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DS/EN 1999-1-3:2023 DK NA:202x

**National Annex to: Eurocode 9 - Design of aluminium structures -
Part 1-3: Structures susceptible to fatigue**

**Nationalt Anneks til: Eurocode 9 - Aluminiumkonstruktioner -
Del 1-3: Udmattelsesfølsomme konstruktioner**

Foreword

Published [måned og år].

This National Annex (NA) to EN 1999-1-3:2023 forms part of the Danish national annexes to the second generation of Eurocodes.

This NA supersedes DS/EN 1999-1-3 DK NA:2011 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 1999-1-3:2023 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 the 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
4.1(2)	Basic rules	Unchanged	
4.3.1(2)	Sources of fatigue loading	Unchanged	
4.3.2(5)	Derivation of fatigue loading	Unchanged	
4.4(1)	Partial factors for fatigue loads	National choice	
5(1)	Materials, constituent products, and connecting devices	Unchanged	
6(2)	Durability	Unchanged	
7.8.1(1)	General	Unchanged	
7.8.2(1)	Design value of stress range	Unchanged	
8.1.3(1)	Constructional details	Unchanged	
8.2.1(2)	Classified constructional details	Unchanged	
8.2.1(7)	Classified constructional details	Unchanged	
8.2.1(10)	Classified constructional details	Unchanged	
A.4.1(4)	General	Unchanged	
A.4.1(5)	General	Unchanged	
E.2(6)	Scope and field of application	Unchanged	
E.2(8)	Scope and field of application	Unchanged	
I.3.2(1)	Welded material	Unchanged	
I.3.3.2(1)	Pinned joints	Unchanged	
I.3.4(1)	Adhesively bonded castings	Unchanged	
L.4.2(5)	DTD-I	Unchanged	
L.5(2)	Start of inspection and inspection intervals	National choice	
L.6(3)	Partial factors γ_{Mf} and the values of D_{Lim}	National choice	

Clause	Subject	Nationally Determined Parameter	Non-Contradictory Complementary Information
L.6(4)	Partial factors γ_{Mf} and the values of D_{Lim}	Unchanged	
L.6(5)	Partial factors γ_{Mf} and the values of D_{Lim}	National choice	
L.7.1(1)	Service category	Unchanged	
Annex B	Guidance on assessment of crack growth by fracture mechanics	Informative	
Annex C	Testing for fatigue design	Informative	
Annex D	Stress analysis	Informative	
Annex E	Adhesively bonded joints	Informative	
Annex F	Low cycle fatigue range	Informative	
Annex G	Influence of applied stress ratio R	Informative	
Annex H	Fatigue strength improvement of welds	Informative	
Annex I	Castings	Informative	
Annex J	Detail category tables	Normative	
Annex K	Hot spot reference detail method	Informative	
Annex L	Guidance on use of design methods, selection of partial factors, limits for damage values, inspection intervals, and execution parameters if Annex J is adopted	Normative	
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)

4.4(1) Partial factors for fatigue loads

(NDP)

Partial factors for fatigue loads are given in DS/EN 1990.

L.5(2) Start of inspection and inspection intervals

(NDP)

The inspection interval should be determined on the basis of the fatigue life obtained using the safe life method, 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 should be included using the inspection method applied.

L.6(3) Partial factors γ_{Mf} and the values of D_{Lim}

(NDP)

Table L.2 DK NA — Recommended values of the partial factor for the fatigue resistance γ_{Mf} .

Design concept	Consequence of failure		
	CC1	CC2a/b	CC3/CC4
SLD-I/II	1,30	1,45	1,60
DTD-I/II	1,00	1,00	1,00

L.5(2) Partial factors γ_{Mf} and the values of D_{Lim}

(NDP)

$D_{Lim} = 1,0$ is applied.