



SLOVENSKI STANDARD

SIST ENV 1099:2000

01-maj-2000

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Plywood - Biological durability - Guidance for the assessment of plywood for use in different hazard classes

Sperrholz - Biologische Dauerhaftigkeit - Leitfaden zur Beurteilung von Sperrholz zur Verwendung in verschiedenen Gefährdungsklassen

Contreplaqué - Durabilité biologique - Guide pour l'évaluation du contreplaqué pour emploi dans les différentes classes de risques

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Ta slovenski standard je istoveten z: **ENV 1099:1997**

ICS:

79.060.10 Vezan les Plywood

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EUROPEAN PRESTANDARD
PRÉNORME EUROPÉENNE
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ENV 1099

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Descriptors: wood products, plywood, durability, biodegradability, estimation, classifications, operating requirements

English version

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plywood for use in different hazard classes**

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l'évaluation du contreplaqué pour emploi dans les
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Beurteilung von Sperrholz zur Verwendung in
verschiedenen Gefährungsklassen

This European Prestandard (ENV) was approved by CEN on 11 September 1997 as a prospective standard for provisional application.

The period of validity of this ENV 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 ENV can be converted into a European Standard.

CEN members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

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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 Prestandard has been prepared by Technical Committee CEN/TC 112 "Wood-based panels", the secretariat of which is held by DIN.

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

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1 Scope

This European Pre-standard gives guidances on the selection of plywood for use in the different hazard classes of biological attack as defined in EN 335-1.

The guidance given takes into account the natural durability classification for solid timber (see EN 350-2) together with other factors specific for plywood.

It does not consider durability against chemico-physical factors, such as weathering, nor does it consider the biological durability of the adhesive.

Guidance on precautionary measures for use is also given.

2 Normative references

This European Pre-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 Pre-standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 313-2

Plywood – Classification and terminology – Part 2: Terminology

EN 335-1

Durability of wood and wood-based products – Definitions of hazard classes of biological attack – Part 1: General

EN 335-3 : 1995

Durability of wood and wood-based products – Definitions of hazard classes of biological attack – Part 3: Application to wood-based panels

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

EN 460 : 1994

Durability of wood and wood-based products – Natural durability of solid wood – Guide to the natural durability requirements for wood to be used in hazard classes

3 Definitions

For the purposes of this standard, the definitions given in EN 313-2 apply.

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4 Precautionary measures for use

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4.1 Rules for selection

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Plywood should be selected according to the relevant hazard classes of its end use situation and taking into account any risk from perceived hazards likely to occur.

Five hazard classes of use have been identified as being representative of the various conditions the material is likely to meet. These 5 classes are defined in EN 335-1 and their applications for plywood in EN 335-3.

The risk of biological attack can differ for different end-uses within the same hazard class.

If the hazard class cannot be determined accurately or when different parts of the same plywood panel are exposed to different hazard classes, selection should be made with regard to the most severe of the probable hazard classes.

When a plywood component would be difficult to replace, or the consequences of its possible failure would be serious, it is advisable to use a more durable plywood than that normally appropriate for the hazard class of the end use situation.

4.2 Use of treated plywood

With some preservative products, a risk of excessive leaching exists¹⁾. If the specified preservative product is leachable, it is essential that the panel is covered, or otherwise protected, after treatment and during transport and construction, as well as in service.

In addition to the natural biological durability of the plywood or durability conferred through preservative treatment, other factors which can affect the performance of plywood and which should be considered during development of specifications include building practice during construction, quality of maintenance, the type and integrity of surface coatings applied and the compatibility between treatments and coatings.

4.3 Installation principles

Plywood should be installed and maintained in such a way that the conditions in-service are no more severe than those appropriate to the specified material.

The moisture content of plywood is influenced by the gradients of temperature and water vapour between the two faces and the permeability of any surface coatings applied to the faces.

Where plywood intended for dry end use has become wet during installation, it should be allowed to dry thoroughly before the components or structures are sealed.

In hazard classes 2 and 3 where there is a risk of wetting, but which can be minimised through design, it is important to incorporate in that design suitable detailing and adequate ventilation to ensure that a build-up and subsequent retention of water does not occur.

Special attention should be paid to protecting plywood edges, e.g. by applying a low permeability finish.

5 Influence of plywood composition on biological durability

The characteristics of natural durability and treatability of solid wood are set out in EN 350-2 and EN 460. These can be used as guidance for estimating the durability and treatability performance of plywood.

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¹⁾ Leaching to a level where the conferred durability is compromised.

If the plywood contains more than one wood species, the species having the lowest natural durability should be used to indicate the expected durability level of the untreated plywood and that being the most resistant to treatment should be used to indicate treatability.

Choice of plywood for a particular application should be made with due consideration given to the characteristics of adhesive type, wood species and lay up and the required life expectancy. The behaviour of plywood subjected to biological attack can differ from that of solid wood.

The behaviour of plywood under different moisture regimes is affected by the wood species comprising the plies, and the nature and content of the adhesive used. The equilibrium moisture content of plywood made from a single wood species can differ from that of solid wood of the same species under the same conditions.

Specific factors for consideration are indicated in annex A.

6 Use of plywood in different hazard classes

6.1 General

In order to select suitable plywood, reference should be made to EN 350-2 to establish the natural durability classification of the constituent wood species against the various biological organisms associated with the hazard class in which the plywood will be used.

6.2 Wood-destroying fungi

Table 1 is based on EN 460 and gives guidance, where natural durability levels are insufficient, on the need for preservative treatment.

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Table 1: Wood-destroying fungi – Guidance on the application of natural durability classes of wood species to plywood used in various hazard classes

Hazard class for plywood ²⁾	Durability class of wood species used in the plies ¹⁾				
	1	2	3	4	5
1	0	0	0	0	0
2	0	0	0	(0)	(0)
3	0	0	(0)	(x)	(x)
4	0	(0)	(x)	x	x
5	0	(x)	(x)	x	x

¹⁾ Sapwood of all species is regarded as belonging to durability class 5.

²⁾ The use of plywoods is only recommended in hazard class 4 and hazard class 5 if adequately modified (see EN 335-3 : 1995, annex A and product standards).

Key:

0 natural durability sufficient

(0) natural durability is normally sufficient but, under certain end uses, treatment can be advisable (see EN 460 : 1994, annex A)

(x) preservative treatment is normally advisable but, in certain end uses, natural durability can be sufficient (see EN 460 : 1994, annex A)

x preservative treatment necessary

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6.3 Insects and marine organisms

Natural durability ratings for plywood against insect and marine borer attacks, based on the rating for constituent wood species given in EN 350-2, are given in table 2.

Wood destroying insects and marine organisms are universally present throughout Europe with a risk of infestation in all hazard classes. Specific end-use situations and local conditions should be taken into account when assessing this risk for selection of a suitable plywood or the need for preservative treatment.

Table 2: Scheme for assigning natural durability rating of plywood for the various organisms

Organisms	Natural durability of wood species		
	Durable	Susceptible	
Hylotrupes	D_{Hy}	S_{Hy}/SH_{Hy}	
Anobium	D_A	S_A/SH_A	
Lyctus	D_L	S_L	
	Durable	Moderately durable	Susceptible
Termites	D_T	M_T	S_T
Marine organisms	D_{Ma}	M_{Ma}	S_{Ma}
<p>Explanation of abbreviations:</p> <p>D durable – M moderately durable – S susceptible – SH the heartwood is also known to be susceptible</p> <p>Subcripts:</p> <p>A Anobium – Hy Hylotrupes – L Lyctus – Ma Marine organisms – T Termites</p> <p>Veneer thickness can result in a modification to the natural durability and thus affect the ratings which can be modified as follows:</p> <p>a) in case of veneer thicknesses > 3 mm, table 2 shall be used as shown;</p> <p>b) in case of veneer thicknesses $> 1,5$ mm and ≤ 3 mm, change table 2 as follows:</p> <p>S_{Hy}/SH_{Hy} to D_{Hy}</p> <p>c) in case of veneer thicknesses $\leq 1,5$ mm: use b) but, due to the limited thickness of the veneer, risk by Hylotrupes bajulus need not be taken into account, and change table 2 as follows:</p> <p>S_A/SH_A to D_A S_L to D_L</p> <p>NOTE: Table 2 is based on annex B of EN 350-2 : 1994.</p>			