



Ineqarnermut, Attaveqaasersuutitut Isorliunerusunullu Naalakkersuisoqarfik
Ministry of Housing, Infrastructure and Outlying Districts

EN 1990 GL NA:2025

National Annex to
Eurocode 0: Basis of structural design

Foreword

This Greenlandic National Annex (GL NA) replaces EN 1990 GL NA:2024.

This Annex is based on DS/EN 1990 DK NA:2024.

Scope

This Annex is adapted to national, geographical and climatic conditions as well as national legislation and specifies how EN 1990:2007 including amendments are to be applied in Greenland.

The Annex provides Greenlandic national choices and complementary information. For any complementary information, it is specified whether it is normative or informative. Normative information comprises requirements to be followed.

The numbering in the Annex refers to the numbering in EN 1990:2007 or DS/EN 1990 DK NA:2024.



Overview of Greenlandic national choices and complementary information

DS/EN 1990 DK NA:2024 is applicable with the following national choices and complementary information:

Clause	Subject	Change
DK NA	References in DK NA	National choice
A1.2.2(1)	Values of ψ factors	National choice
A1.3.1(5)	Design values of actions in persistent and transient design situations: Choice of design approach to geotechnical actions	National choice
A1.3.2(1)	Design values of actions in accidental and seismic design situations	National choice
A1.3.1(8)	Design values of actions in persistent and transient design situations – Load reduction factors in case of fire	Complementary information Normative
Annex B B4 Subclause (4)	Design supervision	Complementary information Normative
Annex B B5, Table B5c GL NA	Minimum requirements for general execution inspection	Complementary information Normative



National choices

References in DK NA

References in DS/EN 1990 DK NA:2024 to other Danish National Annexes are replaced by references to corresponding Greenlandic National Annexes. Where these do not exist, the Danish National Annexes apply.

A1.2.2(1) Values of ψ factors for buildings

Values of ψ factors for buildings are given in Table A1.1 GL NA.

Table A1.1 DK NA ψ factors for buildings

Action	ψ_0	ψ_1	ψ_2
Imposed loads in buildings, see EN 1991-1-1			
Category A: domestic, residential areas	0,5	0,3	0,2
Category B: office areas	0,6	0,4	0,2
Category C: congregation areas	0,6	0,6	0,5
Category D: shopping areas	0,6	0,6	0,5
Category E: storage areas	0,8	0,8	0,7
Category F: traffic areas, vehicle weight ≤ 30 kN	0,6	0,6	0,5
Category G: traffic areas, 30 kN < vehicle weight ≤ 160 kN	0,6	0,4	0,2
Category H: roofs	0	0	0
Snow loads	0,7	0,5	0,2
Wind actions	0,6	0,2	0
Thermal actions	0,6	0,5	0

A1.3.1(5) Design values of actions in persistent and transient design situations – Choice of design approach for geotechnical actions

Design approach 2 is used for piles and ground anchors, see EN 1997-1 GL NA:2024. Design approach 3 is used for spread foundations, earth pressure and stability, see EN 1997-1 GL NA:2024.

A1.3.2(1) Design values of actions in accidental and seismic design situations

Combinations of actions are listed in Table A.1.3 GL NA.

Table A1.3 DK NA Design values of actions for use in the combination of actions in accidental and seismic design situations

Design situations	Permanent actions		Leading accidental or seismic action	Accompanying variable actions ¹⁾	
	Unfavourable	Favourable		Main (if any)	Other
Fire (Expression 6.11a/b)	$G_{kj,sup}$	$G_{kj,inf}$	A_d	$\psi_{1,1} Q_{k,1}$	$\psi_{2,i} Q_{k,i}$
Accidental (Expression 6.11a/b)	$G_{kj,sup}$	$G_{kj,inf}$	A_d	$\psi_{1,1} Q_{k,1}$	$\psi_{2,i} Q_{k,i}$



Seismic ²⁾ (Expression 6.12a/b)	$G_{kj,sup}$	$G_{kj,inf}$	A_d	$\psi_{2,i} Q_{k,i}$
<p>¹⁾ Variable actions are those considered in Table A.1.1 GL NA.</p> <p>²⁾ Seismic actions are determined according to EN 1998-1 GL NA.</p> <p>Seismic actions include actions taken into account to ensure the structure's strength and stability against ground motions. Seismic actions are the smallest horizontal actions assumed to affect a structure.</p> <p>NOTE: Seismic actions are used to evaluate the structure for the seismic design situation. Seismic actions do not include imperfections of the structure, as imperfections are considered according to rules specified in EN 1992 to EN 1999, including Greenlandic National Annexes.</p>				



Complementary information Normative

A1.3.1(8) Design values of actions in persistent and transient design situations – Load reduction factors in case of fire

For member analysis according to EN 1992-1-2 GL NA, EN 1993-1-2 GL NA, EN 1994-1-2 GL NA, EN 1995-1-2 GL NA, EN 1996-1-2 GL NA and EN 1999-1-2 GL NA, NOTE 1 to 2.4.2(3) of these Annexes should be replaced by:

NOTE 1: An example of the relationship between the reduction factor, η_{fi} , and the load factor, $Q_{k,1}/G_k$, by different values of the combination factor, ψ_{fi} , are shown in Figure 2.1. Curves show minimum values calculated using expressions (2.xa) and (2.xb), where the following partial factors on actions, cf. EN1990 GL NA:2024, have been applied for consequence class CC2 (where $K_{FI} = 1$), and unfavourable effect of actions:

- expression (2.xa): $\gamma_G = 1,2 \cdot K_{FI} = 1,2$; $\gamma_{Q,1} = 0$
- expression (2.xb): $\zeta = 1$; $\gamma_G = 1,0 \cdot K_{FI} = 1,0$; $\gamma_{Q,1} = 1,5$

Expression (2.xa) only gives smaller values than Expression (2.xb) in the case of very small values of load conditions ($Q_k/G_k < 0.133$ for all consequence classes). In most practical cases, the load conditions are higher, and therefore Expression (2.xa) can be neglected.

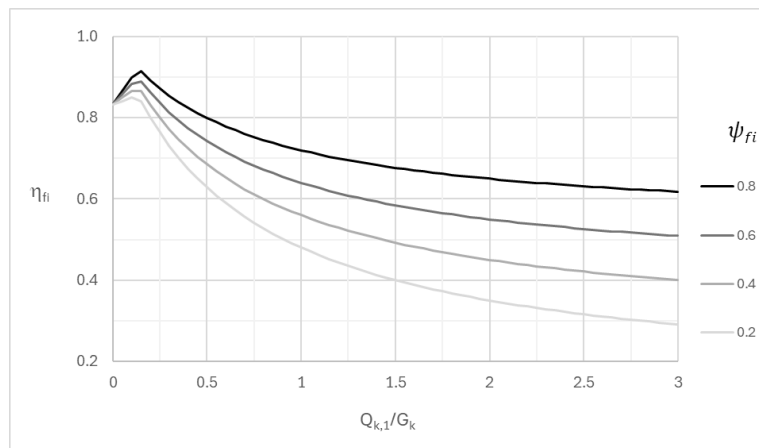


Figure A1.3.1 GL NA – Variation of the reduction factor η_{fi} with the load condition $Q_{k,1}/G_k$ according to expressions (2.xa) and (2.xb) for different values of action combination factor ψ_{fi}

In the expression designations '(2.xa)' and '(2.xb)', x refers to expression numbers in EN 1992-1-2 GL NA, EN 1993-1-2 GL NA, EN 1994-1-2 GL NA, EN 1995-1-2 GL NA, EN 1996-1-2 GL NA and EN 1999-1-2 GL NA; e.g. Expression (2.5a) in EN 1993-1-2 GL NA and Expression (2.9a) in EN 1995 GL NA.

Annex B Management of structural reliability for construction works

Annex B in DS/EN 1990 DK NA:2024 may be used with the following modifications:

- B4 DK NA (Design supervision), Clause 4
- B5 GL NA (Inspection of performance), Table B5c GL NA.

B4 GL NA Design supervision

(4) For structures in consequence class CC3, where the consequences of failure are particularly serious, special requirements apply to supervision.



B5 Execution inspection

B5.2 General inspection

Table B5c DK NA Minimum requirements for general inspection during execution

Consequence class ¹⁾	Self-checking	Independent checking	Third party checking
CC1	X		
CC2	X	X ^{1) 2)}	
CC3	X	X	
CC3 if covered by B4(4)	X	X	X ³⁾
<p>¹⁾ The independent checking of the basis of execution for work shall be carried out by a person who is not involved in the execution of the construction, while other independent checking may be carried out by a person who has not been involved in the execution of the structures in the relevant inspection section.</p> <p>²⁾ The independent checking of the execution may be replaced by independent checking of the documentation of self-checking of the execution.</p> <p>³⁾ Includes checking of the documentation of independent checking only.</p>			