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French standard

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Structural timber

Strength classes

Assignment of visual grades and species

F : Bois de structure — Classes de résistance — Affectation des classes visuelles et des essences

D : Bauholz für tragende Zwecke — Festigkeitsklassen — Zuordnung von visuellen Sortierklassen und Holzarten

French standard approved

by decision of the Director General of AFNOR on May 14, 2008 taking effect on June 14, 2008.

Replaces the approved standard NF EN 1912+A1, dated June 2007.

Correspondence

The European standard EN 1912:2004+A2:2008 has the status of French standard.

Analysis

This document lists visual strength grades, species and sources of timber, and specifies the strength classes from EN 338, to which they are assigned.

Descriptors

Technical International Thesaurus: wood, structural timber, deciduous timber, coniferous timber, mechanical strength, classifications, tables (data).

Modifications

With respect to the document replaced, limited revision regarding the following points:

- modifications made in Table 1;
- modifications made in Clauses 2 and 6 and the Bibliography.

Corrections



National foreword*References to French standards*

The correspondence between the standards figuring in the clause "Normative references" and the identical French standards is as follows:

<i>EN 518</i>	<i>: NF EN 518 (classification index: P 21-357)</i>
<i>EN 14081</i>	<i>: NF EN 14081-1 (classification index: P 21-500-1)</i>
	<i>NF EN 14081-2 (classification index: P 21-500-2)</i>
	<i>NF EN 14081-3 (classification index: P 21-500-3)</i>
	<i>NF EN 14081-4+A2 (classification index: P 21-500-4)</i>



English Version

Structural timber - Strength classes - Assignment of visual grades and species

Bois de structure - Classes de résistance - Affectation des classes visuelles des essences

Bauholz für tragende Zwecke - Festigkeitsklassen - Zuordnung von visuellen Sortierklassen und Holzarten

This European Standard was approved by CEN on 10 September 2004 and includes Amendment 1 approved by CEN on 28 December 2006 and Amendment 2 approved by CEN on 2 February 2008.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

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Foreword

This document (EN 1912:2004+A2:2008) has been prepared by Technical Committee CEN/TC 124 “Timber structures”, the secretariat of which is held by SFS.

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 October 2008 and conflicting national standards shall be withdrawn at the latest by October 2008.

This document includes Amendment 1 approved on 2006-12-28 and Amendment 2, approved by CEN on 2008-02-02.

This document supersedes A2 EN 1912:2004+A1:2007 A2.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1 and A2 A2.

This revised version contains assignments of additional grades and species.

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



1 Scope

This document lists visual strength grades, species and sources of timber, and specifies the strength classes from EN 338, to which they are assigned.

NOTE For the grades, species and sources included, there is long experience of use and/or satisfactory test data. The sources listed are therefore largely determined by existing commercial practice.

2 Normative references

The following referenced documents are 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 384, *Structural timber - Determination of characteristic values of mechanical properties and density*

EN 14081 (all parts), *Timber structures - Strength graded structural timber with rectangular cross section*

3 Terms and definitions

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

3.1

timber source

geographical area of growth of the trees from which the timber is sawn

3.2

timber species

individual species or combination of species

3.3

Nordic countries

Denmark, Finland, Iceland, Norway and Sweden

4 Symbols and abbreviations

CNE Europe Central, Northern and Eastern Europe

NNE Europe Northern and North Eastern Europe

NC Europe Northern and Central Europe



5 Requirements

5.1 The grades referred to in Tables 1 and 2 shall be in accordance with a grading standard meeting the requirements of EN 14081 A_2 .

5.2 Timber of a grade, species and source may be assigned to a strength class and listed in this document provided there is long experience of use and/or test data in accordance with EN 384.

NOTE 1 Where the required information becomes available for a grade, species and source not included in this document, preliminary assignment to a strength class, pending revision of this document, may be obtained from CEN/TC 124.

NOTE 2 The assignments of grades, species and sources to strength classes given in this document should be reassessed when this document is reviewed, or sooner if there is reason to suspect that the mechanical properties and/or density of the timber have changed, or the basis for the existing assessment no longer represents the current situation, e.g. if there has been a change in the source.

6 Assignments to strength classes

Timber grades, species and sources listed, meet the requirements of the strength classes to which they are assigned in Table 1 and Table 2.

Table 3 and Table 4 identify the botanical species for the commercial names listed in Table 1 and Table 2.

NOTE 1 Timber graded by machine to EN 14081 A_2 may be graded directly to the strength classes and marked accordingly, and is therefore not referenced in this document.

NOTE 2 For combinations of species and visual grades, which meet the requirements of EN 14081 A_2 , but are not listed in this standard, the assignment to strength classes can be made according to EN 338 using characteristic values determined in accordance with EN 384.



Table 1 — Assignment of grades of conifer species and poplar to strength classes

Strength Class	Grading rule publishing country (see note 1 at end of Table)	Grade (see note 4)	Species commercial name	Source (see note 2)	Botanical identification (see Table 3)	Comments
C35	Germany	S13	Douglas Fir	Germany	54	
C30	France	ST-I	Spruce & Fir	France	1, 22	
	Germany & Austria	S13	Spruce	CNE Europe	22	
		S13	Pine	CNE Europe	47	
		S13	Fir	CNE Europe	1	
		S13	Larch	CNE Europe	15	
	Nordic countries	T3	Pine (Redwood)	NNE Europe	47	
		T3	Spruce (Whitewood)	NNE Europe	22	
		T3	Fir	NNE Europe	1	
		T3	Larch	NNE Europe	15	
	USA	J&P Sel	Southern pine	USA	35, 36, 43, 48	
		SLF Sel	Southern pine	USA	35, 36, 43, 48	
C 27	Spain	ME1	Laricio pine	Spain	39	
	Slovak Republic	S0	Spruce	Slovak Republic	22	
C 27	France	ST-I	Larch	France	15	
	Spain	ME1	Scots pine	Spain	47	
C24	France	ST-II	Spruce & Fir	France	1, 22	
		ST-II	Douglas Fir	France	54	
		ST-II	Pines	France	39, 44, 47	
		ST-II	Poplar (see note 3)	France	50	
		ST-II	Larch	France	15	
	Germany	S10	Douglas Fir	Germany	54	
	Germany & Austria	S10	Spruce	CNE Europe	22	
		S10	Pine	CNE Europe	47	
		S10	Fir	CNE Europe	1	
		S10	Larch	CNE Europe	15	
	Nordic countries	T2	Pine (Redwood)	NNE Europe	47	
		T2	Spruce (Whitewood)	NNE Europe	22	
		T2	Fir	NNE Europe	1	
		T2	Larch	NNE Europe	15	
		T2 & better	Sitka spruce	Denmark and Norway	28	
	Spain	ME1	Radiata pine	Spain	49	
		ME1	Maritime pine	Spain	44	
C24	USA & Canada	J&P Sel	Douglas fir-Larch	USA & Canada	18, 54	
		J&P Sel	Hem-fir	USA & Canada	2, 4, 5, 7, 8, 62	
		J&P Sel	S-P-F	USA & Canada	3, 6, 23, 25, 26,	

		SLF Sel SLF Sel SLF Sel	Douglas fir-Larch Hem-fir S-P-F	USA & Canada USA & Canada USA & Canada	27, 32, 34, 45 18, 54 2, 4, 5, 7, 8, 62 3, 6, 23, 25, 26, 27, 32, 34, 45	
	UK	SS SS SS SS SS SS	Paraná pine Redwood Whitewood Douglas fir-Larch Hem-fir S-P-F	Brazil CNE Europe CNE Europe USA & Canada USA & Canada USA & Canada	12 47 1, 22 18, 54 2, 4, 5, 7, 8, 62 3, 6, 23, 25, 26, 27, 32, 34, 45	
		SS SS SS	Southern pine Caribbean pitch pine Larch	USA Caribbean UK	35, 36, 43, 48 33, 42 15, 16, 17	
	Slovak Republic	SI	Spruce	Slovak Republic	22	
C22	UK	SS	British pine	UK	39, 47	
	USA	J&P No.1 J&P No.2 SLF No.1 SLF No.2	Southern pine Southern pine Southern pine Southern pine	USA USA USA USA	35, 36, 43, 48 35, 36, 43, 48 35, 36, 43, 48 35, 36, 43, 48	
C20	Canada	No.1 & better No.1 & better No.1 & better	S-P-F Douglas Fir – Larch Hem-fir	Canada Canada Canada	3, 6, 23, 25, 26, 27, 32, 34, 45 18,54 2, 4, 5, 7, 8, 62	
C18	Canada	J&P Sel J&P Sel SLF Sel SLF Sel	Sitka spruce Western red cedar Sitka spruce Western red cedar	Canada Canada Canada Canada	28 58 28 58	
	France	ST-III ST-III ST-III ST-III ST-III	Spruce & fir Douglas fir Pines Poplar (see note 3) Larch	France France France France France	1, 22 54 39, 44, 47 50 15	
	Ireland	SS SS	Norway spruce Sitka spruce	Ireland Ireland	22 28	
	Nordic countries	T1 T1 T1 T1 T1	Pine (Redwood) Spruce (Whitewood) Fir Larch Sitka spruce	NNE Europe NNE Europe NNE Europe NNE Europe Denmark & Norway	47 22 1 15 28	
C18	Portugal	E	Maritime pine	Portugal	44	
	Spain	ME2 ME2 ME2	Radiata pine Maritime pine Laricio pine	Spain Spain Spain	49 44 39	

	UK	ME2	Scots pine	Spain	47	
		SS	Western red cedar	Canada	58	
		SS	Sitka spruce	Canada	28	
		SS	Western white woods	USA	3, 6, 23, 34, 37, 38, 45, 63	
		SS	Douglas fir	UK	54	
		SS	British spruce	UK	22, 28	
		GS	Caribbean pitch pine	Caribbean	33, 42	
		GS	Southern pine	USA	35, 36, 43, 48	
	USA	J&P Sel	Western white woods	USA	3, 6, 23, 34, 37, 38, 45, 63	
		SLF Sel	Western white woods	USA	3, 6, 23, 34, 37, 38, 45, 63	
		LF Const	Southern pine	USA	35, 36, 43, 48	
C16	Germany	S7	Douglas Fir	Germany	54	
	Germany & Austria	S7	Spruce	CNE Europe	22	
		S7	Pine	CNE Europe	47	
		S7	Fir	CNE Europe	1	
		S7	Larch	CNE Europe	15	
	Netherlands	C	Spruce & Fir	NC Europe	1,22	
	UK	GS	Paraná pine	Brazil	12	
		GS	Redwood	CNE Europe	47	
		GS	Whitewood	CNE Europe	1, 22	
		GS	Douglas fir-Larch	USA & Canada	18, 54	
		GS	Hem-fir	USA & Canada	2, 4, 5, 7, 8, 62	
		GS	S-P-F	USA & Canada	3, 6, 23, 25, 26, 27, 32, 34, 45	
		GS	Larch	UK	15, 16, 17	
	USA & Canada	J&P No.1	Douglas fir-Larch	USA & Canada	18, 54	
		J&P No.2	Douglas fir-Larch	USA & Canada	18, 54	
		J&P No.1	Hem-fir	USA & Canada	2, 4, 5, 7, 8, 62	
		J&P No.2	Hem-fir	USA & Canada	2, 4, 5, 7, 8, 62	
		J&P No.1	S-P-F	USA & Canada	3, 6, 23, 25, 26, 27, 32, 34, 45	
		J&P No.2	S-P-F	USA & Canada	3, 6, 23, 25, 26, 27, 32, 34, 45	
	USA & Canada	SLF No.1	Douglas fir-Larch	USA & Canada	18, 54	
		SLF No.2	Douglas fir-Larch	USA & Canada	18, 54	
		SLF No.1	Hem-fir	USA & Canada	2, 4, 5, 7, 8, 62	
		SLF No.2	Hem-fir	USA & Canada	2, 4, 5, 7, 8, 62	
		SLF No.1	S-P-F	USA & Canada	3, 6, 23, 25, 26, 27, 32, 34, 45	
	USA	SLF No.2	S-P-F	USA & Canada	3, 6, 23, 25, 26, 27, 32, 34, 45	
		J&P No.3	Southern pine	USA	35, 36, 43, 48	
		SLF No.3	Southern pine	USA	35, 36, 43, 48	
		Stud	Southern pine	USA	35, 36, 43, 48	
C16	Slovak	SI	Spruce	Slovak Republic	22	

	Republic					
C14	UK	GS	Western red cedar	Canada	58	
		GS	Sitka spruce	Canada	28	
		GS	Western white woods	USA	3, 6, 23, 34, 37, 38, 45, 63	
		GS	Douglas fir	UK	54	
		GS	British spruce	UK	22, 28	
		GS	British pine	UK	39, 47	
	Ireland	GS	Sitka spruce	Ireland	28	
		GS	Norway spruce	Ireland	22	
	Canada	J&P No.1	Sitka spruce	Canada	28	
		J&P No.2	Sitka spruce	Canada	28	
		J&P No.1	Western red cedar	Canada	58	
		J&P No.2	Western red cedar	Canada	58	
		SLF No.1	Sitka spruce	Canada	28	
		SLF No.2	Sitka spruce	Canada	28	
		SLF No.1	Western red cedar	Canada	58	
		SLF No.2	Western red cedar	Canada	58	
	Nordic countries	T0	Pine (Redwood)	NNE Europe	47	
		T0	Spruce (Whitewood)	NNE Europe	22	
		T0	Fir	NNE Europe	1	
		T0	Larch	NNE Europe	15	
		T0	Sitka spruce	Denmark & Norway	28	
	USA & Canada	LF Const	Douglas fir-Larch	USA & Canada	18, 54	
		Stud	Douglas fir-Larch	USA & Canada	18, 54	
		LF Const	Hem-fir	USA & Canada	2, 4, 5, 7, 8, 62	
		Stud	Hem-fir	USA & Canada	2, 4, 5, 7, 8, 62	
		LF Const	S-P-F	USA & Canada	3, 6, 23, 25, 26, 27, 32, 34, 45	
		Stud	S-P-F	USA & Canada	3, 6, 23, 25, 26, 27, 32, 34, 45	
	USA	J&P No.1	Western white woods	USA	3, 6, 23, 34, 37, 38, 45, 63	
		J&P No.2	Western white woods	USA	3, 6, 23, 34, 37, 38, 45, 63	
		SLF No.1	Western white woods	USA	3, 6, 23, 34, 37, 38, 45, 63	
		SLF No.2	Western white woods	USA	3, 6, 23, 34, 37, 38, 45, 63	
C14	USA	LF Std	Southern pine	USA	35, 36, 43, 48	
NOTE 1	The Nordic area comprises Denmark, Finland, Iceland, Norway, and Sweden.					
NOTE 2	CNE Europe is an abbreviation for Central, North and Eastern Europe.					
	NNE Europe is an abbreviation for Northern and North Eastern Europe.					
	NC Europe is an abbreviation for Northern and Central Europe.					
NOTE 3	The assignments only apply to certain clones of poplar – see note 1 under Table 3.					
NOTE 4	The grades listed in this table are specified in the grading standards given in Annex A.					

Table 2 — Assignment of grades of hardwood species to strength classes

A1

Strength class	Grading rule publishing country	Grade (see note 1)	Species commercial Name	Source	Botanical identification (see Table 4)	Comments
D70	UK	HS HS	Balau Greenheart	South East Asia Guyana	113, 114 110	
	The Netherlands	A/B	Azobé	West Africa	100	
	UK	HS	Ekki	West Africa	100	
D60	UK	HS HS	Kapur Kempas	South East Asia South East Asia	86 98	
D50	UK	HS	Keruing	South East Asia	80	
		HS	Karri	Western	90	
		HS	Opepe	Australia	107	
		HS	Merbau	West Africa, South East Asia	94, 95	
D40	Germany	LS 13	Beech	Germany	119	Maximum thickness 60 mm, maximum width 200 mm
	UK	HS HS HS	Iroko Jarrah Teak	Africa Western Australia, South East Asia	103, 104 91 117	
	Spain	MEF	Eucalyptus	Spain	92	
D35	Germany	LS 10 and better	Beech	Germany	119	
D30	Germany	LS 10	Oak	Germany	122,123	
NOTE The grades listed in this table are specified in the grading standards given in Annex A.						

A1

Table 3 — Identification of conifer species and poplar

Botanical name	Identification Number
<i>Abies alba</i>	1
<i>Abies amabilis</i>	2
<i>Abies balsamea</i>	3
<i>Abies concolor</i>	4
<i>Abies grandis</i>	5
<i>Abies lasiocarpa</i>	6
<i>Abies magnifica</i>	7
<i>Abies procera</i> (<i>A. nobilis</i>)	8
<i>Araucaria angustifolia</i>	12
<i>Larix deciduas</i> (<i>L. europea</i>)	15
<i>Larix eurolepis</i>	16
<i>Larix kaempferi</i> (<i>L. leptolepis</i>)	17
<i>Larix occidentalis</i>	18
<i>Picea abies</i>	22
<i>Picea engelmannii</i>	23
<i>Picea glauca</i>	25
<i>Picea mariana</i>	26
<i>Picea rubens</i>	27
<i>Picea sitchensis</i>	28
<i>Pinus banksiana</i>	32
<i>Pinus caribaea</i>	33
<i>Pinus contorta</i>	34
<i>Pinus echinata</i>	35
<i>Pinus elliotii</i>	36
<i>Pinus lambertiana</i>	37
<i>Pinus monticola</i>	38
<i>Pinus nigra</i>	39
<i>Pinus oocarpa</i>	42
<i>Pinus palustris</i>	43
<i>Pinus pinaster</i>	44
<i>Pinus ponderosa</i>	45
<i>Pinus sylvestris</i>	47
<i>Pinus taeda</i>	48
<i>Pinus radiata</i>	49
<i>Populus</i> (see note 1)	50
<i>Pseudotsuga menziesii</i>	54
<i>Thuja plicata</i>	58
<i>Tsuga heterophylla</i>	62
<i>Tsuga mertensiana</i>	63



Table 3 — Identification of conifer species and poplar
(concluded)

NOTE	For Populus only the following clones apply
	<i>Populus x euramericana</i> cv “Robusta”
	<i>Populus x euramericana</i> cv “Dorskamp”
	<i>Populus x euramericana</i> cv “I 214”
	<i>Populus x eura</i>

Table 4 — Identification of hardwood species

A1

Botanical name	Identification number
<i>Dipterocarpus spp</i>	80
<i>Dryobalanops spp</i>	86
<i>Eucalyptus diversicolor</i>	90
<i>Eucalyptus marginata</i>	91
<i>Eucalyptus globulus</i>	92
<i>Intsia bijuga</i>	94
<i>Intsia palembanica</i>	95
<i>Koompassia malaccensis</i>	98
<i>Lophira alata</i>	100
<i>Milicia excelsa</i>	103
<i>Milicia regia</i>	104
<i>Nauclea diderrichii</i>	107
<i>Ocotea rodiaei</i>	110
<i>Shorea glauca</i>	113
<i>Shorea maxwelliana</i>	114
<i>Tectona grandis</i>	117
<i>Fagus sylvatica</i>	119
<i>Quercus petraea</i>	122
<i>Quercus robur</i>	123

A1

Annex A (informative)

Grading standards

The requirements for the grades listed in Table 1 and Table 2 are given in the standards listed in Table A.1.

Table A.1 — Grading standards

A₁

Grading rule publishing country	Grade	Grading standard
Austria	S13 S10 S7	Austrian Standard OENORM DIN 4074 Teil 1 Sortierung von Nadelholz nach der Tragfähigkeit, Nadelschnittholz, 2004
Canada	J&P Sel J&P No.1 J&P No.2 No.1 & better SLF Sel SLF No.1 SLF No.2 LF Const Stud	Canadian Standard NLGA The National Grading Rule for Dimension Lumber (NGRDL)- the current rule as dated and as issued by the National Timber Grading Authority. (These grades are only acceptable when graded in combination with the export annex which gives the rules for compliance with A₂ EN 14081 A₂)
France	ST-I ST-II ST-III	French Standard NF B 52-001 Règles d'utilisation du bois dans les constructions; Classement visuel pour emploi en structure pour les principales essences résineuses et feuillues
Germany	S13 S10 S7 LS 13 LS10 and better	German Standard DIN 4074 Teil 1 Sortierung von Holz nach der Tragfähigkeit, Nadelschnittholz, 2003 German Standard DIN 4074 Teil 5 Sortierung von Holz nach der Tragfähigkeit, Laubschnittholz, 2003
Ireland	SS GS	Irish Standard IS 127 Specification for the stress grading of softwood timber
Netherlands	A/B	Netherlands Standard NEN 5480 Kwaliteitseisen voor hout (KVH 1980) - Houtsoort azobé
Nordic countries	T3 T2 T1 T0	Nordic grading rules – INSTA 142 Nordic visual strength grading rules for timber
Portugal	E	Portuguese Standard NP 4305 Madeira serrada de pinheiro bravo para estruturas
Spain	ME1 ME2 MEF	Spanish Standard UNE 56.544 Clasificación visual de la Madera aserrada para uso estructural Spanish standard UNE 56-546

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		Visual grading for structural timber : Hardwood species
Slovak Republic	S0	Slovak Standard STN 49 1531/Z1
	SI	Drevo na stavebné nosné konštrukcie
	SII	Vizuálne triedenie podľa
UK	SS	British Standard BS 4978
	GS	Visual strength grading of softwood
UK	HS	British Standard BS 5756
		Visual strength grading of hardwood
USA	J&P Sel	USA Standard NGRDL
	J&P No.1	The national grading rules for softwood dimension lumber
	J&P No.2	
	J&P No.3	
	SLF Sel	(These grades are only acceptable when graded in combination with the export
	SLF No.1	annex which gives the rules for compliance with ^{A2} EN 14081 ^{A2})
	SLF No.2	
	SLF No.3	
	LF Const	
	LF Std	
	Stud	

^{A1}



Bibliography

[1] EN 338, *Structural timber - Strength classes*

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