

Sawn timber — Appearance grading of hardwoods

Part 1: Oak and beech

ICS 79.040

National foreword

This British Standard is the UK implementation of EN 975-1:2009. It supersedes BS EN 975-1:1996 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/543, Round and sawn timber.

A list of organizations represented on this committee can be obtained on request to its secretary.

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1: Chêne et hêtre

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- Teil 1: Eiche und Buche

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Foreword

This document (EN 975-1:2009) has been prepared by Technical Committee CEN/TC 175 "Round and sawn timber", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

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1 Scope

This European Standard specifies the rules determining the quality of appearance graded sawn timber. It describes various grades of temperate hardwood rough sawn timber and regularized timber for which it lays down denominations and definitions. It also gives rules for composition and acceptance of batches.

This standard gives minimum requirements for each grade classification. Sawn timber not included within limits given in this standard may be defined, if necessary, by contract specifications established on the basis of this standard.

This standard applies to grading of green and dried timber. Characteristics apply at the time of grading.

This standard does not apply to the strength grading of structural timber or to sawn timber for pallets.

This standard is applicable to the following products:

- a) **Oak sawn timber**, in the following categories:
 - 1) Un-edged boards: individual selected pieces and boules;
 - 2) Square edged timber and strips (not exceeding 41 mm thickness);
 - 3) Baulks (sum of thickness + width \geq 200 mm and thickness \geq 80 mm).
- b) **Beech sawn timber**, in the following categories:
 - 1) Un-edged boards: individual selected pieces and boules;
 - 2) Square edged timber and strips;
 - 3) Prepared timber (dried timber).

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 844-1:1995, *Round and sawn timber – Terminology – Part 1: General terms common to round timber and sawn timber*

EN 844-3:1995, *Round and sawn timber – Terminology – Part 3: General terms relating to sawn timber*

EN 844-4:1997, *Round and sawn timber – Terminology – Part 4: Terms relating to moisture content*

EN 844-6:1997, *Round and sawn timber – Terminology – Part 6: Terms relating to dimensions of sawn timber*

EN 844-7:1997, *Round and sawn timber – Terminology – Part 7: Terms relating to anatomical structure of timber*

EN 844-9:1997, *Round and sawn timber – Terminology – Part 9: Terms relating to features of sawn timber*

EN 844-10:1998, *Round and sawn timber – Terminology – Part 10: Terms relating to stain and fungal attack*

EN 844-11:1998, *Round and sawn timber – Terminology – Part 11: Terms relating to degrade by insects*

EN 844-12:2000, *Round and sawn timber – Terminology – Part 12: Additional terms and general index*

EN 1310, *Round and sawn timber – Method of measurement of features*

EN 1311, *Round and sawn timber – Method of measurement of biological degrade*

EN 1313-2, *Round and sawn timber – Permitted deviations and preferred sizes – Part 2: Hardwood sawn timber*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 844-1:1995, EN 844-3:1995, EN 844-4:1997, EN 844-6:1997, EN 844-7:1997, EN 844-9:1997, EN 844-10:1998, EN 844-11:1998 and EN 844-12:2000 and the following apply.

3.1

dried timber

timber with a stipulated reduced moisture content

3.2

green timber

timber that has not been dried to or below the fibre saturation point

NOTE Green timber has a moisture content normally above 30 %.

[EN 844-4:1997]

3.3

width or length reduction

notional decrease in the actual dimensions of a board to exclude features that may subsequently be removed

4 Method of determination of sawn timber quality

4.1 Rules for grading

Hardwood (oak and beech) can be put into grades using the principles laid down in 4.2, the criteria defined in 4.3 and the following tables:

- Table 2 gives rules for grading oak un-edged boards;
- Table 3 gives rules for grading oak strips and square edged timber;
- Table 4 gives rules for grading oak baulks;
- Table 5 gives rules for grading beech un-edged boards;
- Table 6 gives rules for grading beech strips and square edged timber;
- Table 7 gives rules for grading beech prepared timber.

4.2 Grading principles

4.2.1 Assessment of the quality

For individual selected boards and boules grading is made on the faces. For other pieces grading is made on faces and edges. The size, position and frequency of features, sawing defects and deteriorations are taken into account. Non-conformity with the conditions applicable to any one of these elements is sufficient to downgrade the piece.

Dimensional variation is not taken into account for quality grading of the pieces. It is already covered by EN 1313-2 or by any specific requirements defined contractually.

Only the following categories can be reduced in width and/or length:

- Individual selected boards,
- boules.

4.2.2 Cases of un-edged boards

4.2.2.1 Individual selected boards

No more than 10% of pieces one grade lower than the lowest one stated for the batch is allowed. For mixed grade batches the minimum proportion of each grade shall be identified.

4.2.2.2 Boules

Recognising the characteristics inherent in a growing tree, a boule may comprise a number of un-edged boards of different grades.

Proportion of grades allowed within a boule is given in Table 1:

Table 1 — Proportion of grades allowed within one boule

≥ 65%	Stated grade
< 25%	One grade lower
< 10%	Two grades lower

Pieces presenting features which are not in conformity with the boule grade shall be graded in accordance with reduced width rules (see 3.2).

4.3 Criteria to be taken into account

4.3.1 General

Quality is determined on the basis of the rules in tables given in this standard and measurement rules according to EN 1310 and EN 1311.

The moisture content of the timber at the time of grading shall be stated.

The following criteria are sufficient for the appearance grading:

4.3.2 Criteria linked to the structure of the timber

- Knots (size, nature, degree of intergrowth, frequency);
- Shakes and checks;
- Slope of grain;
- Bark-pocket;
- Sapwood (for oak); unless specified in the contract, sound sapwood is permitted without limit in all grades;

NOTE Unsound sapwood is considered according to grading criteria given in Tables of Clause 7.

- Included sapwood.

4.3.3 Sawing characteristics

- Boxed heart;
- Exposed pith;

NOTE Presence of pith on un-edged boards is not a qualitative element for downgrading but width reduction may be considered.

- Wane.

4.3.4 Warp

- Bow;
- Spring;
- Cup;
- Twist.

4.3.5 Fungal and insect attacks

4.3.6 Stains

- Red heart (in beech);
- Black streaks;
- Dote;
- Rot;
- Brown oak;
- Other discolorations.

4.3.7 Other characteristics

Characteristics as texture, grain, quarter and plain sawn timber are not taken into account in the grading.

5 Denomination of grades

5.1 General

The denomination includes from three to six characters.

5.1.1 The first character is the species' initial in Latin:

- Q for oak;
- F for beech.

5.1.2 The next character indicates the type of product:

- B for boules;
- S for individual selected boards;
- F for strips and square edged timber;
- P for baulks;
- D for prepared timber.

5.1.3 The next character indicated the quality grade

- "A" indicates exceptional quality;
- 1, 2 , etc. represent the other grades.

In some cases, these are subdivided, denoted by the addition of lower case letters and suffixes (see below).

The grades for oak and beech are specified in 5.2 and 5.3.

5.2 Oak (Q)

- | | |
|----------------------------------|------------------------------------|
| — Boules | Q-BA – Q-B1 – Q-B2 – Q-B3 – Q-B4 |
| — Individual selected boards | Q-SA – Q-S1 – Q-S2 – Q-S3 – Q-S4 |
| — Strips and square edged timber | Q-F1a – Q-F1b – Q-F2 – Q-F3 – Q-F4 |
| — Baulks | Q-PA – Q-P1 – Q-P2 |

For strips and square edged timber, the addition, at the end of class denomination:

- Of the letter X indicates the presence of sapwood on one face of strips or square edged pieces in limit given by Table 3,
- Of letters XX indicates the presence of sapwood on all faces and edges of strips or square edged pieces if it is over the limit given by Table 3.

5.3 Beech (F)

— Boules	F-BA – F-B1 – F-B2 – F-B3
— Individual selected boards	F-SA – F-S1 – F-S2 – F-S3
— Strips and squared edged timber	F-F1 – F-F2 – F-F3
— Prepared timber	F-DA – F-D1 – F-D2

The addition of the letter R at the end indicated the presence of red heart.

6 Acceptance of batches

6.1 Un-edged boards

Unless otherwise specified by the purchase, reception with quality acceptance of individual selected un-edged boards and boules shall take place on the seller's premises to allow width or length reduction to be carried out if necessary (see 4.2.2).

6.2 Square edged timber

Reception can be carried out either on the seller's or the buyer's premises, as mutually agreed, using random sampling method given in CEN/TS 12169.

7 Grading rules

7.1 Grading face

a) For individual selected un-edged boards

Take into account features which are on the "falling" face, which is defined as the face which is visible on the production line, after sawing.

In the case of specific measurement, the quality is determined by the face, the width of which is measured.

b) For boules

Take into account features which are on the upper face in the stacking position to form the boule.

c) For strips and square edged timber

Take into account features which are on the best face.

7.2 Un-edged boards

7.2.1 Grading area

A notional area of 0,2m x 2,0 m containing the maximum number or the largest features on the grading face determines the grade of each board.

Features located less than 10 cm from edges or ends of un-edged boards are not considered, unless the resulting width and length is insufficient to inscribe in an area of 0,20 m x 2 m. This manner of doing is not valid for Q-BA and Q-SA classes; only width reduction can be used and it is limited to 1/3 of the width.

7.2.2 Presence of a solitary feature (only one)

Un-edged boards cannot be downgraded by the presence of only one feature which is not accepted in a grading. Consequently, this feature is accepted with a width or length reduction.

7.3 Strips and square edged timber

7.3.1 Knots

Take into account knots in the most penalized linear metre or the whole piece if the length is < 1 m.

Equivalence concept, except for Q-F1a. This allows any repartition of knots, providing:

- each knot diameter is under maximum allowed diameter;
- the sum of diameters is below the maximum permitted.

Example for QF-2:

- the maximum allowed diameter of knot is 25 mm;
- the maximum number is 3, so the sum is 75 mm (25 mm x 3).

One possible repartition is 4 knots of 10 mm, 1 knot of 15 mm and 1 knot of 20 mm.

7.3.2 Other features

These features are taken into account on the whole piece.

7.4 Baulks

Take into account features on the whole piece, except for dead knots where the maximum number is determined by linear metre.

7.5 Appearance grading Tables

Table 2 — Appearance grading of oak un-edged boards

Dimensional Characteristics	GRADE				
	Q-B A and Q-S A	Q-B 1and Q-S 1	Q-B 2 and Q-S 2	Q-B 3and Q-S 3	Q-B 4 and Q-S 4
	Minimum acceptable for grade	Minimum acceptable for grade	Minimum acceptable for grade	Minimum acceptable for grade	Minimum acceptable for grade
Length	2 m and more				
Narrowest width	120 mm excluding sapwood on the entire length of the piece	100 mm excluding sapwood measured at the mid-length of the loose un-edged timber	80 mm excluding sapwood measured at the mid-length of the loose un-edged timber	60 mm excluding sapwood measured at the mid-length of the loose un-edged timber	

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Table 2 — Appearance grading of oak un-edged boards (continued)

Features	GRADE				
	(reminding : Grading area of 0,2 m x 2,0 m)				
	Q-B A and Q-S A	Q-B 1and Q-S 1	Q-B 2 and Q-S 2	Q-B 3and Q-S 3	Q-B 4 and Q-S 4
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Sound, intergrown or partially intergrown knots	Only one of size < 20 mm	Knots < 5 mm : maximum 8 Max diameter : 25 mm Sum of knots from 5 mm to 25 mm < 50 mm	Knots < 5 mm : not limited Max diameter : 40 mm Sum of knots from 5 mm to 40 mm < 100 mm	Knots < 10 mm : not limited Max diameter : 70 mm Sum of knots from 10 mm to 70 mm < 160 mm	Permitted
Not intergrown, dead or rotten knots	Not permitted	1 of 25 mm with reduction ^a	1 of 40 mm with reduction ^a	1 of 70 mm with reduction ^a	Permitted
Solitary knots	15% of the width of the piece with reduction ^a	20% of the width of the piece with reduction ^a	25% of the width of the piece with reduction ^a	30% of the width of the piece with width reduction ^a	Permitted
Heart shake	Permitted with width reduction ^a	Permitted with width reduction ^a		Permitted	Permitted

Table 2— Appearance grading of oak un-edged boards *(continued)*

Features	GRADE				
	(reminding : Grading area of 0,2 m x 2,0 m)				
	Q-B A and Q-S A	Q-B 1 and Q-S 1	Q-B 2 and Q-S 2	Q-B 3 and Q-S 3	Q-B 4 and Q-S 4
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Ring shakes and frost crack	Not permitted	Permitted with reduction max 1/5 of width a	Permitted with reduction max 1/3 of width a	Permitted with reduction a	Permitted
Straight shakes	Permitted with reduction if the length of shakes is < width of the board	Permitted with reduction a	Permitted with reduction a	Permitted	Permitted
Oblique shakes					
single	Not permitted	Permitted with reduction if the length of shakes is < width of the board	Permitted with width reduction	Permitted with reduction a	Permitted
multiple	Not permitted	Permitted with length reduction	Permitted with length reduction	Permitted with reduction	Permitted
Spiral grain	Permitted with maximum slope of 8 %	No limitation unless specified	No limitation unless specified	No limits unless specified	No limits
Slope of grain	No limitation unless specified	No limitation unless specified	No limitation unless specified	No limitation unless specified	No limitation unless specified

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Table 2— Appearance grading of oak un-edged boards *(continued)*

Features	GRADE				
	(reminding : Grading area of 0,2 m x 2,0 m)				
	Q-B A and Q-S A	Q-B 1 and Q-S 1	Q-B 2 and Q-S 2	Q-B 3 and Q-S 3	Q-B 4 and Q-S 4
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Bark pocket	Not permitted	Permitted if solitary with reduction ^a		Permitted	Permitted
Unsound sapwood	Not permitted Permitted if solitary with width reduction ^a				Permitted
Included sapwood	Not permitted			Permitted with width reduction ^a	Permitted
brown streak	Not permitted ^c	Permitted with length reduction ^c	Permitted with length reduction ^c	Permitted	Permitted
Brown heart ^b	Not permitted	25 % of the width with a width reduction ^a			Permitted
Rot	Not permitted	Not permitted	Permitted if solitary with a reduction ^a		Permitted
Insect attack in sapwood	Permitted with width reduction ^a	Permitted with width reduction ^a			Permitted

Table 2— Appearance grading of oak un-edged boards *(concluded)*

Features	GRADE				
	(reminding : Grading area of 0,2 m x 2,0 m)				
	Q-B A and Q-S A	Q-B 1 and Q-S 1	Q-B 2 and Q-S 2	Q-B 3 and Q-S 3	Q-B 4 and Q-S 4
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Insect attack in heart wood	Not permitted	Permitted on edges with width reduction ^a for QB-1 Permitted with length or/and width reduction ^a for QB-2 and Q-B3			Permitted

^a Generally, the length and/or width reduction shall be agreed between buyer and seller.

^b Sawn timber with values above limit values are traded under the denomination "brown oak".

^c Localized natural colour variation need not necessarily be considered as downgrade where it is not related to decay in the wood.

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Table 3 — Appearance grading of oak strips and square edged timber

Features	GRADE				
	(reminding : Grading area of 0,2 m x 2,0 m)				
	Q-F 1a (3 to 4 clear faces)	Q-F 1b	Q-F 2	Q-F 3	Q-F 4
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Sound, intergrown or partially intergrown knots	For Width < 120 mm, 1 knot of 10 mm for width ≥ 120 mm 2 knots of 10 mm 20% of pieces may have one more sound knot of 10 mm on the surface.	Knots with diameters < 5 mm are not taken into account. For Width < 120 mm, 3 knots of 12 mm a For Width ≥ 120 mm 1 extra knot permitted in each additional 40 mm of width.	Knots with diameters < 5 mm are not taken into account For Width < 120 mm, 3 knots of 25 mm a for Width ≥ 120 mm 1 extra knot permitted in each additional 40 mm of width	Knots with diameters < 10 mm are not taken into account. For Width < 120 mm, 3 knots of 40 mm a for Width ≥ 120 mm 1 extra knot permitted in each additional 40 mm of width	70 mm No restriction providing the appearance and integrity of the piece are suitable for its intended purposes.
Dead and rotten knots	Not permitted	Not permitted	Not permitted	1 of 20mm	1 of 35 mm 1 of 20 mm
Check	Not permitted	Not permitted	Permitted	Permitted	Permitted

Table 3 — Appearance grading of oak strips and square edged timber *(continued)*

Features	GRADE				
	(reminding : Grading area of 0,2 m x 2,0 m)				
	Q-F 1a (3 to 4 clear faces)	Q-F 1b	Q-F 2	Q-F 3	Q-F 4
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Shake	Not permitted	Not permitted	Not permitted	Up to 20% of pieces permitted with the length of the shake no more than the width of piece	Length of the shake up to the width of the piece
Slope of grain	3 %	Without restriction	Without restriction	Without restriction	Without restriction
Bark pocket	Not permitted	Not permitted	Not permitted	Not permitted	Permitted
Black streak	Not permitted	Up to 10 % of the pieces	Up to 20% of the pieces	Permitted	Permitted
Brown heart	Not permitted	Not permitted	Not permitted	Not permitted	Permitted
Brown streak	Not permitted	Not permitted	Not permitted	Up to 10 % of the pieces	Permitted
Rot	Not permitted	Not permitted	Not permitted	Not permitted	Not permitted
Insect attacks	Not permitted	Not permitted	Not permitted	Not permitted	Not permitted
Boxed heart	Not permitted	Not permitted	Not permitted	Not permitted	Permitted

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Table 3 — Appearance grading of oak strips and square edged timber *(continued)*

Features	GRADE				
	(reminding : Grading area of 0,2 m x 2,0 m)				
	Q-F 1a (3 to 4 clear faces)	Q-F 1b	Q-F 2	Q-F 3	Q-F 4
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Exposed pith	Not permitted	Not permitted	Not permitted	Not permitted	Permitted
Wane	Not permitted	Not permitted	Not permitted	Up to 3 mm on face and on edge	Up to 10 % of the width and up to 20 % of the length
Deformations (bow, spring, twist)	2mm/m of length	5mm/m of length	8 mm/m of length	10 mm/m of length	12 mm/m of length
Cup	1% of the width	1,5 % of the width	2 % of the width	2 % of the width	3 % of the width
Included sapwood	Not permitted	Not permitted	Not permitted	Not permitted	Permitted
Unsound sapwood	Not permitted	Not permitted	Not permitted	Not permitted	Not permitted

Table 3 — Appearance grading of oak strips and square edged timber *(concluded)*

Features	GRADE				
	(reminding : Grading area of 0,2 m x 2,0 m)				
	Q-F 1a X	Q-F 1b X	Q-F 2 X	Q-F 3 X	Q-F 4 X
Except for sapwood defined below, the previous features are valid for all grades.					
Sound sapwood	2/3 of piece thickness	2/3 of piece thickness	2/3 of piece thickness	2/3 of piece thickness	2/3 of piece thickness
NOTE "Occasionally permitted" means that the relevant features are accepted on a few number of pieces according to trade uses.					
^a See equivalence concept, 7.3.1.					

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Table 4 — Appearance grading of oak baulk

Features	GRADE		
	(reminding : Grading area of 0,2 m x 2,0 m)		
	Q-P A	Q-P1	Q-P2
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Sound, intergrown and partially intergrown knots			
On either face	1/3 of face width	½ of face width	Permitted without limitation
On the edge(s)	1/3 of face width	½ of face width	Permitted without limitation
Dead knots			
On either face	2 of 15 mm	2 of ¼ of face width	1/3 of face width
On the edge(s)	2 of 15 mm	2 of ¼ of face width	1/3 of face width
Knot cluster	As separate knots	As separate knots	As separate knots
Cat's paw	As separate knots	As separate knots	As separate knots
Rotten knots	Not permitted	Not permitted	1 for each 1 meter and max diameter : 15% of width of the board
Shakes			
Heart shake	Not permitted when visible on faces and edges	Once width of the piece on the 2 faces	Permitted
End shake	Not permitted	Once width of the piece on the 2 faces	3 times the width of the piece on the 2 faces
Face and end shakes	Not permitted	1/3 of the length of the piece	Permitted

Table 4 – Appearance grading of oak baulks *(continued)*

Features	GRADE		
	(reminding : Grading area of 0,2 m x 2,0 m)		
	Q-P A	Q-P1	Q-P2
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Frost crack	Not permitted	Not permitted	Not permitted
Ring shake	Not permitted	Not permitted	Not visible on faces and edges
Star shake	Not permitted	Not permitted	Not visible on faces and edges
Surface checks	Permitted	Permitted	Permitted
Slope of grain			
General slope of grain	< 7%	< 12%	Sloping grain permitted
Local slope of grain	< 12%	< 20%	Sloping grain permitted
Curly grain	Not permitted	Not permitted	Not permitted
Bark pocket			
Superficial	Not permitted	Not permitted	Occasionally permitted ^a
Trough	Not permitted	Not permitted	Permitted on 2 adjacent faces

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Table 4 – Appearance grading of oak baulks *(continued)*

Features	GRADE		
	(reminding : Grading area of 0,2 m x 2,0 m)		
	Q-P A	Q-P1	Q-P2
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Sound sapwood	Permitted on 2 edges if total width ≤ 15% of face width	Permitted on 2 edges if total width ≤ 15% of face width	Permitted
Unsound sapwood	Not permitted	Not permitted	Occasionally permitted ^a
Discoloration ^b			
Black streak	Occasionally permitted ^a	Occasionally permitted ^a	Permitted
Brown oak	Not permitted	Permitted	Permitted
Brown streak	Not permitted	Occasionally permitted ^a	Permitted
Rot	Not permitted	Not permitted	Not permitted
Insect attack			
Black holes	Not permitted	Occasionally permitted ^a	Permitted
White holes	Not permitted	Not permitted	Not permitted
Sawing characteristics			
Boxed heart	Permitted	Permitted	Permitted
Exposed heart	Traces on two faces	Traces on two faces	Permitted

Table 4– Appearance grading of oak baulks *(concluded)*

Features	GRADE		
	(reminding : Grading area of 0,2 m x 2,0 m)		
	Q-P A	Q-P1	Q-P2
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Wane	Permitted for pieces of more than 3 m length , 10% of face and edge width with a max of 25% of length	Permitted on 10% of face width with a max of 30% length. This tolerance is up to 15% for sections more than 250x250 mm.	Permitted on 15% of face width with a max of 30% length
Deformation (twist)	Not permitted	Not permitted	Not permitted
^a "occasionally permitted" means that relevant features are accepted on a few number of pieces according to trade uses.			
^b Superficial stains are not taken into account.			

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Table 5 — Appearance grading of beech unedged boards

Dimensional characteristics	GRADE			
	(reminding : Grading area of 0,2 m x 2,0 m)			
	F-B A and F-S A	F-B 1and F-S 1	F-B 2 and F-S 2	F-B 3 and F-S 3
	Minimum acceptable for grade	Minimum acceptable for grade	Minimum acceptable for grade	Minimum acceptable for grade
Length				
Boule	F-B A: 3 m and over by increments of 10 cm F-B 1– F-B 2– F-B 3: 2,50 m and over by increments of 10 cm			
Individual selected pieces ^d	2 m and over by increments of 10 cm			
Narrowest width				
Boule	150 mm	120 mm	120 mm	120 mm
Individual selected pieces	100 mm	100 mm	100 mm	100 mm

Table 5– Appearance grading of beech un-edged boards (continued)

Features	GRADE			
	(reminding : Grading area of 0,2 m x 2,0 m)			
	F-B A and F-S A	F-B 1 and F-S 1	F-B 2 and F-S 2	F-B 3 and F-S 3
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Sound intergrown and partially intergrown knots and cat's paw	On 70% of pieces in a batch: not permitted on a face	On 50% of pieces in a batch: not permitted on a face	On 30% of pieces in a batch: not permitted on a face	Unlimited
	On 30% of pieces in a batch: permitted	On 50% of pieces in a batch: permitted	On 70% of pieces in a batch: permitted	
Dead and rotten knots	On 70% of pieces in a batch: not permitted on a face	On 50% of pieces in a batch: not permitted on a face	On 30% of pieces in a batch: not permitted on a face	Permitted with a width reduction ^b
	On 30% of pieces in a batch : permitted with a width reduction ^b	On 50% of pieces in a batch : permitted with a width reduction ^b	On 70% of pieces in a batch : permitted with a width reduction ^b	
Shakes	Shakes are taken into account by their presence, without any size limit.			
Hearth shake, frost crack ring shake, star shake	On 70% of pieces in a batch: not permitted on a face	Permitted if normal to the faces; permitted with width reduction if oblique to the faces ^b	Permitted if normal to the faces; permitted with width reduction if oblique to the faces ^b	Permitted if normal to the faces; permitted with width reduction if oblique to the faces ^b
	On 30% of pieces in a batch: permitted if normal to the faces; permitted with width reduction if oblique to the faces ^b			

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Table 5 – Appearance grading of beech un-edged boards *(continued)*

Features	GRADE			
	(reminding : Grading area of 0,2 m x 2,0 m)			
	F-B A and F-S A	F-B 1 and F-S 1	F-B 2 and F-S 2	F-B 3 and F-S 3
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Check	Not permitted	Not permitted	Occasionally permitted ^c	Permitted
Slope of grain	Slope of grain is visually estimated, unless otherwise specification in the contract.			
General slope of grain	Approximatively straight	Sloping grain permitted if slight	Sloping grain permitted if slight	Not taken into account
Curly grain	Not permitted	Not permitted	Occasionally permitted with width reduction ^{b c}	Permitted
Bark pocket : superficial or through	On 70% of pieces in a batch: not permitted	Permitted with width reduction a b	Permitted with width reduction a b	Permitted with width reduction a b
	On 30% of pieces in a batch: permitted with width reduction a b			
Dote	Not permitted	Permitted with width reduction a b	Permitted with width reduction a b	Permitted with width reduction a b

Table 5 – Appearance grading of beech un-edged boards *(continued)*

Features	GRADE			
	(reminding : Grading area of 0,2 m x 2,0 m)			
	F-B A and F-S A	F-B 1 and F-S 1	F-B 2 and F-S 2	F-B 3 and F-S 3
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Rot	Not permitted	Not permitted	Permitted with width reduction a b	Permitted with width reduction a b
Insect attack	Not permitted	Permitted with width reduction a b	Permitted with width reduction a b	Permitted with width reduction a b
Deformations	Limits to be defined in the contract			
Discolorations	Red heart is acceptable if slight and regular with following limits.			
(sound red heart)	20% of the width of the piece	25% of the width of the piece	33% of the width of the piece	Unlimited

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Table 5 – Appearance grading of beech un-edged boards *(concluded)*

Features	GRADE			
	(reminding : Grading area of 0,2 m x 2,0 m)			
	F-B AR	F-B 1R	F-B 2R	–
Except for red heart, defined below, all above characteristics are valid in each grade.				
Sound red heart	Regular and slight red stain unlimited		Unlimited	–
Unsound red heart	Not permitted	Not permitted	Not permitted	–
NOTE 1 A maximum of 2 features among those specified by this note, are allowed on a piece.				
NOTE 2 A maximum of 3 features among those specified by this note, are allowed on a piece.				
^a One feature only, among, those specified by this note, is allowed on a piece.				
^b The width reduction shall be agreed between buyer and seller.				
^c "Occasionally permitted" means that the relevant features are accepted on a few number of pieces, according to trade uses.				
^d A shorter length, defined between buyer and seller, is possible.				

Table 6 — Appearance grading of beech strips and square edged timber (green timber)

Features	GRADE		
	(reminding : Grading area of 0,2 m x 2,0 m)		
	F-F 1 (3 to 4 clear faces)	F-F 2 (0 to 3 clear faces)	F-F 3
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Sound, intergrown or partially intergrown knots	For Width < 120 mm, 1 knot of 10 mm for width ≥ 120 mm 2 knots of 10 mm 20% of pieces may have one more sound knot of 10 mm on the surface.	Knots with diameters < 5 mm are not taken into account. For Width < 120 mm, 3 knots of 25 mm for Width ≥ 120 mm 1 extra knot permitted in each additional 40 mm of width	Knots with diameters < 10 mm are not taken into account. For Width < 120 mm, 3 knots of 40 mm for Width ≥ 120 mm 1 extra knot permitted in each additional 40 mm of width
Dead and rottent knots	Not permitted	Not permitted	1 of 20 mm
Checks	Not permitted	Not permitted	Not permitted
Surface checks	Not permitted	Occasionally permitted ^a	Permitted
Grain (spiral grain, curley grain)	Not permitted	Not permitted	Permitted

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Table 6 – Appearance grading of beech strips and square edged timber (green timber) *(continued)*

Features	GRADE		
	(reminding : Grading area of 0,2 m x 2,0 m)		
	F-F 1 (3 to 4 clear faces)	F-F 2 (0 to 3 clear faces)	F-F 3
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Bark pocket; superficial or through	Not permitted	Not permitted	Not permitted
Insect attacks: superficial, deep, black or white holes	Not permitted	Not permitted	Not permitted
Sawing characteristics			
Boxed or exposed heart	Not permitted	Not permitted	Permitted if no shake
Wane	Not permitted	Not permitted	< 1/3 of the piece thickness
Warps			
Bow and spring	Not permitted	10 mm/m	Permitted
Cup	Not permitted	1% of the width of the piece	2% of the width of the piece
Twist	Not permitted	1% of the width of the piece on 2 m	2% of the width of the piece on 2 m
Stain: red heart	Not permitted	Not permitted on clear faces; permitted if sound on other faces	Permitted if sound

Table 6 – Appearance grading of beech strips and square edged timber (green timber) *(concluded)*

Features	GRADE	
	(reminding : Grading area of 0,2 m x 2,0 m)	
	F-F 1 R	F-F 2 R
Excepted for red heart, defined below, all above characteristics are valid in each grade.		
Red heart		
Sound	Permitted	Permitted
Unsound	Not permitted	Not permitted

^a "Occasionally permitted" means that the relevant features are accepted in a few number of pieces, according to trade uses.

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Table 7 — Appearance grading of beech prepared timber (moisture content: $(12 \pm 2) \%$)

Features	GRADE		
	(reminding : Grading area of 0,2 m x 2,0 m)		
	F-D A (4 clear faces)	F-D 1 (3 to 4 clear faces)	F-D 2 (0 to 3 clear faces)
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Intergrown sound knot			
On the better face	Not permitted	Not permitted	3 of 1/3 of the width of the piece – Maximum 40 mm
On the worse face	Not permitted	2 of ¼ of the width either on a face or on an edge ^a	3 of 1/3 of the width of the piece – Maximum 40 mm
On the edge(s)	Not permitted		3 of 1/3 of the width of the piece – Maximum 40 mm
Partially intergrown sound knot: on the better face, on the worse face or on the edge(s)	Not permitted	Not permitted	Not permitted
Rotten knots	Not permitted	Not permitted	Not permitted
Checks	Not permitted	Not permitted	Not permitted
Surface checks	Not permitted	Occasionally permitted ^b	Permitted
Grain: spiral and curly grain	Not permitted	Not permitted	Permitted

Table 7 – Appearance grading of beech prepared timber (Moisture content: $(12 \pm 2) \%$) (continued)

Features	GRADE		
	(reminding : Grading area of 0,2 m x 2,0 m)		
	F-D A (4 clear faces)	F-D 1 (3 to 4 clear faces)	F-D 2 (0 to 3 clear faces)
	Maximum acceptable for grade	Maximum acceptable for grade	Maximum acceptable for grade
Bark pocket: superficial or through	Not permitted	Not permitted	Not permitted
Insect attacks: superficial,deep, black or white holes	Not permitted	Not permitted	Not permitted
Sawing characteristics			
Boxed or exposed heart	Not permitted	Not permitted	Permitted if no shake
Wane	Not permitted	Not permitted	< 1/3 of the piece thickness
Warps			
Bow or spring	5 mm/m	5 mm/m	10mm/m
Cup or twist	5 mm/m	5 mm/m	10 mm/m
Stain : red heart	Not permitted	Not permitted	Permitted if sound

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Table 7 – Appearance grading of beech prepared timber (Moisture content: $(12 \pm 2) \%$) (concluded)

Features	GRADE	
	(reminding : Grading area of 0,2 m x 2,0 m)	
	F-D AR	F-D 1 R
Excepted for red heart defined below, all above characteristics are valid in each grade.		
Red heart		
Sound	Permitted	Permitted
Unsound	Not permitted	Not permitted

^a For F-F1 grade, features specified in this note may exist on 25% of pieces in a batch.

^b "Occasionally permitted" means that the relevant features are accepted on a few number of pieces, according to trade uses.

Bibliography

- [1] EN 1312:1997, *Round and sawn timber – Determination of the batch volume of sawn timber*
- [2] CEN/TS 12169, *Criteria for the assessment of conformity of a lot of sawn timber*

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