EUROKOODEKS 3: TERASKONSTRUKTSIOONIDE PROJEKTEERIMINE. OSA 1-5: TASAPINNALISED KONSTRUKTSIOONIELEMENDID

Eurocode 3 - Design of steel structures - Part 1-5: Plated structural elements

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 1993-1-5:2006 +A1+NA+A2:2020 sisaldab Euroopa standardi EN 1993-1-5:2006 ingliskeelset teksti ja selle paranduse AC:2009, muudatuste A1:2017 ja A2:2020, ja Eesti rahvusliku lisa NA:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 1993-1-5:2006 +A1+NA+A2:2020 consists of the English text of the European standard EN 1993-1-5:2006 and its corrigendum AC:2009, amendments A1:2017 and A2:2020, and Estonian national annex NA:2017.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 25.10.2006, muudatused A1 26.04.2017 ja A2 31.07.2019.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation. Date of Availability of the European standard is 25.10.2006, for A1 26.04.2017 and A2 31.07.2019.
Muudatusega A1 lisatud või muudetud teksti algus ja lõpp on tekstis ära märgitud märgenditega ⟦A1⟩ ⟨A1⟧. Muudatusega A2 lisatud või muudetud teksti algus ja lõpp on tekstis ära märgitud märgenditega ⟦A2⟩ ⟨A2⟧. Parandusega AC lisatud või muudetud teksti algus ja lõpp on tekstis ära märgitud märgenditega ⟦AC⟩ ⟨AC⟧. Standard on kättesaadav Eesti Standardi-keskusest.	The start and finish of text introduced or altered by amendment A1 is indicated in the text by symbols ⟦A1⟩ ⟨A1⟧. The start and finish of text introduced or altered by amendment A2 is indicated in the text by symbols ⟦A2⟩ ⟨A2⟧. The start and finish of text introduced or altered by amendment AC is indicated in the text by symbols ⟦AC⟩ ⟨AC⟧. The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 91.010.30; 91.080.10

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1993-1-5 + A1 +A2

October 2006, April 2017, July 2019

ICS 91.010.30; 91.080.10

Supersedes ENV 1993-1-5:1997

English Version

Eurocode 3 - Design of steel structures - Part 1-5: Plated structural elements

Eurocode 3 - Calcul des structures en acier - Partie 1-5: Plaques planes

Eurocode 3 - Bemessung und Konstruktion von Stahlbauten - Teil 1-5: Plattenförmige Bauteile

This European Standard was approved by CEN on 13 January 2006. The amendment A1 was approved by CEN on 17 January 2017. The amendment A2 was approved by CEN on 11 June 2019.

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This European Standard and its amendments A1 and A2 exist 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 Central Secretariat has the same status as the official versions.

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+ EN 1993-1-5:2006/A1:2017 E
+ EN 1993-1-5:2006/A2:2019 E

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Foreword

This European Standard EN 1993-1-5,, Eurocode 3: Design of steel structures Part 1.5: Plated structural elements, has been prepared by Technical Committee CEN/TC250 « Structural Eurocodes », the Secretariat of which is held by BSI. CEN/TC250 is responsible for all Structural Eurocodes.

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 April 2007 and conflicting National Standards shall be withdrawn at latest by March 2010.

This Eurocode supersedes ENV 1993-1-5.

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National annex for EN 1993-1-5

This standard gives alternative procedures, values and recommendations with notes indicating where national choices may have to be made. The National Standard implementing EN 1993-1-5 should have a National Annex containing all Nationally Determined Parameters to be used for the design of steel structures to be constructed in the relevant country.

National choice is allowed in EN 1993-1-5 through:

- 2.2(5)
- 3.3(1)
- 4.3(6)
- 5.1(2)
- 6.4(2)
- 8(2)
- 9.1(1)
- 9.2.1(9)
- 10(1)
- 10(5)
- C.2(1)
- C.5(2)
- C.8(1)
- C.9(3)
- D.2.2(2)

A1 Amendment A1 foreword

This document (EN 1993-1-5:2006/A1:2017) has been prepared by Technical Committee CEN/TC 250 "Structural Eurocodes", the secretariat of which is held by BSI.

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A2 Amendment A2 foreword

This document (EN 1993-1-5:2006/A2:2019) has been prepared by Technical Committee CEN/TC 250 "Structural Eurocodes", the secretariat of which is held by BSI.

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1 Introduction

1.1 Scope

(1) EN 1993-1-5 gives design requirements of stiffened and unstiffened plates which are subject to in-plane forces.

(2) Effects due to shear lag, in-plane load introduction and plate buckling for I-section girders and box girders are covered. Also covered are plated structural components subject to in-plane loads as in tanks and silos. The effects of out-of-plane loading are outside the scope of this document.

NOTE 1: The rules in this part complement the rules for class 1, 2, 3 and 4 sections, see EN 1993-1-1.

NOTE 2: For the design of slender plates which are subject to repeated direct stress and/or shear and also fatigue due to out-of-plane bending of plate elements (breathing) see EN 1993-2 and EN 1993-6.

NOTE 3: For the effects of out-of-plane loading and for the combination of in-plane effects and out-of-plane loading effects see EN 1993-2 and EN 1993-1-7.

NOTE 4: Single plate elements may be considered as flat where the curvature radius r satisfies:

$$r \geq \frac{a^2}{t} \tag{1.1}$$

where a is the panel width

t is the plate thickness

1.2 Normative references

(1) 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.

EN 1993-1-1 *Eurocode 3 :Design of steel structures: Part 1-1: General rules and rules for buildings*

1.3 Terms and definitions

For the purpose of this standard, the following terms and definitions apply:

1.3.1
elastic critical stress
stress in a component at which the component becomes unstable when using small deflection elastic theory of a perfect structure

1.3.2
membrane stress
stress at mid-plane of the plate

1.3.3
gross cross-section
the total cross-sectional area of a member but excluding discontinuous longitudinal stiffeners