SLOVENSKI STANDARD
SIST EN 1995-1-1:2005/kFprA2:2013

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Evrokod 5: Projektiranje lesenih konstrukcij - 1-1. del: Splošna pravila in pravila za stavbe

Eurocode 5: Design of timber structures - Part 1-1: General - Common rules and rules for buildings

Eurocode 5: Bemessung und Konstruktion von Holzbauten - Teil 1-1: Allgemeines - Allgemeine Regeln und Regeln für den Holzbau

Eurocode 5: Conception et calcul des structures en bois - Partie 1-1 : Généralités - Règles communes et règles pour les bâtiments

Ta slovenski standard je istoveten z: **EN 1995-1-1:2004/FprA2**

ICS:

91.010.30	Tehnični vidiki	Technical aspects
91.080.20	Lesene konstrukcije	Timber structures

SIST EN 1995-1-1:2005/kFprA2:2013 **en,fr,de**

EUROPEAN STANDARD

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FINAL DRAFT
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English Version

Eurocode 5: Design of timber structures - Part 1-1: General - Common rules and rules for buildings

Eurocode 5: Conception et calcul des structures en bois - Partie 1-1 : Généralités - Règles communes et règles pour les bâtiments

Eurocode 5: Bemessung und Konstruktion von Holzbauten - Teil 1-1: Allgemeines - Allgemeine Regeln und Regeln für den Holzbau

This draft amendment is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 250.

This draft amendment A2, if approved, will modify the European Standard EN 1995-1-1:2004. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

This draft amendment was established by CEN 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-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 1995-1-1:2004/FprA2:2013) has been prepared by Technical Committee CEN/TC 250, "Structural Eurocodes", the secretariat of which is held by BSI.

This document is currently submitted to the Unique Acceptance Procedure.

1 Modification to 1.2, Normative references

Delete

EN 10147, *Specification for continuously hot-dip zinc coated structural steel sheet and strip – Technical delivery conditions*

Add

EN 10346, *Continuously hot-dip coated steel flat products – Technical delivery conditions*

2 Modification to 1.6

Remove h_{rl} (Distance from lower edge of hole to bottom of member) and h_{ru} (Distance from upper edge of hole to top of member)

3 Modification to 2.2.3, Seviceability limit states

Replace the existing paragraph (3) with the following:

(3) The final deformation u_{fin}, see e.g. w_{fin} in Figure 7.1, should be calculated by superimposing the creep deformation u_{creep} calculated using the quasi-permanent combination of actions, see EN 1990, 6.5.3(2)(c), on the instantaneous deformation u_{inst} calculated from 2.2.3(2). The creep deformation should be calculated using mean values of the appropriate moduli of elasticity, shear moduli and slip moduli and the relevant values of k_{def} given in Table 3.2.

Replace the existing paragraph (4) with the following:

(4) If the structure consists of members or components having different creep behaviour, the long-term deformation due to the quasi-permanent combination of actions should be calculated using the final mean values of the appropriate moduli of elasticity, shear moduli and slip moduli according to 2.3.2.2 (1). The final deformation u_{fin} is then calculated by superimposing the instantaneous deformation due to the difference between the characteristic and the quasi-permanent combination of actions on the long-term deformation.

4 Modification to 2.3.2.2, Load-duration and moisture influences on deformations

Replace the existing paragraph (1) with the following:

For serviceability limit states, if the structure consists of members or components having different time-dependent properties, the final mean value of modulus of elasticity $E_{\text{mean,fin}}$, shear modulus $G_{\text{mean,fin}}$ and slip modulus $K_{\text{ser,fin}}$ which are used to calculate the long-term deformation due to the quasi-permanent combination of actions, see EN 1990, 6.5.3(2)(c), should be taken from the following expressions:

5 Modification to 4.2, Resistance to corrosion

Replace the existing note [a] *in Table 4.1 with the following*:

[a] If hot dip zinc coating is used on steel plates, Fe/Zn 12C shall be replaced by Z275 and Fe/Zn 25C by Z350 in accordance with EN 10346. If hot dip coating is used on dowel type fasteners, Fe/Zn 12C shall be replaced by a layer of zinc of minimum 39 µm and Fe/Zn 25C by a layer of zinc of minimum 49 µm in accordance with EN ISO 1461.

6 Modification to 6.1.5 Compression perpendicular to the grain

Replace the existing paragraph (4) with the following:

(4) For members on discrete supports loaded by distributed loads and/or by concentrated loads further away from the support than l_1 = 2h, see Figure 6.2b, the value of $k_{c,90}$ should be taken as:

− $k_{c,90}$ = 1,5 for solid softwood timber
− $k_{c,90}$ = 1,75 for glued laminated softwood timber provided that $\ell \leq 400$ mm

where

h is the depth of the member and ℓ is the contact length.

NOTE A series of point loads acting at close centres (e.g. joists or rafters at centres < 610 mm) may be regarded as a distributed load.

7 Modification to 6.1.8, Torsion

Replace the existing Formula (6.15) with the following:

$$k_{shape} = \begin{cases} 1{,}2 & \text{for a circular cross-section} \\ \min\begin{cases} 1+0{,}05\frac{h}{b} \\ 1{,}3 \end{cases} & \text{for a rectangular cross-section} \end{cases} \quad (6.15)$$

8 Modification to 6.2.3, Combined bending and axial tension

Replace the existing paragraph (2) with the following:

(2) The values of k_m given in 6.1.6 apply.

NOTE To check the instability condition, the method given in 6.3 can be used with $\sigma_{t,0,d} = 0$.

9 Modification to 6.5.2, Beams with a notch at the support

Replace the existing Formula (6.60) with the following:

$$\tau_d = \frac{1{,}5\, V_d}{b_{ef} h_{ef}} \leq k_v f_{v,d} \quad (6.60)$$

10 Modification to 8.3.2, Axially loaded nails

Replace the existing definition of t_{pen} in paragraph (4) with the following:
t_{pen} is the pointside penetration length or the length of the threaded part, excluding the point length, in the point side member

11 Modification to 8.4, Stapled connections

Replace the existing Formula (8.29) with the following:

$$M_{y.Rk} = 150\, d^3 \tag{8.29}$$

Replace the existing paragraph (7) with the following:

(7) For a row of n staples parallel to the grain, the load-carrying capacity in that direction should be calculated using the effective number of fasteners $n_{ef} = n$.

12 Modification to 8.6, Dowelled connections

Replace the existing Table 8.5 with the following:

Table 8.5 – Minimum spacings and edge and end distances for dowels

Spacing and edge/end distances (see Figure 8.7)	Angle to grain	Minimum spacings and edge/end distances
a_1 (parallel to grain)	$0^\circ \le \alpha \le 360^\circ$	$(3 + 2\,\lvert\cos\alpha\rvert)d$
a_2 (perpendicular to grain)	$0^\circ \le \alpha \le 360^\circ$	$3\,d$
$a_{3,t}$ (loaded end)	$-90^\circ \le \alpha \le 90^\circ$	max (7 d; 80 mm)
$a_{3,c}$ (unloaded end)	$90^\circ \le \alpha \le 150^\circ$ $150^\circ \le \alpha \le 210^\circ$ $210^\circ \le \alpha \le 270^\circ$	$a_{3t}\,\lvert\sin\alpha\rvert$ max(3,5 d; 40 mm) $a_{3t}\,\lvert\sin\alpha\rvert$
$a_{4,t}$ (loaded edge)	$0^\circ \le \alpha \le 180^\circ$	$\max((2 + 2\sin\alpha)d; 3d)$
$a_{4,c}$ (unloaded edge)	$180^\circ \le \alpha \le 360^\circ$	$3\,d$

13 Modification to 8.7.1, Laterally loaded screws

Replace the existing paragraph (1)P with the following:

(1)P The effect of the threaded part of the screw shall be taken into account in determining the load carrying capacity by using an effective diameter d_{ef} when determining the yield moment capacity and the embedment strength of the threaded part. The outer thread diameter d shall be used to determine spacing, edge and end distances and the effective number of screws.

Replace the existing paragraph (4) with the following:

(4) For screws with a diameter $d_{ef} > 6$ mm, the rules in 8.5.1 apply.

Replace the existing paragraph (5) with the following:

(5) For screws with a diameter $d_{ef} \le 6$ mm, the rules of 8.3.1 apply.

14 Modification to 8.7.2, Axially loaded screws

NOTE This clause is completely rewritten in Amendment EN 1995-1-1:2004/A1: 2008.

Replace the existing 1st line in paragraph (4) with the following:

For connections in softwood timber with screws in accordance with EN 14592 with

15 Modification to 8.8.5.1, Plate anchorage capacity

Replace the existing definition of $F_{A,Ed}$ in paragraph (1) with the following:

$F_{A,Ed}$ is the design force, positive when tension, acting on a single plate at the centroid of the effective area (i.e. half of the total force in the timber member);

Replace the existing definition of r in paragraph (1) with the following:

r is the distance from the centre of gravity of the effective plate area to the segmental plate area dA

Add a new NOTE after paragraph (3) as follows:

NOTE Only the component of F_{Ed} perpendicular to the timber surface needs to be reduced.

Replace the existing paragraph (4) with the following:

(4) Contact pressure between the timber members in chord splices in compression may, when $F_{Ed} \leq 0$, be taken into account by designing the single plate for a design force, $F_{A,Ed}$, and a design moment $M_{A,Ed}$, according to the following expressions:

$$F_{A,Ed} = \frac{F_x}{|F_x|}\sqrt{F_x^2 + \left(F_{Ed}\sin\beta\right)^2} \qquad (8.50)$$

$$M_{A,Ed} = \frac{M_{Ed}}{2} \qquad (8.51)$$

where:

$$F_x = \frac{F_{Ed}\cos\beta}{2} + \frac{3|M_{Ed}|}{2h}$$

F_{Ed} is the design axial force of the chord acting on a single plate (compression or zero)

M_{Ed} is the design moment of the chord acting on a single plate

h is the height of the chord

16 Modification to 8.8.5.2, Plate capacity

Add a new NOTE after paragraph (1) as follows:

NOTE F_{Ed} can be reduced by the contact pressure determined in 8.8.5.1 (3).

17 Modification to 8.9, Split ring and shear plate connectors

Replace the existing Table 8.7 with the following:

Table 8.7 – Minimum spacings and edge and end distances for ring and shear plate connectors

Spacing and edge/end distances (see Figure 8.7)	Angle to grain	Minimum spacings and edge/end distances
a_1 (parallel to grain)	$0^\circ \leq \alpha \leq 360^\circ$	$(1{,}2 + 0{,}8 \lvert\cos\alpha\rvert) d_c$
a_2 (perpendicular to grain)	$0^\circ \leq \alpha \leq 360^\circ$	$1{,}2\ d_c$
$a_{3,t}$ (loaded end)	$-90^\circ \leq \alpha \leq 90^\circ$	$2{,}0\ d_c$
$a_{3,c}$ (unloaded end)	$90^\circ \leq \alpha \leq 150^\circ$ $150^\circ \leq \alpha \leq 210^\circ$ $210^\circ \leq \alpha \leq 270^\circ$	$(0{,}4 + 1{,}6 \lvert\sin\alpha\rvert) d_c$ $1{,}2\ d_c$ $(0{,}4 + 1{,}6 \lvert\sin\alpha\rvert) d_c$
$a_{4,t}$ (loaded edge)	$0^\circ \leq \alpha \leq 180^\circ$	$(0{,}6 + 0{,}2 \lvert\sin\alpha\rvert) d_c$
$a_{4,c}$ (unloaded edge)	$180^\circ \leq \alpha \leq 360^\circ$	$0{,}6\ d_c$

18 Modification to 8.10, Toothed –plate connectors

Replace the existing Table 8.8 with the following:

Table 8.8 – Minimum spacings and edge and end distances for toothed-plate connector types C1 to C9

Spacing and edge/end distances (see Figure 8.7)	Angle to grain	Minimum spacings and edge/end distances
a_1 (parallel to grain)	$0^\circ \leq \alpha \leq 360^\circ$	$(1{,}2 + 0{,}3 \lvert\cos\alpha\rvert) d_c$
a_2 (perpendicular to grain)	$0^\circ \leq \alpha \leq 360^\circ$	$1{,}2\ d_c$
$a_{3,t}$ (loaded end)	$-90^\circ \leq \alpha \leq 90^\circ$	$1{,}5\ d_c$
$a_{3,c}$ (unloaded end)	$90^\circ \leq \alpha \leq 150^\circ$ $150^\circ \leq \alpha \leq 210^\circ$ $210^\circ \leq \alpha \leq 270^\circ$	$(0{,}9 + 0{,}6 \lvert\sin\alpha\rvert) d_c$ $1{,}2\ d_c$ $(0{,}9 + 0{,}6 \lvert\sin\alpha\rvert) d_c$
$a_{4,t}$ (loaded edge)	$0^\circ \leq \alpha \leq 180^\circ$	$(0{,}6 + 0{,}2 \lvert\sin\alpha\rvert) d_c$
$a_{4,c}$ (unloaded edge)	$180^\circ \leq \alpha \leq 360^\circ$	$0{,}6\ d_c$