

SINGAPORE STANDARD**Eurocode 3 : Design of steel structures**

– Part 1-12 : Additional rules for the extension
of EN 1993 up to steel grades S 700

(This national standard is the identical implementation of EN 1993-1-12 : 2007 incorporating corrigendum, April 2009 and is adopted with permission of CEN, Avenue Marnix 17, 1000 Brussels)

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SINGAPORE STANDARD

Eurocode 3 : Design of steel structures

– Part 1-12 : Additional rules for the extension of EN 1993 up to steel grades S 700

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Corus South East Asia Pte Ltd
Nanyang Technological University
National University of Singapore
TYH Consulting Engineers
Yongnam Engineering & Construction Pte Ltd

National Foreword

This Singapore Standard was prepared by the Technical Committee on Building Structure and Sub-structure under the purview of the Building and Construction Standards Committee.

This SS EN is the identical implementation of EN 1993-1-12 : 2007 'Eurocode 3 : Design of steel structures – Part 1-12 : Additional rules for the extension of EN 1993 up to steel grades S 700' including its Corrigendum EN 1993-1-12 : 2007 / AC : 2009 and is adopted with the permission of CEN, Rue de Stassart 36, B-1050 Brussels.

Attention is drawn to the following:

- The comma has been used throughout as a decimal marker whereas in Singapore Standards, it is a practice to use a full point on the baseline as the decimal marker.
- The Singapore Standards which implement international or European publications referred to in this document may be found in the SS Electronic Catalogue at:
<http://www.singaporestandardseshop.sg>

The EN gives values with notes indicating where national choices may be made. Where a normative part of the EN allows for national choice to be made, the range and possible choice will be given in the normative text, and a note will qualify it as a Nationally Determined Parameter (NDP). NDPs can be a specific value for a factor, a specific level or class, a particular method or a particular application rule if several are proposed in the EN.

The requirements of this SS EN 1993-1-12 : 2007 are to be read in conjunction with the Singapore National Annex (NA) to SS EN 1993-1-12 : 2007 which contains information on the Singapore Nationally Determined Parameters and is published separately.

National choice is allowed in EN 1993-1-12 through the following clauses:

- 2.1 (3.1(2))
- 2.1 (3.2.2(1))
- 2.1 (5.4.3(1))
- 2.1 (6.2.3(2))
- 2.8 (4.2(2))
- 3 (1)

At the time of publication, this standard is expected to be used as a reference in the Building and Construction Authority's 'Approved Document – Acceptable Solutions'.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

NOTE

1. *Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions.*
2. *An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR.*
3. *Compliance with a SS or TR does not exempt users from any legal obligations.*

English Version

Eurocode 3 - Design of steel structures - Part 1-12: Additional rules for the extension of EN 1993 up to steel grades S 700

Eurocode 3 - Calcul des structures en acier - Partie 1-12 :
Règles additionnelles pour l'utilisation de l'EN 1993 jusqu'à
la nuance d'acier S 700

Eurocode 3: Bemessung und Konstruktion von Stahlbauten
- Teil 1-12: Zusätzliche Regeln zur Erweiterung von EN
1993 auf Stahlsorten bis S 700

This European Standard was approved by CEN on 6 July 2006.

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.

CEN members are the national standards bodies of 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.



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Foreword

This European Standard EN 1993-1-12, “Eurocode 3: Design of steel structures: Part 1-12: Additional rules for the extension of EN 1993 up to steel grades S 700”, 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 August 2007, and conflicting National Standards shall be withdrawn at latest by March 2010.

According to the CEN-CENELEC Internal Regulations, the National Standard 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.

National annex for EN 1993-1-12

This standard gives alternative procedures, values and recommendations with notes indicating where national choices may have to be made. Therefore the National Standard implementing EN 1993-1-12 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 1993-1-12 through:

- **2.1** (3.1(2))
- **2.1** (3.2.2(1))
- **2.1** (5.4.3(1))
- **2.1** (6.2.3(2))
- **2.8** (4.2(2))
- **3** (1)

1 General

1.1 Scope

(1) This EN 1993-1-12 gives rules that can be used in conjunction with parts

- EN1993-1-1
- EN 1993-1-2
- EN 1993-1-3
- EN 1993-1-4
- EN 1993-1-5
- EN 1993-1-6
- EN 1993-1-7
- EN 1993-1-8

- EN 1993-1-9
- EN 1993-1-10
- EN 1993-1-11
- EN 1993-2
- EN 1993-3-1
- EN 1993-3-2
- EN 1993-4-1
- EN 1993-4-2
- EN 1993-4-3
- EN 1993-5
- EN 1993-6

to enable steel structures to be designed with steel of grades greater than S460 up to S700.

(2) Where it is necessary to alter a rule in other parts to enable up to S700 to be used, it is stated what needs to be done, either by noting that a rule is not to be used with steel grades greater than S460, then giving the one that is required, or by giving an additional rule or rules.

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 499 *Welding consumables – Covered electrodes for manual metal arc welding of non alloy and fine grain steels – Classification*

EN 10025-6 *Hot rolled products of structural steels - Part 6: Technical delivery conditions for flat products of high yield strength structural steels in the quenched and tempered condition*

EN 10149-1 *Hot-rolled flat products made of high yield strength steels for cold forming – Part 1: General delivery conditions*

EN 10149-2 *Hot-rolled flat products made of high yield strength steels for cold forming – Part 2: Delivery conditions for thermomechanically rolled steels*

EN 12534 *Welding consumables – Wire electrodes, wires, rods and deposits for gas shielded metal arc welding of high strength steels – Classification*

EN 12535 *Welding consumables – Tubular cored electrodes for gas shielded metal arc welding of high strength steels – Classification*