DS/EN 1993-1-8 DK NA:2013

National Annex to
Eurocode 3: Design of steel structures -
Part 1-8: Design of joints

Foreword

This national annex (NA) is a revision of DS/EN 1993-1-8 DK NA:2007 and replaces the latter on 2013-06-15. For a transition period until 2013-09-01, this National Annex as well as the previous National Annex will be applicable. In addition to minor editorial changes, the factor $\gamma_0$ has been introduced in clause 2.2(2).

Previous versions, addenda and an overview of all National Annexes can be found at www.eurocodes.dk

This NA lays down the conditions for the implementation in Denmark of EN 1993-1-8 for construction works in conformity with the Danish Building Act or the building legislation. Other parties can put this NA into effect by referring thereto.

This NA includes:

- an overview of possible national choices and clauses containing complementary information;
- national choices;
- complementary (non-contradictory) information which may assist the user of the Eurocode.

The numbering refers to the clauses of the Eurocode where national choices have been made and/or complementary information is given. To the extent possible, headings or subjects are identical to the headings given in the Eurocode. A more explicit heading may have been added, if appropriate.
# Overview of possible national choices and clauses containing complementary information

The list below identifies the clauses where national choices are possible and the applicable/not applicable informative annexes. Furthermore, clauses giving complementary information are identified. Complementary information is given at the end of this document.

<table>
<thead>
<tr>
<th>Clause</th>
<th>Subject</th>
<th>National choice</th>
<th>Complementary information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.6</td>
<td>Normative references, Reference standards, Group 6: Rivets</td>
<td>No further information</td>
<td></td>
</tr>
<tr>
<td>2.2(2)</td>
<td>Basis of design, General requirements</td>
<td>National choice</td>
<td></td>
</tr>
<tr>
<td>3.1.1(3)</td>
<td>Connections made with bolts, rivets or pins, Bolts, nuts and washers, General</td>
<td>No further information</td>
<td></td>
</tr>
<tr>
<td>3.4.2(1)</td>
<td>Connections made with bolts, rivets or pins, Categories of bolted connections, Tension connections</td>
<td>No further information</td>
<td>Complementary information</td>
</tr>
<tr>
<td>5.2.1(2)</td>
<td>Analysis, classification and modelling, Classification of joints, General</td>
<td>No further information</td>
<td></td>
</tr>
<tr>
<td>6.2.7.2(9)</td>
<td>Structural joints connecting H or I sections, Design Resistance, Design moment resistance of beam-to-column joints and splices</td>
<td>No further information</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE**

Unchanged:

Recommendations, if any, in the Eurocode are followed. No further information

The Eurocode allows further information. No further information is given.
National choices

2.2(2) Basis of design, General requirements

The below expressions for $\gamma_{Mi}$ are used, including the factor ($\gamma_0$) for the partial factors for strength parameters and resistances, cf. National Annex to EN 1990, Table A1.2(B+C):

$\gamma_{M2} = 1,35 \cdot \gamma_0 \cdot \gamma_3$
$\gamma_{M3} = 1,35 \cdot \gamma_0 \cdot \gamma_3$
$\gamma_{M3,ser} = 1,20 \cdot \gamma_0 \cdot \gamma_3$
$\gamma_{M4} = 1,10 \cdot \gamma_0 \cdot \gamma_3$
$\gamma_{M5} = 1,10 \cdot \gamma_0 \cdot \gamma_3$
$\gamma_{M6,ser} = 1,10 \cdot \gamma_0 \cdot \gamma_3$
$\gamma_{M7} = 1,20 \cdot \gamma_0 \cdot \gamma_3$

The factor $\gamma_0$ takes account of the combination of actions, cf. National Annex to EN 1990, Table A1.2(B+C).

<table>
<thead>
<tr>
<th>Limit state</th>
<th>STR/GEO</th>
<th>STR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combination of actions</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>$\gamma_0$</td>
<td>1,0</td>
<td>1,0</td>
</tr>
</tbody>
</table>

The factor $\gamma_3$ takes account of the level of checking of the product. The reduced level of checking is not used.

- Extended level of checking: $\gamma_3 = 0,95$
- Normal level of checking: $\gamma_3 = 1,00$

The partial factors are determined in accordance with the National Annex to EN 1990, Annex F, where $\gamma_M = \gamma_1 \gamma_2 \gamma_3 \gamma_4$.

- $\gamma_1$ takes into account the type of failure
- $\gamma_2$ takes into account the uncertainty related to the design model
- $\gamma_3$ takes into account the scope of checking
- $\gamma_4$ takes into account the variation of the strength parameter or resistance.

When determining $\gamma_1$, the following types of failure have been assumed:

- $\gamma_{M4}$: Warning of failure with residual resistance
- $\gamma_{M5}$: Warning of failure with residual resistance
- $\gamma_{M6,ser}$: Warning of failure with residual resistance
- $\gamma_{M3,ser}$: Warning of failure without residual resistance
- $\gamma_{M7}$: Warning of failure without residual resistance
- $\gamma_{M2}$: No warning of failure
- $\gamma_{M3}$: No warning of failure

For accidental and seismic design situations the following values are used:

$\gamma_{Mi} = 1,0$ where $i = 2, 3, 3,ser, 4, 5, 6,ser$ or $7$
Complementary (non-contradictory) information

3.4.2(1) Connections made with bolts, rivets or pins, Categories of bolted connections, Tension connections
Preloading of bolts to consider other aspects than resistance and stiffness should be determined, as required, on the basis of an assessment of each individual case.