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DS/EN 1993-1-9:2025 DK NA:202x

**National Annex to: Eurocode 3 - Design of steel structures -
Part 1-9: Fatigue**

**Nationalt Anneks til: Eurocode 3 - Stålkonstruktioner -
Del 1-9: Udmattelse**

Foreword

Published [måned og år].

This National Annex (NA) to EN 1993-1-9:2025 forms part of the Danish national annexes to the second generation of Eurocodes.

This NA supersedes DS/EN 1993-1-9 DK NA:2007 upon its implementation in the Building Regulations (Bygningsreglementet 2018 – BR18) as an appendix.

During the transition period stated in the Building Regulations, both the first generation and the second generation of the Eurocodes and NAs may be applied.

This NA cannot be used in conjunction with the first generation of Eurocodes.

This NA lays down the conditions for the Danish implementation of DS/EN 1993-1-9:2025 for construction works in conformity with the Danish Building Regulations; Bygningsreglementet 2018 (BR18). Other parties may bring this NA into force by reference.

The Eurocodes establish the principle that certain parameters are left open for national determination. These parameters are referred to as *Nationally Determined Parameters* (NDP) and specifies the nationally applicable values, classes or methods. Furthermore, the NA may provide *Non-Contradictory, Complementary Information* (NCCI), i.e. additional guidance and alternative methods or values that support the application of the Eurocode without altering or contradicting its provisions.

Further, this National Annex includes NOTES. Notes have the status of guidance and provide additional information intended to assist the understanding or use of text of the national annex.

In conformity with the Danish Building regulations, the verbal forms used in this Eurocode and NA are to be understood as follows:

- “shall” expresses a requirement to be followed
- “should” expresses a recommendation. Alternative approaches could be used if technically justified
- “may” expresses permission within the limits of Danish Building Regulations
- “can” expresses a possibility or capability
- “is/are” expresses a statement of certainty or a fact

This NA includes:

- Foreword;
- An overview of clauses with possible Nationally Determined Parameters (NDPs) and of Non-Contradictory Complementary Information (NCCI);
- National choice to national Determined Parameters (NDP), and Non-Contradictory Complementary Information (NCCI)

Valid versions of the NAs as well as previous versions, addenda can be found at www.bygningsreglementet.dk.

Overview of possible Nationally Determined Parameters (NDPs) and Non-Contradictory Complementary Information (NCCI)

The list below identifies the clauses where Nationally Determined Parameters (NDPs) are possible, and whether a national choice has been made, and if an informative annex is applicable or not applicable. Furthermore, clauses providing complementary information (NCCI) are identified in the list below.

Clause	Subject	Nationally Determined Parameter	Non-Contradictory Complementary Information
4(6)	Basis of fatigue design	Unchanged	
5(4)	Fatigue design concepts	National choice	
5(6)	Fatigue design concepts	National choice	
6.1(3)	Design stress methods	Unchanged	
6.2(3)	Verification methods	Unchanged	
7.1(5)	Calculations of nominal stresses	National choice	
8.2(1),	Classification of constructional details	National choice	
8.2(1), NOTE 5	Classification of constructional details	Unchanged	
8.3.2(1)	Post-fabrication treatment	Unchanged	
9.1(1)	Verification with respect to elastic behaviour	Unchanged	
B.2(3)	Scope and field of application	Unchanged	
B.2(4)	Scope and field of application	Unchanged	
C.2(6)	Scope and field of application	Unchanged	
F.2(2)	Scope and field of application	Unchanged	
F.2(5)	Scope and field of application	Unchanged	
F.3.2(1)	Calculation of the stress ranges	Unchanged	
F.4.2.1(3)	Classification of constructional details	Unchanged	
Annex D	Recommendation for magnification factors k_1 and stress factors k_f	Informative	
Annex E	Recommendation for preloaded bolts and rods subject to tension	Informative	

Clause	Subject	Nationally Determined Parameter	Non-Contradictory Complementary Information
Annex F	Fatigue design of welded joints subjected to High Frequency Mechanical Impact Treatment	Informative	
Annex G	Hot spot stress reference detail method	Informative	
NOTE Unchanged: Recommendations in the Eurocode to be followed. National choice: A National Determined Parameter is chosen and defined. Complementary information: (Non-contradictory) complementary information on how to use the Eurocode. Normative: The Annex shall be used. Informative: The Annex may be used. Not applicable: The Annex cannot be used. No further information: The Eurocode allows further information. No further information is given.			

National Determined Parameter (NDP) and Non-contradictory complementary Information (NCCI)

5(4) Fatigue design concepts

(NDP)

The inspection interval shall be determined on the basis of the fatigue life obtained using the safe life concept, γ_M , by applying the partial factor γ_{Mf} , which is relevant for this particular method, to the fatigue strength.

When determining the inspection interval, a statistical assessment of the probability of fatigue damage shall be included using the inspection method applied.

5(6) Fatigue design concepts

(NDP)

Table 5.1 NA — Recommended values of the partial factor for the fatigue resistance γ_{Mf}

Design concept	Consequence of failure		
	Low consequence	Medium consequence	High consequence
Safe life	1,30	1,45	1,60
Dama tolerant	1,00	1,00	1,00

7.1(5) Calculations of nominal stresses

(NDP)

The reduced stress method according to EN 1993-1-5 shall not be used, as it does not take into account the actual stress distribution in the plate. Instead, a cross-section class 4 element shall be analysed for the actual elastic stresses in the element, including stresses from initial buckling.

8.2(1) Classification of constructional details

(NDP)

Special fatigue strength categories for particular details are allowed, if the fatigue strength is verified in accordance with the guidelines given in 8.2(1).