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

EN 1998-1 GL NA:2026

National Annex to
Eurocode 8: Design of structures for earthquake resistance – Part 1: General rules, seismic actions and rules for buildings

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Foreword

This Greenlandic National Annex (GL NA) replaces EN 1998-1 GL NA:2025.

This Annex is based on DS/EN 1998-1 DK NA:2020.

Scope

This Annex is adapted to geographical and climatic conditions as well as national legislation and specifies how EN 1998-1:2005 is 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 1998-1:2005 or the associated Danish National Annexes.

Overview of Greenlandic national choices and complementary information

DS/EN 1998-1 DK NA:2020 is applicable with the following national choices and complementary information:

Clause	Subject	Change
DK NA	References in DK NA	National choice
3.1.2(1) and Table 3.1 GL NA	Identification of ground types	National choice
D.5 Figure D.1 GL NA:	Horizontal acceleration of seismic shear - Seismic response spectrum - Values of design ground acceleration	Complementary information Normative

National choices

References in DK NA
References in DS/EN 1998-1 DK NA:2020 to other Danish National Annexes are replaced by references to corresponding Greenlandic National Annexes. Where these do not exist, the Danish National Annexes apply.

3.1.2(1) Identification of ground types
Table 3.1 is replaced by Table 3.1 GL NA:

Table 3.1 GL NA Ground types

Ground type[1)]	**Description of stratigraphic profile**	**Parameter**[2)]		
		$v_{s,30}$ (m/s)	N_{SPT} (blows/30cm)	c_u (kPa)
A	Rock, permafrozen soil to rock, or other rock-like geological formation, including not more than 5 m of weaker material at the surface.	> 800	-	-
B[3)]	Deposits of very dense sand, gravel, or very stiff clay, at least 10 m in thickness, characterised by a gradual increase of mechanical properties with depth.	360-800	> 50	> 250
C[3)]	Deep deposits of dense or medium-dense sand, gravel or stiff clay with thickness from several tens to many hundreds of metres.	180-360	15-50	70-250
D[3)]	Deposits of loose-to-medium cohesionless soil (with or without soft cohesive layers), of predominantly soft-to-firm cohesive soil.	100-180	10-15	20-70
E[4)]	A soil profile consisting of a surface alluvium layer with v_s values of type C or D and thickness varying between 5 m and 20 m, underlain by stiffer material with v_s > 800 m/s.			
S_1	Deposits consisting, or containing a layer at least 10 m thick, of soft clays/silts with a high plasticity index (PI > 40) and high water content.	< 100 (indicative)	< 10 (indicative)	10-20 (indicative)
S_2	Deposits of liquefiable soils, of sensitive clays, or any other soil			

	profile not included in types A-E or S_1.			

1) If at least 75 % of the structure is founded on rock (ground type A) and the remainder on loose soil, and the foundation is a continuous structure, such as slab foundations or strip foundations, ground type A may be used.
2) The choice of ground type may be based on either $v_{s,30}$, N_{SPT} or c_u.
3) For sites with permafrozen soil that does not extend to rock, ground types B–D may be used conservatively as described, regardless of the presence of permafrozen soil.
4) For foundations in the active layer above permafrozen soil, ground type E is to be used.

In case of doubt concerning the ground type listed in Table 3.1 GL NA, the most unfavourable one shall be selected.

Complementary information
Normative

Annex D GL NA – Simplified rules for horizontal seismic actions

D.5 Horizontal acceleration of seismic shear
(1) Horizontal acceleration of seismic shear, S_e/a_g, is given by Figure D.1 GL NA as a function of the natural period of vibration of the building, T_s [s].

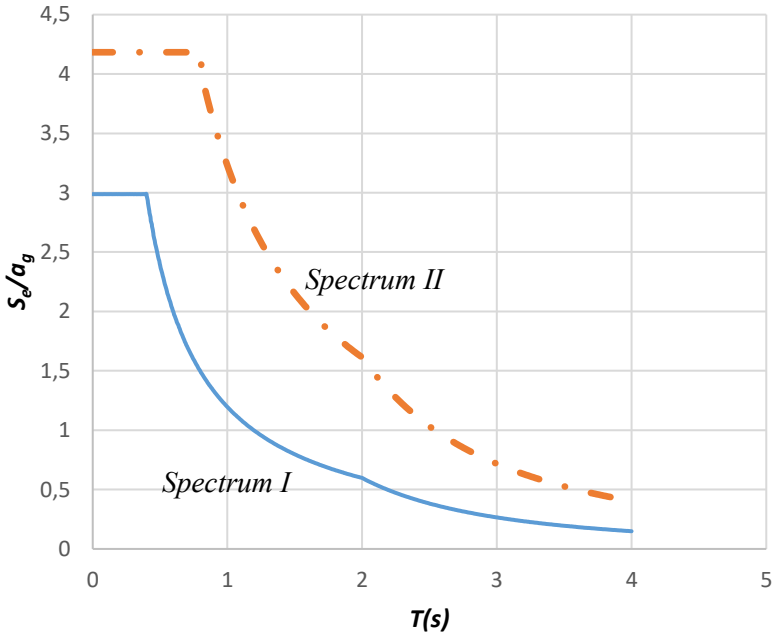

Figure D.1 GL NA. Normalized horizontal response spectrum, S_e/a_g, as a function of the natural period of vibration of the building, T_s [s]. *Spectrum I* is used for ground type A. *Spectrum II* can be used, on the safe side, for ground types B-E.

NOTE: Normalized horizontal response spectrum in Figure D.1 GL NA assumes a damping of at least 2 %.

For buildings, S_e/a_g may, on the safe side, be taken as 3,0 for ground type A and 4,2 for ground types B-E.

(2) The design ground acceleration, a_g, is to be determined on the basis of seismic data for the site in question. If no specific data are available for the site in question, the design ground acceleration may be taken from Table D.2 GL NA.

Table D.2 GL NA Seismic design ground acceleration, a_g [m/s^2].

Seismic zone	**Delimitation**		**Values of design ground acceleration a_g [m/s^2]**
	Geographical	Selected locations	
South Greenland	South of latitude 63°	Nanortalik Narsaq Qaqortoq	0,035
Southeast Greenland	Between 63° and 68° latitude, East	Tasiilaq	0,055
East Greenland	Between 68° and 74° latitude, East	Ittoqqortoormiit	0,030
Northeast Greenland	Between 74, East, and 82° latitude, West		0,035
Remaining Greenland	–	Aasiaat Ilulissat Kangerlussuaq Maniitsoq Nuuk Paamiut Qaanaaq Qeqertarsuaq Sisimiut Upernavik Uummannaq	0,040

The seismic design ground accelerations in Table D.2 GL NA are not applicable to the Greenland Ice Sheet.