NEMETSCHEK
Scia

Stade des Alpes - Grenoble
Etudes et Techniques Internationales (ETI)

Theoretical Background

National Annexes to EN 1993

Scia
Engineer

Table of contents

Version Information

Welcome to the Theoretical Background for National Annexes to EN 1993.

This document provides background information regarding the application of NDP items according to different countries.

Version info

Document Title	Theoretical Background – National Annexes to EN 1993
Release	16.1
Revision	09/2016

Introduction

In this Theoretical background in depth information is given regarding the application of National Annexes to EN 1993 for different countries.

More specifically this concerns the following codes:

Eurocode 3
Design of steel structures
Part 1 - 1: General rules and rules for buildings
EN 1993-1-1:2005

Corrigendum
EN 1993-1-1:2005/AC:2006

Corrigendum
EN 1993-1-1:2005/AC:2009

Addendum
EN 1993-1-1:2005/A1:2014

Eurocode 3
Design of steel structures
Part 1 - 2: General rules – Structural fire design
EN 1993-1-2:2005

Corrigendum
EN 1993-1-2:2005/AC:2005

Corrigendum
EN 1993-1-2:2005/AC:2009

Eurocode 3
Design of steel structures
Part 1 - 3: Supplementary rules for cold-formed members and sheeting
EN 1993-1-3:2006

Corrigendum
EN 1993-1-3:2006/AC:2009

Eurocode 3
Design of steel structures
Part 1 - 5: Plated Structural elements
EN 1993-1-5:2006

Corrigendum
EN 1993-1-5:2006/AC:2009

Eurocode 3
Design of steel structures
Part 1 - 8: Design of joints
EN 1993-1-8:2005

Corrigendum
EN 1993-1-8:2005/AC:2005

The first chapter gives an overview of all NDP articles given in EN 1993 and specifies which of those articles are supported by Scia Engineer.

The subsequent chapters provide details on the specific implementation of the supported articles for different countries.

National Choice in EN 1993

This chapter specifies the articles of EN 1993 in which a national choice is allowed. In addition for each article information is given if the article is supported within Scia Engineer.

EN 1993-1-1

Article	Commentary
2.3.1(1)	NA may define additional actions *No default implementation/Not supported for Scia Engineer*
3.1(2)	NA may define additional steel grades *No default implementation/Not supported for Scia Engineer*
3.2.1(1)	NA may define nominal value procedure *No default implementation/Not supported for Scia Engineer*
3.2.2(1)	NA may define limiting values *No default implementation/Not supported for Scia Engineer*
3.2.3(1)	NA may define lowest service temperature *No default implementation/Not supported for Scia Engineer*
3.2.3(3)B	NA may give info on selection of toughness *No default implementation/Not supported for Scia Engineer*
3.2.4(1)B	NA may specify allocation *No default implementation/Not supported for Scia Engineer*
5.2.1(3)	NA may give limits for critical load factor *No default implementation/Not supported for Scia Engineer*
5.2.2(8)	NA may define the scope of the equiv. column method *No default implementation/Not supported for Scia Engineer*
5.3.2(3)	NA may define the bow imperfections *NA data supported in Scia Engineer*
5.3.2(11)	NA may define the scope of alternative imperfection *No default implementation/Not supported for Scia Engineer*
5.3.4(3)	NA may define imperfection coefficient k *NA data supported in Scia Engineer*
6.1(1)	NA may define safety factors for structures not covered by the code *NA data supported in Scia Engineer*

6.1(1)B	NA may define safety factors *NA data supported in Scia Engineer*
6.3.2.2(2)	NA may define imperfection factors and buckling curves *NA data supported in Scia Engineer*
6.3.2.3(1)	NA may define coefficients and LTB curves *NA data supported in Scia Engineer*
6.3.2.3(2)	NA may define the correction factor f *NA data supported in Scia Engineer*
6.3.2.4(1)B	NA may define slenderness limit *No default implementation/Not supported for Scia Engineer*
6.3.2.4(2)B	NA may define modification factor *No default implementation/Not supported for Scia Engineer*
6.3.3(5)	NA may specify the interaction method *NA data supported in Scia Engineer*
6.3.4(1)	NA may specify the field of application *No default implementation/Not supported for Scia Engineer*
7.2.1(1)B	NA may specify deflection limits *No default implementation/Not supported for Scia Engineer*
7.2.2(1)B	NA may specify deflection limits *No default implementation/Not supported for Scia Engineer*
7.2.3(1)B	NA may specify vibration limits *No default implementation/Not supported for Scia Engineer*
BB.1.3(3)B	NA may give additional info on buckling lengths *No default implementation/Not supported for Scia Engineer*

EN 1993-1-2

Article	Commentary
2.3 (1)	NA may define the safety factor *NA data supported in Scia Engineer*
2.3 (2)	NA may define the safety factor *NA data supported in Scia Engineer*
4.1 (2)	NA may define the use of advanced calculation models *No default implementation/Not supported for Scia Engineer*
4.2.3.6 (1)	NA may define limit temperature *NA data supported in Scia Engineer*
4.2.4 (2)	NA may define critical temperatures *NA data supported in Scia Engineer*

EN 1993-1-3

Article	Commentary
2(3)P	NA may define the safety factors *NA data supported in Scia Engineer*
2(5)	NA may define the SLS safety factor *No default implementation/Not supported for Scia Engineer*
3.1(3) Note 1 and Note 2	NA may define nominal values of the material *No default implementation/Not supported for Scia Engineer*
3.2.4(1)	NA may define the core thickness limits *NA data supported in Scia Engineer*
5.3(4)	NA may define LTB imperfections *NA data supported in Scia Engineer through EN 1993-1-1*
8.3(5)	NA may define the safety factor *No default implementation/Not supported for Scia Engineer*
8.3(13), Table 8.1	NA may give additional information *No default implementation/Not supported for Scia Engineer*
8.3(13), Table 8.2	NA may give additional information *No default implementation/Not supported for Scia Engineer*

8.3(13), Table 8.3	NA may give additional information *No default implementation/Not supported for Scia Engineer*
8.3(13), Table 8.4	NA may give additional information *No default implementation/Not supported for Scia Engineer*
8.4(5)	NA may define the safety factor *No default implementation/Not supported for Scia Engineer*
8.5.1(4)	NA may define the safety factor *No default implementation/Not supported for Scia Engineer*
9(2)	NA may give further info on testing *No default implementation/Not supported for Scia Engineer*
10.1.1(1)	NA may give further info on tests *No default implementation/Not supported for Scia Engineer*
10.1.4.2(1)	NA may define the reduction factor *NA data supported in Scia Engineer*
A.1(1), NOTE 2	NA may give further info on testing *No default implementation/Not supported for Scia Engineer*
A.1(1), NOTE 3	NA may give further info on testing *No default implementation/Not supported for Scia Engineer*
A.6.4(4)	NA may define the safety factor *No default implementation/Not supported for Scia Engineer*
E(1)	NA may define the validity of the method *No default implementation/Not supported for Scia Engineer*

EN 1993-1-5

Article	Commentary
2.2(5)	The NA may define the parameter *No default implementation/Not supported for Scia Engineer*
3.3(1)	The NA may choose the method for shear lag *No default implementation/Not supported for Scia Engineer*
4.3(6)	The NA may define the parameter *No default implementation/Not supported for Scia Engineer*
5.1(2)	The NA may define the parameter *NA data supported in Scia Engineer*
6.4(2)	The NA may give additional information *No default implementation/Not supported for Scia Engineer*
8(2)	The NA may give additional information *No default implementation/Not supported for Scia Engineer*
9.1(1)	The NA may give additional information *No default implementation/Not supported for Scia Engineer*
9.2.1(9)	The NA may define the parameter *No default implementation/Not supported for Scia Engineer*
10(1)	The NA may define the limits of application *No default implementation/Not supported for Scia Engineer*
10(5)	The NA may give additional information *No default implementation/Not supported for Scia Engineer*
C.2(1)	The NA may define the conditions *No default implementation/Not supported for Scia Engineer*
C.5(2)	The NA may define the imperfections *No default implementation/Not supported for Scia Engineer*
C.8(1)	The NA may define the limit *No default implementation/Not supported for Scia Engineer*
C.9(3)	The NA may give additional information *No default implementation/Not supported for Scia Engineer*
D.2.2(2)	The NA may give additional information *No default implementation/Not supported for Scia Engineer*

EN 1993-1-8

Article	Commentary
2.2(2)	NA may define the safety factors *NA data supported in Scia Engineer*
1.2.6 (Group 6: Rivets)	The NA may give additional information *No default implementation/Not supported for Scia Engineer*
3.1.1(3)	The NA may exclude bolt classes *No default implementation/Not supported for Scia Engineer*
3.4.2(1)	NA may specify the level of preload *NA data supported in Scia Engineer*
5.2.1(2)	The NA may give additional information *No default implementation/Not supported for Scia Engineer*
6.2.7.2(9)	NA may give further information on triangular limit *NA data supported in Scia Engineer*

National Annexes

This chapter provides details on the specific implementation of the supported articles for different countries. Only those items for which a country differs from the default EN are elaborated. For more information reference is made to the EN code and the respective National Annex documents.

EN 1993-1-1

Czech Republic

According to Czech National Annex CSN EN 1993-1-1/NA ed.A:2011-08.

<table>
<tr><th>Article</th><th>Commentary</th></tr>
<tr><td>5.3.2(3)</td><td>Using the default EN</td></tr>
<tr><td>5.3.4(3)</td><td>When choosing the “Czech CSN-EN NA method” the member imperfections are determined according to the method given in the National Annex:
<table>
<tr><th>Cross-section</th><th>Dimensions</th><th>Elastic
v0 / L</th><th>Plastic
v0 / L</th></tr>
<tr><td rowspan="2">Rolled I or PPL</td><td>h/b ≤ 2,0</td><td>1 / 600</td><td>1 / 500</td></tr>
<tr><td>h/b > 2,0</td><td>1 / 500</td><td>1 / 400</td></tr>
<tr><td rowspan="2">Welded I or PPL</td><td>h/b ≤ 2,0</td><td>1 / 400</td><td>1 / 300</td></tr>
<tr><td>h/b > 2,0</td><td>1 / 300</td><td>1 / 200</td></tr>
</table>
</td></tr>
<tr><td>6.1(1)</td><td>Using the default EN</td></tr>
<tr><td>6.1(1)B</td><td>Using the default EN</td></tr>
<tr><td>6.3.2.2(2)</td><td>Using the default EN</td></tr>
<tr><td>6.3.2.3(1)</td><td>Using the default EN</td></tr>
<tr><td>6.3.2.3(2)</td><td>Using the default EN</td></tr>
<tr><td>6.3.3(5)</td><td>Annex B (Alternative Method 2) is used.</td></tr>
</table>

Germany

According to German National Annex DIN EN 1993-1-1/NA:2010-12.

<table>
<tr><th>Article</th><th>Commentary</th></tr>
<tr><td>5.3.2(3)</td><td>

*When choosing the “**German DIN-EN NA method**” the bow imperfections are determined according to the alternative given in the National Annex:*

<table>
<tr><th>Buckling Curve</th><th>Elastic
e0/L</th><th>Plastic
e0/L</th></tr>
<tr><td>a0</td><td>1/900</td><td>(1/900) * (Wpl / Wel)</td></tr>
<tr><td>a</td><td>1/550</td><td>(1/550) * (Wpl / Wel)</td></tr>
<tr><td>b</td><td>1/350</td><td>(1/350) * (Wpl / Wel)</td></tr>
<tr><td>c</td><td>1/250</td><td>(1/250) * (Wpl / Wel)</td></tr>
<tr><td>d</td><td>1/150</td><td>(1/150) * (Wpl / Wel)</td></tr>
</table>

</td></tr>
<tr><td>5.3.4(3)</td><td>

*When choosing the “**German DIN-EN NA method**” the member imperfections are determined according to the method given in the National Annex:*

<table>
<tr><th>Cross-section</th><th>Dimensions</th><th>Elastic
v0 / L</th><th>Plastic
v0 / L</th></tr>
<tr><td rowspan="2">Rolled I or PPL</td><td>h/b ≤ 2,0</td><td>1/500</td><td>1/400</td></tr>
<tr><td>h/b > 2,0</td><td>1/400</td><td>1/300</td></tr>
<tr><td rowspan="2">Welded I or PPL</td><td>h/b ≤ 2,0</td><td>1/400</td><td>1/300</td></tr>
<tr><td>h/b > 2,0</td><td>1/300</td><td>1/200</td></tr>
</table>

*In addition, by activating the setting **Double v0** the value of v0 will be doubled. This can be used to manually increase v0 in case the relative slenderness is between the interval of 0,7 and 1,3.*

</td></tr>
<tr><td>6.1(1)</td><td>

Using the default EN

</td></tr>
<tr><td>6.1(1)B</td><td>

*When choosing the “**German DIN-EN NA method**” the safety factors are determined according to the method given in the National Annex:*

By default:

Gamma M0 = 1,0

Gamma M1 = 1,1

Gamma M2 = 1,25

In case the check is executed for a Non-linear 2nd Order combination:

Gamma M0 = 1,1

Gamma M1 = 1,1

Gamma M2 = 1,25

In case the check is executed for a code combination of type "EN-Accidental1" or "EN-Accidental2":

Gamma M0 = 1,0

Gamma M1 = 1,0

Gamma M2 = 1,15

</td></tr>
</table>

<table>
<tr><td></td><td></td></tr>
<tr><td>6.3.2.2(2)</td><td>
The German National Annex specifies that the modification factor f used in 6.3.2.3 may also be applied to the general case.
This concerns however a discussion within the code commission as specified in ECCS 119(“Rules for member Stability in EN 1993-1-1 Background documentation and design guidelines, ECCS, 2006”). Therefore this is not supported until a general correction from the commission is published.
In case Alpha,LT is set to “German DIN-EN NA method” the imperfection factor is calculated according to the alternative given in the National Annex:
$$\alpha^{*}_{LT} = \frac{\bar{\lambda}^{2}_{LT}}{\bar{\lambda}^{2}_{Fl}} * \alpha$$
<table>
<tr><td>With:</td><td>$\bar{\lambda}_{LT}$</td><td>The relative LTB slenderness</td></tr>
<tr><td></td><td>$\bar{\lambda}_{Fl}$</td><td>The relative LTB slenderness
neglecting the torsional stiffness It</td></tr>
<tr><td></td><td>α</td><td>Either taken as α or α_{LT}</td></tr>
</table>
In case the LTB curves are set to “German DIN-EN NA method” the LTB curves are determined according to Table 6.2 for flexural buckling about the z-z axis.
</td></tr>
<tr><td>6.3.2.3(1)</td><td>Using the default EN</td></tr>
<tr><td>6.3.2.3(2)</td><td>Using the default EN</td></tr>
<tr><td>6.3.3(5)</td><td>Annex B (Alternative Method 2) is used by default.
Annex A (Alternative Method 1) can be set.</td></tr>
</table>

France

According to French National Annex NF EN 1993-1-1/NA:2007-05.

Article	Commentary
5.3.2(3)	*When choosing the “**French NF-EN NA method**” the ELASTIC bow imperfections are determined according to the alternative given in the National Annex:* $$\frac{e_0}{L} = \frac{\alpha(\bar{\lambda} - 0{,}2)}{L}\frac{W_{el}}{A}$$ *With :* e_0 *Bow imperfection* L *Member system length* α *Imperfection factor* $\bar{\lambda}$ *Relative slenderness* W_{el} *Elastic section modulus* A *Cross-section Area*
5.3.4(3)	*When choosing the “**French NF-EN NA method**” the coefficient **k** is calculated in the following way:* *k = 1 - (0.5 * (x_max-x_min)/(y_max-y_min)) ≥ 0.5* *With :* *x max* *Maximal horizontal fiber coordinate of the cross-section* *x min* *Minimal horizontal fiber coordinate of the cross-section* *y max* *Maximal vertical fiber coordinate of the cross-section* *y min* *Minimal vertical fiber coordinate of the cross-section*
6.1(1)	*Using the default EN*
6.1(1)B	*Using the default EN*
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*In case **Lambda,LT,0** and **LTB Curves** are set to “**French NF-EN NA method**” the limit slenderness and imperfection values are determined as follows:*

— I-sections (Form code 1) with fabrication hot-rolled

$$\bar{\lambda}_{LT,0} = 0{,}2 + 0{,}1\frac{b}{h} \qquad \text{and} \qquad \alpha_{LT} = 0{,}4 - 0{,}2\frac{b}{h}\bar{\lambda}_{LT}^{2} \geq 0$$

— I-sections (Form code 1) with fabrication welded

$$\bar{\lambda}_{LT,0} = 0{,}3\frac{b}{h} \qquad \text{and} \qquad \alpha_{LT} = 0{,}5 - 0{,}25\frac{b}{h}\bar{\lambda}_{LT}^{2} \geq 0$$

— Other sections

$$\bar{\lambda}_{LT,0} = 0{,}2 \qquad \text{and} \qquad \alpha_{LT} = 0{,}76$$

For all sections : $\beta = 1{,}0$.

With: *b = Flange width of the cross-section*

h = Height of the cross-section

*In addition, the second rule (I-section with fabrication welded) will apply also to Asymmetric I sections (Form code **101**) with fabrication **welded** in case the following conditions are satisfied:*

- *The inertia ratio of the flanges does not exceed **1,2**.*

  This is expressed as follows:

  *I_top = (Bt * tt^3) / 12*
  *I_bottom = (Bb * tb^3) / 12*

  Ratio = max(I_top ; I_bottom) / min(I_top ; I_bottom) should be <= 1,2

- *The maximal flange thickness should be smaller than or equal to **3** times the web thickness.*

  This is expressed as:

  *max(tt ; tb) <= 3*s*

With:	*Bt*	*Width top flange*
	Bb	*Width bottom flange*
	tt	*Thickness top flange*
	tb	*Thickness bottom flange*
	s	*Thickness web*

*For all cases **Beta** is set as **1,00**.*

6.3.2.3(2)

*When choosing the "**French NF-EN NA method**" the coefficient **f** is calculated in the following way:*

- *In case there are no LTB restraints on the member, the default EN method for **f** is used.*
- *In case there are LTB restraints on the member, **f** is set to **1,00***

6.3.3(5)	*Annex A (Alternative Method 1) is used.*

Netherlands

According to Dutch National Annex NEN-EN 1993-1-1+C2:2011/NB:2011.

Article	Commentary
5.3.2(3)	*When choosing the "**Dutch NEN-EN NA method**" the bow imperfections are determined according to the formula given in the National Annex which can be rewritten as follows:* $e_0 = \alpha * (\bar{\lambda} - 0{,}2) * \frac{W}{A}$ *With :* e_0 *Bow imperfection* *L* *Member system length* α *Imperfection factor* $\bar{\lambda}$ *Relative slenderness* *W* *Section modulus* *A* *Cross-section Area*
5.3.4(3)	*Using the default EN*
6.1(1)	*Using the default EN*
6.1(1)B	*Using the default EN*
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*Using the default EN*
6.3.2.3(2)	*Using the default EN*
6.3.3(5)	*Annex B (Alternative Method 2) is used*

Notes
- The NEN-EN NA specifies several NCCI. The implementation within Scia Engineer concerns the NDP's as defined in the base EN 1993-1-1
- Concerning Annex C & D of the NEN-EN NA: The determination of buckling ratio's and Mcr within Scia Engineer are compatible with the NEN-EN following the 'Principle of Equality'

Austria

According to Austrian National Annex ÖNORM B 1993-1-1:2007.

Article	Commentary
5.3.2(3)	*Using the default EN*
5.3.4(3)	*Using the default EN*
6.1(1)	*Using the default EN*
6.1(1)B	*Using the default EN*
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*Using the default EN*
6.3.2.3(2)	*Using the default EN*
6.3.3(5)	*Annex B (Alternative Method 2) is used.*

Belgium

According to Belgian National Annex NBN EN 1993–1–1 ANB:2010.

Article	Commentary
5.3.2(3)	*Using the default EN*
5.3.4(3)	*Using the default EN*
6.1(1)	*Using the default EN*
6.1(1)B	*Using the default EN*
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*The limit slenderness **Lambda,LT,0** is set to **0,20**.* *The coefficient **Beta** is set to **1,00**.*
6.3.2.3(2)	*Using the default EN*
6.3.3(5)	*Annex A (Alternative Method 1) is used.*

Finland

According to Finnish National Annex SFS EN 1993-1-1 NA.

<table>
<tr><th>Article</th><th>Commentary</th></tr>
<tr><td>5.3.2(3)</td><td>Using the default EN</td></tr>
<tr><td>5.3.4(3)</td><td>Using the default EN</td></tr>
<tr><td>6.1(1)</td><td>Using the default EN</td></tr>
<tr><td>6.1(1)B</td><td>Using the default EN</td></tr>
<tr><td>6.3.2.2(2)</td><td>Using the default EN</td></tr>
<tr><td>6.3.2.3(1)</td><td>In case Lambda,LT,0; Beta and LTB Curves are set to “Finnish SFS-EN NA method” the limit slenderness, Beta and imperfection values are determined as follows:
- For Form code 1 with fabrication rolled, Form code 2 with fabrication rolled or cold formed AND in case the member is uniform (i.e. no haunch or arbitrary member)
$\bar{\lambda}_{LT,0} = 0,4$
$\beta = 0,75.$
- For Form code 1 with fabrication welded AND in case the member is uniform (i.e. no haunch or arbitrary member)
$\bar{\lambda}_{LT,0} = 0,2$
$\beta = 1,0.$
The LTB curves are decided in the following way:
<table>
<tr><th>Cross-section
(constant cross section)</th><th>Limits</th><th>Buckling curve</th></tr>
<tr><td>Form code 1 or 2 with fabrication rolled</td><td>$h/b \leq 2$
$2 < h/b < 3,1$</td><td>b
c</td></tr>
<tr><td>Form code 1 with fabrication welded or Form code 2 with fabrication cold - formed</td><td>$h/b \leq 2$
$2 < h/b < 3,1$</td><td>c
d</td></tr>
</table>
In all other cases the General case is applied instead.</td></tr>
<tr><td>6.3.2.3(2)</td><td>The Modification factor f is set to 1,00.</td></tr>
<tr><td>6.3.3(5)</td><td>Annex B (Alternative Method 2) is used by default.
Annex A (Alternative Method 1) can be set.</td></tr>
</table>

Slovakia

According to Slovak National Annex STN EN 1993-1-1/NA:2007.

Article	Commentary
5.3.2(3)	*Using the default EN*
5.3.4(3)	*Using the default EN*
6.1(1)	*Using the default EN*
6.1(1)B	*Using the default EN*
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*Using the default EN*
6.3.2.3(2)	*Using the default EN*
6.3.3(5)	*Annex B (Alternative Method 2) is used.*

United Kingdom

According to British National Annex BS EN 1993-1-1/NA:2008.

Article	Commentary
5.3.2(3)	*When choosing the "**British BS-EN NA method**" the bow imperfections are determined according to the method given in the National Annex which can be rewritten as follows:* $$e_0 = \alpha * (\bar{\lambda} - 0{,}2) * \frac{W}{A}$$ *With :* e_0 *Bow imperfection* *L* *Member system length* α *Imperfection factor* $\bar{\lambda}$ *Relative slenderness* *W* *Section modulus* *A* *Cross-section Area*
5.3.4(3)	*The coefficient **k** is set to **1,00**.*
6.1(1)	*Using the default EN*
6.1(1)B	*The safety factors are set as follows:* ***Gamma M0** = **1,00*** ***Gamma M1** = **1,00*** ***Gamma M2** = **1,10***

<table>
<tr><td></td><td></td></tr>
<tr><td>6.3.2.2(2)</td><td>Using the default EN</td></tr>
<tr><td>6.3.2.3(1)</td><td>
In case Lambda,LT,0; Beta and LTB Curves are set to “British BS-EN NA method” the limit slenderness, Beta and imperfection values are determined as follows:

For any section with fabrication rolled or Form code 2 with fabrication rolled or cold formed:

$$\bar{\lambda}_{LT,0} = 0,4$$
$$\beta = 0,75.$$

For any section with fabrication welded:

$$\bar{\lambda}_{LT,0} = 0,2$$
$$\beta = 1,0.$$

The LTB curves are decided in the following way:

<table>
<tr><th>Cross-section</th><th>Limits</th><th>Buckling curve</th></tr>
<tr><td>Form code 1 or 2 with fabrication rolled</td><td>$h/b \leq 2$
$2 < h/b < 3,1$
$h/b > 3,1$</td><td>b
c
d</td></tr>
<tr><td>Form code 1 with fabrication welded or Form code 2 with fabrication cold - formed</td><td>$h/b \leq 2$
$2 < h/b < 3,1$</td><td>c
d</td></tr>
<tr><td>Form code 4</td><td></td><td>d</td></tr>
<tr><td>Any other section with fabrication rolled</td><td></td><td>d</td></tr>
</table>
In all other cases the General case is applied instead.
</td></tr>
<tr><td>6.3.2.3(2)</td><td>Using the default EN</td></tr>
<tr><td>6.3.3(5)</td><td>Annex A (Alternative Method 1) is used by default.
Annex B (Alternative Method 2) can be set.</td></tr>
</table>

Ireland

According to Irish National Annex I.S. EN 1993-1-1/NA:2005.

Article	Commentary
5.3.2(3)	*Using the default EN*
5.3.4(3)	*Using the default EN*
6.1(1)	*Using the default EN*
6.1(1)B	*Using the default EN*
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*Using the default EN*
6.3.2.3(2)	*Using the default EN*
6.3.3(5)	*Annex B (Alternative Method 2) is used by default.* *Annex A (Alternative Method 1) can be set.*

Poland

According to Polish National Annex PN-EN 1993-1-1:2006.

Article	Commentary
5.3.2(3)	*Using the default EN* *In addition the default values for Plastic analysis are set equal to the default values of Elastic analysis.*
5.3.4(3)	*Using the default EN*
6.1(1)	*Using the default EN*
6.1(1)B	*The safety factors are set as follows:* ***Gamma M0** = **1,00*** ***Gamma M1** = **1,00*** *When choosing the **"Polish PN-EN NA method"** the value of **Gamma M2** is determined as follows:* $\gamma_{M2} = \min [1,1; 0,9f_u / f_y]$
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*Using the default EN*

6.3.2.3(2)	*Using the default EN*
6.3.3(5)	*Annex B (Alternative Method 2) is used.* *Note: The alternative formula and the special formula for hollow sections are not supported since these concern NCCI and not NDP.*

Greece

According to Greek National Annex ΣΕΠ ΕΛΟΤ 1493-1-1:2009.

Article	Commentary
5.3.2(3)	*Using the default EN*
5.3.4(3)	*Using the default EN*
6.1(1)	*Using the default EN*
6.1(1)B	*Using the default EN*
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*Using the default EN*
6.3.2.3(2)	*Using the default EN*
6.3.3(5)	*Annex A (Alternative Method 1) is used by default.* *Annex B (Alternative Method 2) can be set.*

Slovenia

According to Slovenian National Annex SIST EN 1993-1-1:2005/A101:2006.

Article	Commentary
5.3.2(3)	*Using the default EN*
5.3.4(3)	*Using the default EN*
6.1(1)	*Using the default EN*
6.1(1)B	*Using the default EN*
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*Using the default EN*
6.3.2.3(2)	*Using the default EN*
6.3.3(5)	*Annex B (Alternative Method 2) is used.*

Romania

According to Romanian National Annex SR EN 1993-1-1:2006/NA:2008.

Article	Commentary
5.3.2(3)	*Using the default EN*
5.3.4(3)	*Using the default EN*
6.1(1)	*Using the default EN*
6.1(1)B	*Using the default EN*
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*Using the default EN*
6.3.2.3(2)	*Using the default EN*
6.3.3(5)	*Annex 1 (Alternative Method 1) is used.*

Luxembourg

According to Luxembourgian National Annex EN1993-1-1:2005/AN-LU:2011.

Article	Commentary
5.3.2(3)	*Using the default EN*
5.3.4(3)	*Using the default EN*
6.1(1)	*Using the default EN*
6.1(1)B	*Using the default EN*
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*Using the default EN*
6.3.2.3(2)	*Using the default EN*
6.3.3(5)	*Annex 1 (Alternative Method 1) is used.*

Malaysia

According to Malaysian National Annex MS EN 1993-1-1: 2010.

Article	Commentary
5.3.2(3)	*When choosing the "**Malaysian MS-EN NA method**" the bow imperfections are determined according to the method given in the National Annex which can be rewritten as follows:* $$e_0 = \alpha * (\bar{\lambda} - 0{,}2) * \frac{W}{A}$$ *With :* e_0 *Bow imperfection* *L* *Member system length* α *Imperfection factor* $\bar{\lambda}$ *Relative slenderness* *W* *Section modulus* *A* *Cross-section Area*
5.3.4(3)	*The coefficient **k** is set to **1,00**.*
6.1(1)	*Using the default EN*
6.1(1)B	*The safety factors are set as follows:* ***Gamma M0** = **1,00*** ***Gamma M1** = **1,00*** ***Gamma M2** = **1,20***
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*In case **Lambda,LT,0**; **Beta** and **LTB Curves** are set to "**Malaysian MS-EN NA method**" the limit slenderness, Beta and imperfection values are determined as follows:* - *For any section with fabrication **rolled** or Form code **2** with fabrication **rolled** or **cold formed**:* $$\bar{\lambda}_{LT,0} = 0{,}4$$ $$\beta = 0{,}75.$$ - *For any section with fabrication **welded**:* $$\bar{\lambda}_{LT,0} = 0{,}2$$ $$\beta = 1{,}0.$$ - *The LTB curves are decided in the following way:*

<table>
<tr>
<td></td>
<td>
<table>
<tr><th>Cross-section</th><th>Limits</th><th>Buckling curve</th></tr>
<tr><td>Form code 1 or 2 with fabrication rolled</td><td>$h/b \leq 2$
$2 < h/b < 3,1$
$h/b > 3,1$</td><td>b
c
d</td></tr>
<tr><td>Form code 1 with fabrication welded or Form code 2 with fabrication cold - formed</td><td>$h/b \leq 2$
$2 < h/b < 3,1$</td><td>c
d</td></tr>
<tr><td>Form code 4</td><td></td><td>d</td></tr>
<tr><td>Any other section with fabrication rolled</td><td></td><td>d</td></tr>
</table>
In all other cases the General case is applied instead.
</td>
</tr>
<tr>
<td>6.3.2.3(2)</td>
<td>Using the default EN</td>
</tr>
<tr>
<td>6.3.3(5)</td>
<td>Annex A (Alternative Method 1) is used by default.
Annex B (Alternative Method 2) can be set.</td>
</tr>
</table>

Singapore

According to Singaporean National Annex NA to SS EN 1993-1-1:2010.

Article	Commentary
5.3.2(3)	*When choosing the "**Singaporean SS-EN NA method**" the bow imperfections are determined according to the method given in the National Annex which can be rewritten as follows:* $$e_0 = \alpha * (\bar{\lambda} - 0{,}2) * \frac{W}{A}$$ *With :* e_0 *Bow imperfection* *L* *Member system length* α *Imperfection factor* $\bar{\lambda}$ *Relative slenderness* *W* *Section modulus* *A* *Cross-section Area*
5.3.4(3)	*The coefficient **k** is set to **1,00**.*
6.1(1)	*Using the default EN*
6.1(1)B	*The safety factors are set as follows:* ***Gamma M0*** = ***1,00*** ***Gamma M1*** = ***1,00*** ***Gamma M2*** = ***1,10***
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*In case **Lambda,LT,0**; **Beta** and **LTB Curves** are set to "**Singaporean SS-EN NA method**" the limit slenderness, Beta and imperfection values are determined as follows:* - *For any section with fabrication **rolled** or Form code **2** with fabrication **rolled** or **cold formed**:* $$\bar{\lambda}_{LT,0} = 0{,}4$$ $$\beta = 0{,}75.$$ - *For any section with fabrication **welded**:* $$\bar{\lambda}_{LT,0} = 0{,}2$$ $$\beta = 1{,}0.$$ - *The LTB curves are decided in the following way:*

Cross-section	Limits	Buckling curve
Form code 1 or 2 with fabrication rolled	$h/b \leq 2$ $2 < h/b < 3{,}1$ $h/b > 3{,}1$	b c d
Form code 1 with fabrication welded or Form code 2 with fabrication cold - formed	$h/b \leq 2$ $2 < h/b < 3{,}1$	c d
Form code 4		d
Any other section with fabrication rolled		d

In all other cases the General case is applied instead.

6.3.2.3(2)	*Using the default EN*
6.3.3(5)	*Annex A (Alternative Method 1) is used by default.* *Annex B (Alternative Method 2) can be set.*

Norway

According to Norwegian National Annex NS-EN 1993-1-1:2005/NA:2008.

Article	Commentary
5.3.2(3)	*Using the default EN*
5.3.4(3)	*Using the default EN*
6.1(1)	*Using the default EN*
6.1(1)B	*The safety factors are set as follows:* ***Gamma M0** = **1,05*** ***Gamma M1** = **1,05*** ***Gamma M2** = **1,25***
6.3.2.2(2)	*Using the default EN*
6.3.2.3(1)	*Using the default EN*
6.3.2.3(2)	*Using the default EN*
6.3.3(5)	*Annex A (Alternative Method 1) is used by default.* *Annex B (Alternative Method 2) can be set.*

EN 1993-1-2

Czech Republic

According to Czech National Annex CSN EN 1993-1-2/Z1:2010-03.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*When choosing the "**Czech CSN-EN NA method**" the limit temperature is determined as follows:* *When the check is executed and the member has a class 4 cross-section, the limit temperature **Theta,crit** is taken as **450 °C** in case the member is subjected to a compressive axial load.* *For any other class 4 section (i.e. without compression) **Theta,crit** is taken as **500 °C**.*
4.2.4 (2)	*When choosing the "**Czech CSN-EN NA method**" the critical temperature is determined as follows:* $\theta_{a,cr} = 36{,}5 \ln\left[\frac{1}{1{,}0\,\mu_0^{4{,}167}} - 1\right] + 435$

Germany

According to German National Annex DIN EN 1993-1-2/NA:2010-12.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*Using the default EN*
4.2.4 (2)	*Using the default EN*

France

According to French National Annex NF EN 1993-1-2/NA:2007-10.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*The limit temperature is determined using the default EN.* *For determining the resistance of Class 4 members the French National Annex specifies that Annex E may not be applied.* *In case the **Resistance of Class 4 sections** is set to the "**French NF-EN NA method**" the resistance of the class 4 member is determined according to NF EN 1993-1-2/NA:2007 Annex article 2*
4.2.4 (2)	*When choosing the "**French NF-EN NA method**" the critical temperature is determined as follows:* *For members of class 1 to 3:* - *540 °C for Isostatic beams or elements in tension* - *570 °C for Hyperstatic beams* - *500 °C for Elements in compression or in compression and bending* *For each member the type can be set through the **Fire Resistance additional data**.* *In case the member has class **4** the default EN method is applied.*

Netherlands

According to Dutch National Annex NEN NEN-EN 1993-1-2+C2:2011/Ontw. NB:2014.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*Using the default EN*
4.2.4 (2)	*Using the default EN*

Austria

According to Austrian National Annex ÖNORM B 1993-1-2:2007.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*Using the default EN*
4.2.4 (2)	*Using the default EN*

Belgium

According to Belgian National Annex NBN EN 1993-1-2-ANB:2010.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*Using the default EN*
4.2.4 (2)	*When choosing the "**Belgian NBN-EN NA method**" the critical temperature is determined as follows:* *For members of class 1 to 3:* - *540 °C for Isostatic beams or elements in tension* - *570 °C for Hyperstatic beams* - *500 °C for Elements in compression or in compression and bending* *For each member the type can be set through the **Fire Resistance additional data**.* *In case the member has class **4** the default EN method is applied.*

Finland

According to Finnish National Annex SFS EN 1993-1-2 NA.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*The limit temperature **Theta,crit** is set to **450 °C***
4.2.4 (2)	*Using the default EN*

Slovakia

According to Slovak National Annex STN EN 1993-1-2/NA:2008.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*Using the default EN*
4.2.4 (2)	*Using the default EN*

United Kingdom

According to British National Annex BS EN 1993-1-2/NA:2008.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6.(1)	*Using the default EN*
4.2.4 (2)	*When choosing the "**British BS-EN NA method**", the critical temperature **Theta,a,cr** is determined according to the table given in the National Annex which can be written as follows:*

Description of member	Relative slenderness	Critical Temperature (°C) for utilization factor Mu0					
	Lambda	0,7	0,6	0,5	0,4	0,3	0,2
a) Member loaded by	0,4	485	526	562	598	646	694
compressive axial load	0,6	470	518	554	590	637	686
	0,8	451	510	546	583	627	678
	1	434	505	541	577	619	672
	1,2	422	502	538	573	614	668
	1,4	415	500	536	572	611	666
	1,6	411	500	535	571	610	665
b) Member with following fire data:		558	587	619	654	690	750
- Protection: YES							
- Fire exposure: 3 sides							
c) Member with following fire data:		594	621	650	670	717	775
- Protection: NO							
- Fire exposure: 3 sides							
d) Other		526	558	590	629	671	725

*The Relative slenderness **Lambda** is taken as the maximal Relative slenderness for flexural buckling about either axis.*

*For intermediate values of the utilization factor **Mu0** or the Relative slenderness **Lambda** an interpolation is used.*

Ireland

According to Irish National Annex I.S. EN 1993-1-2/NA:2005.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*Using the default EN*
4.2.4 (2)	*Using the default EN*

Poland

According to Polish National Annex PN-EN 1993-1-2:2007.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*Using the default EN*
4.2.4 (2)	*Using the default EN*

Greece

According to Greek National Annex ΣΕΠ ΕΛΟΤ 1493-1-2:2009.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*Using the default EN*
4.2.4 (2)	*Using the default EN*

Slovenia

According to Slovenian National Annex SIST EN 1993-1-2:2005/A101:2007.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*Using the default EN*
4.2.4 (2)	*Using the default EN*

Romania

According to Romanian National Annex SR EN 1993-1-2:2006/NB:2008.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*Using the default EN*
4.2.4 (2)	*Using the default EN*

Luxembourg

According to Luxembourgian National Annex EN1993-1-2:2005/AN-LU:2011.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*Using the default EN*
4.2.4 (2)	*The simplified approach is supported:* *When choosing the "**Luxembourgian LU-EN NA method**" the critical temperature is determined as follows:* *For members of class 1 to 3:* - *540 °C for Isostatic beams or elements in tension* - *570 °C for Hyperstatic beams* - *500 °C for Elements in compression or in compression and bending* *For each member the type can be set through the **Fire Resistance additional data**.* *In case the member has class **4** the default EN method is applied.*

Note: Additional NCCI's are not supported.

Malaysia

No National Annex currently available, using default EN.

Singapore

According to Singaporean National Annex NA to SS EN 1993-1-2:2009.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6.(1)	*Using the default EN*
4.2.4 (2)	*When choosing the "**Singaporean SS-EN NA method**", the critical temperature **Theta,a,cr** is determined according to the table given in the National Annex which can be written as follows:*

Description of member	Relative slenderness	Critical Temperature (°C) for utilization factor Mu0					
	Lambda	0,7	0,6	0,5	0,4	0,3	0,2
a) Member loaded by compressive axial load	0,4	485	526	562	598	646	694
	0,6	470	518	554	590	637	686
	0,8	451	510	546	583	627	678
	1	434	505	541	577	619	672
	1,2	422	502	538	573	614	668
	1,4	415	500	536	572	611	666
	1,6	411	500	535	571	610	665
b) Member with following fire data: - Protection: YES - Fire exposure: 3 sides		558	587	619	654	690	750
c) Member with following fire data: - Protection: NO - Fire exposure: 3 sides		594	621	650	670	717	775
d) Other		526	558	590	629	671	725

*The Relative slenderness **Lambda** is taken as the maximal Relative slenderness for flexural buckling about either axis.*

*For intermediate values of the utilization factor **Mu0** or the Relative slenderness **Lambda** an interpolation is used.*

Norway

According to Norwegian National Annex NS-EN 1993-1-2:2005/NA:2009.

Article	Commentary
2.3 (1)	*Using the default EN*
2.3 (2)	*Using the default EN*
4.2.3.6 (1)	*Using the default EN*
4.2.4 (2)	*Using the default EN*

EN 1993-1-3

Czech Republic

According to Czech National Annex CSN EN 1993-1-3/Z1:2010-03.

Article	Commentary
2(3)P	*Using the default EN*
3.2.4(1)	*Using the default EN*
10.1.4.2(1)	*Using the default EN*

Germany

According to German National Annex DIN EN 1993-1-3/NA:2010-12.

Article	Commentary
2(3)P	*The Safety factors are set as follows:* *Gamma M0 =* ***1,10*** *Gamma M1 =* ***1,10*** *Gamma M2 =* ***1,25***
3.2.4(1)	*The member Steel Core Limits are set as follows:* *Minimal =* ***0,45*** *mm* *Maximal =* ***3,00*** *mm*
10.1.4.2(1)	*Using the default EN*

France

According to French National Annex NF EN 1993-1-3/NA:2007-10.

Article	Commentary
2(3)P	*Using the default EN*
3.2.4(1)	*Using the default EN*
10.1.4.2(1)	*Using the default EN*

Netherlands

According to Dutch National Annex NEN-EN 1993-1-3:2006/NB:2011.

Article	Commentary
2(3)P	*Using the default EN*
3.2.4(1)	*The member Steel Core Limits are set as follows:* *Minimal =* ***0,95*** *mm* *Maximal =* ***8,00*** *mm*
10.1.4.2(1)	*Using the default EN*

Austria

According to Austrian National Annex ÖNORM B 1993-1-3:2007.

Article	Commentary
2(3)P	*Using the default EN*
3.2.4(1)	*Using the default EN*
10.1.4.2(1)	*When choosing the "**Austrian ÖNORM-EN NA method**" the value of **Chi,**$_{LT}$ is determined using the default EN method but using the actual buckling curve for buckling around the z-z axis.*

Belgium

According to Belgian National Annex NBN EN 1993-1-3 ANB:2011.

Article	Commentary
2(3)P	*Using the default EN*
3.2.4(1)	*Using the default EN*
10.1.4.2(1)	*Using the default EN*

Finland

According to Czech Finnish National Annex SFS EN 1993-1-3 NA.

Article	Commentary
2(3)P	*Using the default EN*
3.2.4(1)	*Using the default EN*
10.1.4.2(1)	*Using the default EN*

Slovakia

According to Slovak National Annex STN EN 1993-1-3/NA:2010.

Article	Commentary
2(3)P	*The safety factors are set as follows:* ***Gamma M0** = **1,00*** ***Gamma M1** = **1,10*** ***Gamma M2** = **1,25***
3.2.4(1)	*Using the default EN*
10.1.4.2(1)	*Using the default EN*

United Kingdom

According to British National Annex BS EN 1993-1-3/NA:2009.

Article	Commentary
2(3)P	*Using the default EN*
3.2.4(1)	*The member Steel Core Limits are set as follows:* *Minimal = **0,35** mm* *Maximal = **15,00** mm*
10.1.4.2(1)	*When choosing the "**British BS-EN NA method**" the value of* ***Chi,$_{LT}$*** *is determined using the General Case for LTB i.e. EN 1993-1-1 article 6.3.2.2.*

Ireland

According to Irish National Annex I.S. EN 1993-1-3/NA:2006.

Article	Commentary
2(3)P	*Using the default EN*
3.2.4(1)	*Using the default EN*
10.1.4.2(1)	*Using the default EN*

Poland

According to Polish National Annex PN-EN 1993-1-3:2008.

Article	Commentary
2(3)P	*Using the default EN*
3.2.4(1)	*Using the default EN*
10.1.4.2(1)	*Using the default EN*

Greece

According to Greek National Annex ΣΕΠ ΕΛΟΤ 1493-1-3:2009.

Article	Commentary
2(3)P	*Using the default EN*
3.2.4(1)	*Using the default EN*
10.1.4.2(1)	*Using the default EN*

Slovenia

No National Annex currently available, using default EN.

Romania

According to Romanian National Annex SR EN 1993-1-3:2007/NB:2008.

Article	Commentary
2(3)P	*The safety factors are set as follows:* ***Gamma M0*** = ***1,00*** ***Gamma M1*** = ***1,10*** ***Gamma M2*** = ***1,25***
3.2.4(1)	*Using the default EN*
10.1.4.2(1)	*Using the default EN*

Luxembourg

According to Luxembourgian National Annex EN1993-1-3:2006/AN-LU:2011.

Article	Commentary
2(3)P	*Using the default EN*
3.2.4(1)	*Using the default EN*
10.1.4.2(1)	*Using the default EN*

Malaysia

No National Annex currently available, using default EN.

Singapore

According to Singaporean National Annex NA to SS EN 1993-1-3:2010.

Article	Commentary
2(3)P	*Using the default EN*
3.2.4(1)	*The member Steel Core Limits are set as follows:* *Minimal* = ***0,35*** *mm* *Maximal* = ***15,00*** *mm*
10.1.4.2(1)	*When choosing the "**Singaporean SS-EN NA method**" the value of* ***Chi,*** $_{LT}$ *is determined using the General Case for LTB i.e. EN 1993-1-1 article 6.3.2.2.*

Norway

According to Norwegian National Annex NS-EN 1993-1-3:2006/NA:2009.

Article	Commentary
2(3)P	*The Safety factors are set as follows:* *Gamma M0 =* ***1,05*** *Gamma M1 =* ***1,05*** *Gamma M2 =* ***1,25***
3.2.4(1)	*Using the default EN*
10.1.4.2(1)	*Using the default EN*

EN 1993-1-5

Czech Republic

According to Czech National Annex CSN EN 1993-1-5/Z1:2010-03.

Article	Commentary
5.1(2)	*Using the default EN* *By default* ***Eta*** *is set to* ***1,20*** *and can manually be changed if required.*

Germany

According to German National Annex DIN EN 1993-1-5/NA:2010-12.

Article	Commentary
5.1(2)	*Using the default EN* *By default* ***Eta*** *is set to* ***1,20*** *and can manually be changed if required.*

France

According to French National Annex NF EN 1993-1-5/NA:2007-10.

Article	Commentary
5.1(2)	*Using the default EN* *By default* ***Eta*** *is set to* ***1,20*** *and can manually be changed if required.*

Netherlands

According to Dutch National Annex NEN-EN 1993-1-5:2006/NB:2011.

Article	Commentary
5.1(2)	*Using the default EN* *By default* ***Eta*** *is set to* ***1,20*** *and can manually be changed if required.*

Austria

According to Austrian National Annex ÖNORM B 1993-1-5:2008.

Article	Commentary
5.1(2)	*Using the default EN* *By default* ***Eta*** *is set to* ***1,20*** *and can manually be changed if required.*

Belgium

According to Belgian National Annex prNBN EN 1993-1-5 ANB:2010.

Article	Commentary
5.1(2)	*Using the default EN* *By default **Eta** is set to **1,20** and can manually be changed if required.*

Finland

According to Finnish National Annex SFS EN 1993-1-5 NA.

Article	Commentary
5.1(2)	*Using the default EN* *By default **Eta** is set to **1,20** and can manually be changed if required.*

Slovakia

According to Slovak National Annex STN EN 1993-1-5/NA:2010.

Article	Commentary
5.1(2)	*Using the default EN* *By default **Eta** is set to **1,20** and can manually be changed if required.*

United Kingdom

According to British National Annex BS EN 1993-1-5/NA:2008.

Article	Commentary
5.1(2)	*The factor **Eta** is set to **1,00**.*

Ireland

According to Irish National Annex I.S. EN 1993-1-5/NA:2006.

Article	Commentary
5.1(2)	*The factor **Eta** is set to **1,00**.*

Poland

According to Polish National Annex PN-EN 1993-1-5:2008.

Article	Commentary
5.1(2)	*Using the default EN* *By default **Eta** is set to **1,20** and can manually be changed if required.*

Greece

According to Greek National Annex ΣΕΠ ΕΛΟΤ 1493-1-5:2009.

Article	Commentary
5.1(2)	*Using the default EN* *By default **Eta** is set to **1,20** and can manually be changed if required.*

Slovenia

No National Annex currently available, using default EN.

Romania

According to Romanian National Annex SR EN 1993-1-5:2007/NA:2008.

Article	Commentary
5.1(2)	*Using the default EN* *By default **Eta** is set to **1,20** and can manually be changed if required.*

Luxembourg

According to Luxembourgian National Annex EN1993-1-5:2006/AN-LU:2011.

Article	Commentary
5.1(2)	*Using the default EN* *By default **Eta** is set to **1,20** and can manually be changed if required.*

Malaysia

No National Annex currently available, using default EN.

Singapore

According to Singaporean National Annex NA to SS EN 1993-1-5:2009.

Article	Commentary
5.1(2)	*The factor **Eta** is set to **1,00**.*

Norway

According to Norwegian National Annex NS-EN 1993-1-5:2006/NA:2009.

Article	Commentary
5.1(2)	*Using the default EN* *By default **Eta** is set to **1,20** and can manually be changed if required.*

EN 1993-1-8

Czech Republic

According to Czech National Annex CSN EN 1993-1-8/Z2:2011-07.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN*
6.2.7.2(9)	*Using the default EN*

Germany

According to German National Annex DIN EN 1993-1-8/NA:2010-12.

Article	Commentary
2.2(2)	*For Gamma M0, Gamma M1 and Gamma M2 reference is made to the German National Annex settings for EN 1993-1-1.*
3.4.2(1)	*Using the default EN* *A reduction coefficient can be manually set to reduce the Preload Force if required.*
6.2.7.2(9)	*Using the default EN*

France

According to French National Annex NF EN 1993-1-8/NA:2007-07.

Article	Commentary
2.2(2)	*The Partial Safety Factors are set as follows:* *Gamma M0 =* ***1,00*** *Gamma M1 =* ***1,00*** *Gamma M2 =* ***1,25*** *Gamma M3 =* ***1,10*** *Gamma c =* ***1,50***
3.4.2(1)	*Using the default EN* *A reduction coefficient can be manually set to reduce the Preload Force if required.*
6.2.7.2(9)	*When choosing the "****French NF-EN NA method****" the alternative method given in the French National Annex which starts the triangular limit from the first inner bolt row instead of from the bolt row farthest away from the centre of compression is supported for beam-column connections.* *As specified, in the Annex, both the standard and this alternative triangular limit are checked and the one leading to the lowest moment resistance is used.*

Netherlands

According to Dutch National Annex NEN-EN 1993-1-8+C2:2011/NB:2011.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN*
6.2.7.2(9)	*When choosing the "****Dutch NEN-EN NA method****" the default EN method is applied in which the factor of* ***1,9*** *is replaced by* ***1,8****.*

Austria

According to Austrian National Annex ÖNORM B 1993-1-8:2006.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN*
6.2.7.2(9)	*Using the default EN*

Belgium

According to Belgian National Annex NBN EN 1993-1-8-ANB:2010.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN* *A reduction coefficient can be manually set to reduce the Preload Force if required.*
6.2.7.2(9)	*Using the default EN*

Finland

According to Finnish National Annex SFS EN 1993-1-8 NA.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN*
6.2.7.2(9)	*Using the default EN*

Slovakia

According to Slovak National Annex STN EN 1993-1-8/NA:2008.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN* *A reduction coefficient can be manually set to reduce the Preload Force if required.*
6.2.7.2(9)	*Using the default EN*

United Kingdom

According to British National Annex BS EN 1993-1-8/NA:2008.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN*
6.2.7.2(9)	*Using the default EN* *Note: The limit of 1,9 $F_{t,Rd}$ is used to check if failure mode 3 is limiting. In case this occurs the triangular limit is applied. The additional formulas given in the UK NA for tfc and tp concern the same limit but written in a different way. Therefore no additional test is applied.*

Ireland

According to Irish National Annex I.S. EN 1993-1-8/NA:2005.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN* *A reduction coefficient can be manually set to reduce the Preload Force if required.*
6.2.7.2(9)	*Using the default EN* *Note: The limit of 1,9 $F_{t,Rd}$ is used to check if failure mode 3 is limiting. In case this occurs the triangular limit is applied. The additional formulas given in the IS NA for tfc and tp concern the same limit but written in a different way. Therefore no additional test is applied.* *Note that the IS NA uses a wrong wording: it specifies that equation 6.26 may be used in case tp and tfc are smaller than the given limits, this should be bigger than the given limits.*

Poland

According to Polish National Annex PN-EN 1993-1-8:2006.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN* *A reduction coefficient can be manually set to reduce the Preload Force if required.*
6.2.7.2(9)	*Using the default EN*

Greece

According to Greek National Annex ΣΕΠ ΕΛΟΤ 1493-1-8:2009.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN* *A reduction coefficient can be manually set to reduce the Preload Force if required.*
6.2.7.2(9)	*Using the default EN*

Slovenia

According to Slovenian National Annex SIST EN 1993-1-8:2005/A101:2006.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN* *A reduction coefficient can be manually set to reduce the Preload Force if required.*
6.2.7.2(9)	*Using the default EN*

Romania

According to Romanian National Annex SR EN 1993-1-8:2006/NB:2008.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN* *A reduction coefficient can be manually set to reduce the Preload Force if required.*
6.2.7.2(9)	*Using the default EN*

Luxembourg

According to Luxembourgian National Annex EN1993-1-8:2005/AN-LU:2011.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN* *A reduction coefficient can be manually set to reduce the Preload Force if required.*
6.2.7.2(9)	*Using the default EN*

Malaysia

No National Annex currently available, using default EN.

Singapore

According to Singaporean National Annex NA to SS EN 1993-1-8:2010.

Article	Commentary
2.2(2)	*Using the default EN*
3.4.2(1)	*Using the default EN*
6.2.7.2(9)	*Using the default EN* *Note: The limit of 1,9 $F_{t,Rd}$ is used to check if failure mode 3 is limiting. In case this occurs the triangular limit is applied. The additional formulas given in the UK NA for tfc and tp concern the same limit but written in a different way. Therefore no additional test is applied.*

Norway

According to Norwegian National Annex NS-EN 1993-1-8:2005/NA:2009.

Article	Commentary
2.2(2)	*The Safety factors are set as follows:* *Gamma M0 =* ***1,05*** *Gamma M1 =* ***1,05*** *The other factors are using the default EN.*
3.4.2(1)	*Using the default EN* *A reduction coefficient can be manually set to reduce the Preload Force if required.*
6.2.7.2(9)	*Using the default EN*