved.

Place in each culture vessel (5.3.1) a sufficient quantity of the medium to provide a minimum depth of 3 mm to 4 mm when in its in-use position. Close the vessels as specified in 5.3.1 and sterilize in an autoclave at 121 °C for 20 min. Let the vessels cool in their in-use position.

5.3 Apparatus

5.3.1 Culture vessels, Kolle flasks or equivalent vessels with a capacity of between 400 ml and 650 ml providing a flat surface area of between 85 cm² and 120 cm² for the medium.

NOTE 1 Examples of suitable vessels are given in EN 113.

NOTE 2 Kolle flasks are usually plugged with a wad of cotton wool. Other culture vessels are usually fitted with leakproof lids, the centres of which are pierced with a round hole of up to 15 mm diameter and plugged with a wad of cotton wool.

5.3.2 Drying oven, capable of being controlled at (103 ± 2) °C.

5.3.3 Desiccators, with efficient desiccant (silica gel for example).

5.3.4 Conditioning chamber, well ventilated and controlled at (20 ± 2) °C and (65 ± 5) % relative humidity.

5.3.5 Culture chamber, (incubator or room) dark and controlled at (22 ± 2) °C and (70 ± 5) % relative humidity.

5.3.6 Test specimens supports, made of glass, stainless steel or any other inert material, that is to say, with no risk of having any effect on the culture medium, the fungus, the wood, or in itself being modified.

NOTE Supports may be capable of holding either one or two test specimens.

The supports are used to prevent direct contact of the test specimens with the culture medium, but shall not separate them from it by more than 3 mm.

5.3.7 Ordinary laboratory equipment, including a balance capable of weighing to an accuracy of 0,01 g and an autoclave.

6 Test specimens

6.1 Species and source of wood

Ensure that the species of each plank or log to be tested has been identified correctly and record both the botanical and the trade name. Obtain as much information as possible on the origin and history of the sample (see Clause 9). The sample of timber shall be free from penetrating wood preservative treatments, for example boron-based anti-stain products.

NOTE 1 Commercial samples of timber can contain more than one botanical species.

NOTE 2 Guidance on sampling is given in Annex A.

6.2 Wood quality

Record the physical characteristics of the timber sample, for example the sizes of logs/planks, the presence of resin pockets, cross-grain, knots, sapwood and where possible record the widths of annual rings and the proportion of latewood. For logs, record the position in the trunk if known.

6.3 Provision of the test specimens

Reject at least the outer 10 mm from lateral faces of planks and 50 mm from the end grain; reject at least 50 mm from the end grain of logs.

Prepare planed strips having a cross-section of (25 ± 0,5) mm x (15 ± 0,5) mm which avoid all obvious defects and which are entirely heartwood or entirely sapwood. The longitudinal faces shall be parallel to the direction of the grain. The annual rings shall not be parallel to the broad faces (contact angle to be greater than 5°) but otherwise may run in any direction. Make transverse cuts, neatly to give sharp edges and a fine-sawn finish to the end-grain surfaces, to give timber test specimens (50 ± 0,5) mm long.

6.4 Dimensions of test specimens

The dimensions of each timber test specimen at a mass fraction of (12 ± 2) % moisture content shall be:

(50 ± 0,5) mm x (25 ± 0,5) mm x (15 ± 0,5) mm.

NOTE 1 A moisture meter of the two-pronged electrical conductivity type is suitable for assessing moisture content.

NOTE 2 The nominal volume of each test specimen is 18,75 cm^3.

6.5 Number and distribution of test specimens

The timber test specimens are divided into:

e_1 Test specimens:

these are the test specimens of the test timber subjected to attack by the wood-destroying basidiomycete fungi. Use at least 30 test specimens for exposure to each test fungus, obtained from a minimum of five logs or planks (see Annex A).

e_2 Moisture content test specimens:

these are test specimens of the test timber which are used to establish the moisture content of the timber following conditioning to constant mass, to allow calculation of the initial dry mass of the test specimens. Use at least 10 moisture content test specimens and a minimum of one from each log or plank.

Mark each test specimen so that it can be identified throughout the test.

7 Procedure

7.1 Preparation of the timber test specimens

7.1.1 Reference timber

Place the numbered reference timber test specimens in the oven (5.3.2) and leave them there for 18 h to 24 h. Cool to room temperature in a desiccator (5.3.3) and weigh to the nearest 0,01 g to determine the initial dry mass (m_0). Place the test specimens in the conditioning chamber (5.3.4) until they need to be sterilized.

7.1.2 Test timber

NOTE If the test specimens are to be subjected to an ageing procedure, the procedure should be carried out prior to conditioning to constant mass to avoid the need to establish changes in mass due to the ageing procedure.

Place the numbered timber test specimens (e_1) and the moisture content test specimens (e_2) in the conditioning chamber (5.3.4) until weighings of sample test specimens at 24 h intervals are within $\pm$ 0,01 g. Weigh the timber test specimens and the moisture content test specimens and record the initial conditioned mass (m_1).

Calculate the mean density of the timber test specimens using the mean conditioned mass and the nominal volume (see 6.4).

Place the moisture content test specimens in the oven (5.3.2) and leave them there for 18 h to 24 h. Cool to room temperature in a desiccator (5.3.3) and weigh to the nearest 0,01 g to determine the oven dry mass (m_0).

Calculate the moisture content of each moisture content test specimen by expressing the mass of water (m_1 - m_0) as a percentage of the oven dry mass (m_0).

Calculate the mean moisture content (MC) of the moisture content test specimens. Use the mean moisture content to calculate the initial dry mass (m_i) of each timber test specimen using the equation:

$$mi = m_1 \times \frac{100}{100 + MC}$$

where

m_i is the initial dry mass of timber;

m_1 is the initial conditioned mass ;

MC is the mean moisture content.

7.2 Exposure to fungi

Inoculate the culture medium (see 5.2.1) in the culture vessels (5.3.1) not more than seven days after sterilization of the medium. The inocula shall be obtained from cultures which are less than four weeks old and which are still actively growing across the culture medium, or have covered it for less than one week. After inoculation, place the culture vessels in the culture chamber (5.3.5).

The exposure to fungi shall take place as soon as the mycelium completely covers the surface of the culture medium. This corresponds to the active phase of development; in no case shall this period exceed four weeks. The fungi shall be free from contamination by other organisms.

Into each culture vessel, introduce aseptically one or two previously sterilized test specimen supports (5.3.6). Place two test specimens or two reference timber test specimens, previously sterilized by one of the methods given in Annex C, on the support(s) in each inoculated culture vessel

7.3 Culture conditions and duration of test

After introducing the test specimens, return the culture vessels to the culture chamber (5.3.5) and leave them there for 16 weeks.

7.4 Assessment of test

7.4.1 Examination of the test specimens

At the end of test, withdraw the test specimens from the vessels, removing any adhering mycelium. Record evidence of waterlogging or contaminating micro-organisms.

7.4.2 Final dry mass

Weigh each test specimen to the nearest 0,01 g at the end of the test (m_2). Place the test specimens in the oven (5.3.2) at (103 ± 2) °C until the test specimens have reached constant mass, that is when weighings at 4 h intervals are within ± 0,05 g. Cool the test specimens to room temperature in desiccators (5.3.3) and weigh each test specimen to the nearest 0,01 g to determine the final dry mass (m_3).

Calculate the moisture content of each test specimen by expressing its water content ($m_2 - m_3$) as a percentage of the final dry mass (m_3); calculate the mean final moisture content of the timber test specimens exposed to each of the test fungi. Calculate the loss in mass of each test specimen by expressing the loss in mass ($m_i - m_3$) as a percentage of the initial dry mass (m_i).

7.4.3 Validity of results

Reject any test specimen affected by the growth of contaminating micro-organisms. Reject any reference timber test specimen affected by waterlogging.

The data from any set of replicates are valid provided the results from at least four test specimens have been accepted.

Calculate the mean loss in mass of reference timber test specimens exposed to each test fungus.

Determine the median value for the losses in mass of the timber test specimens exposed to each test fungus and taken from each log or plank sampled and the median value for all the test specimens exposed to each test fungus.

The test is valid if the mean loss in mass of the reference timber test specimens exposed to each of the test fungi is equal to or higher than the minimum values given in 5.1.1.

NOTE In Annex D a provisional assessment system is given.

8 Test report

The report shall include at least the following information[1]:

a) number and the date of this CEN Technical Specification;

b) timber species under test;

c) supplier of the timber;

d) known history of the timber, for example country and district of origin, method of drying, storage conditions;

e) description of visible features of the timber, for example resin pockets, cross-grain, knots, widths of annual rings, proportion of latewood;

f) details of the sampling regime;

g) density of the timber tested (based on the mean conditioned mass and the nominal volume);

h) species and strain numbers of the fungi used for the test;

i) where applicable, the nature of any ageing test carried out, specifying the type, conditions and duration, reference being made to a standard where appropriate;

j) means of sterilization used;

k) date when the test specimens were exposed to the test fungi;

l) date when the test specimens were removed from the test fungi and the duration of test;

m) for each reference timber test specimen, the loss in mass expressed as a percentage of the initial dry mass, the mean loss in mass of the test specimens exposed to each of the test fungi and a statement on the validity of the test;

n) for the timber test specimens, the mean final moisture content of the test specimens exposed to each of the test fungi and the range in values;

o) for each timber test specimen, the loss in mass expressed as a percentage of the initial dry mass, the median loss in mass of the test specimens exposed to each of the test fungi;

p) provisional durability rating given to the sample of timber;

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[1] An example of a test report is given in Annex D.

q) any deviation from the standard method and any factors that may have affected the results including noted variation between logs or planks;

r) name of the organization responsible for the test report and the date of issue;

s) name and signature of the officer(s) in charge of testing;

t) following note:

"The interpretation and practical conclusions that can be drawn from a test report demand a specialized knowledge of timber. The information contained in this report applies only to the sample of timber tested."

Annex A
(informative)

Guidance on sampling

A.1 Introduction

The reliability of the information derived using the method described in this document depends on the sampling regime that is employed.

Within a tree, it is accepted that the natural durability of the heartwood will vary both along the length of the trunk and across the diameter of the trunk. For most timbers, the sapwood is significantly less durable than the heartwood. Some timbers have a pronounced 'transition zone' between the true heartwood and the true sapwood. This transition zone may have some heartwood features, for example low permeability, and some sapwood features, for example low natural durability.

Variations in natural durability also occur between trees due to inherent genetic variation. The conditions under which a tree is grown may also affect the natural durability. The characteristics of timber from trees grown at the limit of the natural geographical distribution of a species will vary from those of timber grown under more normal conditions, for example timber from *Pinus sylvestris* trees grown close to the arctic circle is different from timber from trees grown in southern Sweden. Additionally, the timber from trees grown in plantations outside the natural geographical distribution of a species may be different from timber obtained from traditional sources, for example *Tectona grandis* grown in plantations in Africa may be less durable than that from Burma.

For these reasons, it is important to provide as much information as possible on the source and history of the timber that is being tested so that the results obtained can be put into a proper context.

A.2 Sampling from logs

Logs should be available for testing timbers grown within Europe and are the preferred source of test timber. Where possible, the butt log should be used. Sampling should avoid juvenile wood close to the pith and wood close to the heartwood/sapwood boundary to avoid the transition zone unless this zone is being specifically investigated. Use of logs allows investigation of variation in durability both along the trunk and across the diameter of the trees.

A.3 Sampling from commercial supplies of timber

With most timbers imported into Europe, only commercial supplies will be available. Within a package of timber, it is rarely possible to identify individual planks that have originated from different trees. For an individual plank, it may be possible to estimate the distance from the centre of the trunk but, in most cases, it will not be possible to establish the position in the cross-section from which the plank originated. For these reasons, it is preferred to sample as many planks as possible so as to better estimate the overall durability of the sample. For example, two replicate test specimens from each of 20 planks is preferred to 10 test specimens from each of four planks.

Annex B
(informative)

Test fungi

B.1 General information on maintenance and acquisition of test strains

Laboratories holding the parent strain should re-isolate the strain after growth on untreated wood if it shows any sign of weakness.

Laboratories which run tests regularly may maintain the strains themselves, but if the strain shows any sign of weakness, a fresh culture should be obtained from the laboratory of origin. All laboratories maintaining test fungi should test the virulence at least once a year, using reference timber test specimens, exposed using the method described in 7.3.

If tests are not undertaken regularly or if a strain shows signs of degeneration a new standard culture of the strain should be obtained from the laboratory of its origin for each test (see 5.1.1).

The laboratory sending test cultures should provide all growth features characteristic of the respective fungus.

NOTE When sending cultures special care has to be taken to avoid any harmful influence during transport, e.g. by freezing during air transport. To avoid the effects of X-rays, the cultures should be packed in aluminium containers or wrapped in aluminium foil. International Regulations exist concerning the transport of cultures. Information on these can be obtained from any recognised culture collection, for example a member of the European Culture Collection Organization.

When new strains are received, the virulence should be tested to ensure it exceeds the minimum given in 5.1.1.

B.2 Maintenance and treatment of test fungi

At least every six months, test strains should be re-isolated from untreated wood which is being actively attacked.

NOTE When undertaking tests regularly, the process of re-isolation can be carried out in association with each test to provide cultures for future tests.

Two reference timber test specimens of Scots pine sapwood for *Coniophora puteana* and *Poria placenta* and beech for *Coriolus versicolor* should be sterilized. Alternatively, two small wood test specimens, measuring approximately 5 mm (grain direction) x 30 mm x 30 mm, of the appropriate wood species should be sterilized. The test specimens, without ageing, should be exposed to attack by the test fungus using the exposure system described in 7.3 for a period of six to eight weeks for reference timber test specimens or four weeks for the smaller test specimens. Without oven drying, under sterile conditions, the reference timber test specimens should be split open, small splinters of wood from the centre of the test specimens should be removed and partly embedded in mass fraction of 5 % malt agar medium in test tubes or Petri dishes. The smaller test specimens should be transferred whole to the mass fraction of 5 % malt agar medium. The fungi should be allowed to grow out of the wood. These cultures should be used for future tests and to provide stock cultures for future use.

The virulence of the test fungi should be checked at least once a year. If test are done less than once a year, a separate virulence test should be undertaken prior to test.

B.3 Information regarding obligatory fungi

B.3.1 *Coniophora puteana* (Schumacher ex Fries) Karsten (Synonym: *Coniophora cerebella* (Persoon) Duby).

Strain: BAM Ebw. 15 (Bundesanstalt für Materialforschung und -prüfung – D 12200 BERLIN).

Activity: Fungus causing a cuboidal brown rot of hardwood and softwood.

Simple laboratory culture, rapid growth on malt agar medium, or malt agar-peptone.

Maintenance: Store stock cultures at 5 °C to 8 °C.

Subculture every six months on malt agar medium.

B.3.2 *Poria placenta* (Fries) Cooke sensu J, Eriksson (Synonyms : *Poria monticola* Murrill)

Strain: FPRL 280 (Building Research Establishment Ltd - Garston, Watford, Herts WD2 7JR - UK).

Activity: Fungus causing a cuboidal brown rot of softwood.

Simple laboratory culture, rapid growth on malt agar medium.

Maintenance: Store stock cultures at 5 °C to 20 °C.

Keep stock cultures on a mass fraction of 5 % malt agar medium and subculture every three months.

B.3.3 *Coriolus versicolor* (Linnaeus) Quélet (Synonyms : *Polyporus versicolor* Linnaeus ex Fries - *Polystictus versicolor* (Linnaeus) Saccardo - *Trametes versicolor* (Linnaeus ex Fries) Pilát)

Strain: CTB 863A (Centre Technique du Bois et de l'Ameublement, Allée de Boutaut – BP 227, F 33 028 Bordeaux cedex)

Activity: Fungus causing a fibrous white rot of hardwood.

Simple laboratory culture, rapid growth on malt agar medium.

Maintenance: Store stock cultures at 5 °C to 20 °C.

Subculture every six weeks on malt agar medium.

Annex C
(normative)

Methods of sterilization

C.1 Ionizing radiation

Place the test specimens individually, or in groups of similar replicates, in polyethylene envelopes (at least 90 μm thick) and seal the envelopes by hot iron welding.

NOTE 1 Polyethylene sheeting may be used, folding the sheet over the specimen bed and welding along three sides. It is more practical to use polyethylene tubing sold in rolls. The test specimens are introduced into this tubing which is then welded on both sides of the specimens.

Send the envelopes thus prepared to an irradiation centre. Advice with regard to the packing of the envelopes shall be obtained from the irradiation centre.

Subject the envelopes to a dose of between 25 kGy[2] and 50 kGy when using radioisotopes

(e.g. ^{60}Co sources) or between 50 kGy and 100 kGy when using electron-accelerators.

NOTE 2 There does not appear to be any difference between sterilization obtained with a high intensity for a short time or a low intensity applied over a prolonged period. After irradiation, the envelopes may be safely stored for several weeks without detrimental effects.

Do not open the envelopes until the precise moment that the contents are to be used.

C.2 Steam

The day before the test specimens are to be planted in the culture vessels, place them in glass or other suitable dishes, placing only test specimens of the test timber or the reference timber in the same dish. Arrange the test specimens so that they do not touch, placing glass or stainless steel rods between each of them.

Cover the dishes and place them in a steamer. The steam shall circulate round the dishes for 20 min.

Leave the dishes to cool, store them for 24 h in a room at ambient temperature and then repeat the sterilization process for 10 min.

Do not open the dishes until the precise moment when the test specimens are to be placed in the culture vessels.

[2] 1 kGy = 1kJ/kg = 0,1 Mrad.

Annex D
(informative)

Assessment of results

The assessment of results obtained by this test method is supposed to identify a durability class for the material tested. This annex is proposing a provisional durability rating scale that should be considered during revisions of EN 350-1 and EN 460.

The sample of timber tested should be given a provisional durability rating against wood-destroying basidiomycete fungi, based on the higher median mass loss determined for all the test specimens exposed to each of the two test fungi, using the scale given in Table D.1.

Table D.1 — Provisional durability rating scale

Durability class	Description	Per cent loss in mass
1	Very durable	≤ 5
2	Durable	> 5 to ≤ 10
3	Moderately durable	> 10 to ≤ 15
4	Slightly durable	> 15 to ≤ 30
5	Not durable	> 30

Annex E
(informative)

Example of a test report

Number and date of this document	:	CEN/TS 15083-1:2005
Timber species	:	*Pseudotsuga menziesii* (Mirb.) Franco known as Douglas fir; confirmed by microscopic examination
Supplier	:	Company A
History of the timber	:	Grown in Germany; imported in 2002
Description of the timber	:	Light reddish-brown heartwood clearly distinct from pale sapwood; prominent growth ring figure with approximately 20 % latewood; straight grained; growth rate 3 to 6 annual rings per 10 mm
Sampling regime used	:	Five planks taken at random from a single parcel of timber; ten test specimens from each plank
Density of timber tested	:	520 kg/m^3
Species and strain numbers of the test fungi	:	*Coniophora puteana* BAM Ebw. 15
		Coriolus versicolor CTB 863A
Ageing procedures carried out	:	None
Method of sterilization	:	Gamma irradiation
Date of exposure to fungi	:	2003-08-20
Date removed from fungi and duration of test	:	2004-01-13
		16 weeks
Losses in mass reference timber	:	See Table E.1 [a]; the test was valid
Losses in mass test timber	:	See Table E.2 [a]
Provisional durability rating against wood-destroying basidiomycete fungi	:	Rating 4 (slightly durable)
Deviations from the standard, etc.	:	None: no significant variation between logs
Report prepared by	:	Laboratory B, Anytown, Europe

Name and signature of the officer(s) in charge		Mr C
		Mrs D
Date	:	2004-02-02

NOTE The interpretation and practical conclusions that can be drawn from a test report demand a specialized knowledge of timber. The information contained in this report applies only to the sample of timber tested.

[a] Tables E.1 and E.2 are not included as they contain obvious data.

Bibliography

[1] EN 73, *Wood preservatives – Accelerated ageing tests of treated wood prior to biological testing – Evaporative ageing procedure*

[2] EN 84, *Wood preservatives – Accelerated ageing tests of treated wood prior to biological testing – Leaching procedure*

[3] EN 113, *Wood preservatives – Test method for determining the protective effectiveness against wood-destroying basidiomycetes – Determination of the toxic values*

[4] CEN/TS 15083-2, *Durability of wood and wood-based products – Determination of the natural durability of solid wood against wood-destroying fungi, test methods – Part 2: Soft rotting micro-fungi*

[5] EN 350-1, *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*

[6] EN 460, *Durability of wood and wood-based products – Natural durability of solid wood – Guide to the durability requirements for wood to be used in hazard classes*

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