
**Non-impregnated densified laminated wood for electrical purposes - Part 3:
Specifications for individual materials - Sheet 1: Sheets produced from beech
veneer (IEC 61061-3-1:1998)**

Non-impregnated densified laminated wood for electrical purposes -- Part 3:
Specifications for individual materials -- Sheet 1: Sheets produced from beech veneer

Nicht-imprägniertes Kunstharz-Preßholz für elektrotechnische Zwecke -- Teil 3:
Anforderungen für einzelne Werkstoffe -- Blatt 1: Tafeln aus Rotbuchenfurnieren
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Stratifiés de bois densifiés, non imprégnés, à usages électriques -- Partie 3:
Spécifications pour matériaux particuliers -- Feuille 1: Planches réalisées à partir de
placages de hêtre
c6773a678689/sist-en-61061-3-1-2002

Ta slovenski standard je istoveten z: EN 61061-3-1:1998

ICS:

29.035.99 Drugi izolacijski materiali Other insulating materials

SIST EN 61061-3-1:2002**en**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61061-3-1

October 1998

ICS 17.220.99;29.035.01

Descriptors: Solid electrical insulating materials, laminates, wood, veneer, beech wood, specifications, characteristics, tests, tables of data, flatness, dimensional deviations

English version

Non-impregnated densified laminated wood
for electrical purposes
Part 3: Specifications for individual materials
Sheets 1: Sheets produced from beech veneer

(IEC 61061-3-1:1998)

Stratifiés de bois densifiés, non
imprégnés, à usages électriques
Partie 3: Spécifications pour matériaux
particuliers
Feuille 1: Planches réalisées à partir de
placages de hêtre
(CEI 61061-3-1:1998)

Nicht-imprägniertes Kunstharz-Preßholz
für elektrotechnische Zwecke
Teil 3: Anforderungen für einzelne
Werkstoffe
Blatt 1: Tafeln aus Rotbuchenfurnieren
(IEC 61061-3-1:1998)

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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 CENELEC member.

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

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Ref. No. EN 61061-3-1:1998 E

Foreword

The text of document 15C/968/FDIS, future edition 1 of IEC 61061-3-1, prepared by SC 15C, Specifications, of IEC TC 15, Insulating materials, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61061-3-1 on 1998-10-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1999-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2001-07-01

Annexes designated “normative” are part of the body of the standard.

In this standard, Annex ZA is normative.

Annex ZA has been added by CENELEC

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Endorsement notice

The text of the International Standard IEC 61061-3-1:1998 was approved by CENELEC as a European Standard without any modification.

Introduction

This International Standard is one of a series which deals with non-impregnated densified wood for electrical purposes.

The series consists of three parts:

Part 1: *Definitions, designation and general requirements*; (IEC 61061-1)

Part 2: *Methods of test*; (IEC 61061-2)

Part 3: *Specifications for individual materials*;

Sheet 1: Sheets produced from beech veneer (IEC 61061-3-1)

Sheet 2: Rings produced from beech veneer (IEC 61061-3-2)

1 Scope

This sheet of IEC 61061-3 specifies the requirements for individual types of sheets of non-impregnated densified laminated wood produced from beech veneer defined in IEC 61061-1.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this sheet of IEC 61061-3. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this sheet of IEC 61061-3 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below¹⁾. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 61061-1:1991, *Specification for non-impregnated, densified laminated wood for electrical purposes — Part 1: Definitions, designation and general requirements*.

IEC 61061-2:1992, *Specification for non-impregnated, densified laminated wood for electrical purposes — Part 2: Methods of test*.

3 Requirements

In addition to the general requirements given in IEC 61061-1, the sheets produced from beech veneer shall also comply with the requirements given in Table 1.

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¹⁾ In case of dispute, the reference edition is applicable.

Table 1 — Requirements for sheets

Property	Test method in IEC 61061-2 Subclause	Unit	Max., min. or range	Type										Remarks
				P1R	P2R	P3R	P4R	C1R	C2R	C3R	C4R			
Thickness	5.1	mm		See Table 2										
Length and width	—	mm		See Table 3										
Flatness	5.2	mm		See Table 4										
Flexural strength perpendicular to the laminations	6.1	MPa	Min.	100 ¹⁾	120 ¹⁾	150 ¹⁾	180 ¹⁾	45 ²⁾	55 ²⁾	65 ²⁾	80 ²⁾		1) direction A 2) directions A and B	
Apparent modulus of elasticity in flexure perpendicular to the laminations	6.2	GPa	Min.	9 ¹⁾	10 ¹⁾	14 ¹⁾	15 ¹⁾	4,5 ²⁾	6 ²⁾	8 ²⁾	9 ²⁾		1) direction A 2) directions A and B	
Compressibility perpendicular to the laminations	6.4													
C		%	Max.	5	4	3	2,5	5	4	3	2,5			
C rev		%	Min.	70	70	70	70	70	70	70	70			
Impact strength	6.5	kJ/m ²	Min.	25 ¹⁾	30 ¹⁾	35 ¹⁾	40 ¹⁾	6 ²⁾	10 ²⁾	13 ²⁾	15 ²⁾		1) direction A 2) directions A and B	
Shearing strength test for glue line bond	6.6	MPa	Min.	5	7	8	9	5	7	8	9			
Electric strength perpendicular to the laminations	7.1	kV/mm	Min.	9	10	11	12	9	10	11	12			
Breakdown voltage, parallel to the laminations	7.1	kV	Min.	50	50	50	50	50	50	50	50			
Apparent density	9.1	g/cm ³	Range	0,7 – 0,9	0,9 – 1,1	1,1 – 1,2	1,2 – 1,3	0,7 – 0,9	0,9 – 1,1	1,1 – 1,2	1,2 – 1,3			
Moisture content	9.3	%	Max.	6	6	6	6	6	6	6	6			
Shrinkage after drying		%												
Direction A		%	Max.	0,2	0,2	0,2	0,2	0,3	0,3	0,3	0,3			
Direction B		%	Max.	0,5	0,5	0,5	0,5	0,3	0,3	0,3	0,3			
Thickness		%	Max.	3	3	3	3	3	3	3	3			
Oil absorption	9.5	%	Min.	20	15	8	5	20	15	8	5			
Contamination of liquid dielectrics	9.7	—	Max.	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1			

**Table 2 — Tolerances on nominal thicknesses
for un-machined pressed sheets**

Nominal thickness mm	Tolerance mm
≤ 10	± 1,4
>10 ... ≤ 15	± 1,6
>15 ... ≤ 20	± 1,8
>20 ... ≤ 25	± 2,0
>25 ... ≤ 30	± 2,2
>30 ... ≤ 40	± 2,6
>40 ... ≤ 60	± 3,0
>60 ... ≤ 100	± 4,0

The tolerance in nominal thickness for machined sheets shall be ± 0,5 mm for all thicknesses.

**Table 3 — Tolerance on nominal length
and width for sheets**

Length and width of sheets mm	Tolerance for all types mm
> 100 ... ≤ 250	± 0,8
> 250 ... ≤ 500	± 1,0
> 500 ... ≤ 1 000	± 2,0
> 1 000 ... ≤ 2 000	± 3,0
> 2 000	± 4,0

Table 4 — Flatness

Nominal thickness mm	Maximum departure at any point of the upper surface of sheets from lightweight straight-edge for a length of	
	500 mm	1 000 mm
≤ 15	2,5	6
>15 ... ≤ 25	2,0	4
> 25 ... ≤ 60	1,5	2
> 60	1,0	1,5

Annex ZA (normative)**Normative references to international publications with their corresponding European publications**

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 (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61061-1	1991 ^a	Specification for non-impregnated, densified laminated wood for electrical purposes Part 1: Definitions, designation and general requirements	—	—
IEC 61061-2	1992	Part 2: Methods of test	—	—

^a IEC 61061-1:1998 is harmonized as EN 61061-1:1998

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