DS/EN 1991-1-7 DK NA:2013

National Annex to

Eurocode 1: Actions on structures - Part 1-7: General actions – Accidental actions

---

Foreword

This National Annex (NA) is a revision and consolidation of EN 1991-1-7 DK NA:2007 and DS/EN 1991-1-7 DK NA Addendum:2010 and supersedes these documents as from 2013-10-25. For a transition period until 2014-03-01 the former documents are applicable. In addition to editorial changes, clause 4.3.1 has been technically revised.

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 this Eurocode 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 complementary information;
- national choices;
- complementary (non-contradictory) information.

The numbering refers to the clauses where choices are allowed and/or complementary information is given. To the extent possible, the heading/subject is identical to the heading of the clause, but as references are at a more detailed level than the headings, the heading/subject has in several cases been made more explicit.

DANISH ENERGY AGENCY

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 providing complementary information at the end of this document are identified.

Clause	Subject	Choice	Complementary information
2(2)	Classification of accidental actions	-	
3.1(2)	Strategies for accidental design situations	-	
3.2(1)	Level of risk	-	
3.3(2) a)	Notional accidental loads	National choice	
3.3(2) b)	Limit of local failure	Unchanged	
3.3(2) c)	Choice of strategies	National choice	
3.4(1)	Consequences classes	National choice	
3.4(2)	Design approaches	National choice	
4.1(1) NOTE 1	Definition of lightweight structures	Not relevant for building structures	
4.1(1) NOTE 3	Transmission of impact forces to foundations	-	
4.3.1(1) NOTE 1	Values of vehicle impact forces	National choice	
4.3.1(1) NOTE 2	Impact force as a function of the distance from traffic lanes	-	
4.3.1(1) NOTE 3	Types or elements of structure subject to vehicular collision	-	
4.3.1(2)	Alternative impact rules	Unchanged	
4.3.1(3)	Conditions of impact from road vehicles	National choice	
4.3.2(1)	Clearances and protection measures and design values	Not relevant for building structures	
4.3.2(1) NOTE 3	Reduction factor r_F	Not relevant for building structures	
4.3.2(1) NOTE 4	Impact actions on underside of bridge decks	Not relevant for building structures	
4.3.2(2)	Use of F_{dy}	Not relevant for building structures	
4.3.2(3)	Dimension and position of impact areas	Not relevant for building structures	
4.4(1)	Value of impact forces from forklift trucks	National choice	
4.5	Type of rail traffic	Not relevant for building structures	

4.5.1.2(1) NOTE 1	Structures to be included in each exposure class	Not relevant for building structures	
4.5.1.2(1) NOTE 2	Classification of temporary structures and auxiliary construction works	Not relevant for building structures	
4.5.1.4(1)	Impact forces from derailed traffic	Not relevant for building structures	
4.5.1.4(2)	Reduction of impact forces	Not relevant for building structures	
4.5.1.4(3)	Point of application of impact forces	Not relevant for building structures	
4.5.1.4(4)	Equivalent static forces - Impact forces for speeds less than 50 km/h	Not relevant for building structures	
4.5.1.4(5)	Impact forces for speeds greater than 120 km/h	Not relevant for building structures	
4.5.1.5(1)	Requirements for Class B structures	Not relevant for building structures	
4.5.2(1)	Areas beyond track ends	Not relevant for building structures	
4.5.2(4)	Impact forces on end walls	Not relevant for building structures	
4.6.1(3)	Classification of ship impacts	Not relevant for building structures	
4.6.2(1)	Values of frontal and lateral forces from ships	Not relevant for building structures	
4.6.2(2)	Friction coefficient μ	Not relevant for building structures	
4.6.2(3)	Application area of impact - Position of impact forces	Not relevant for building structures	
4.6.2(4)	Impact forces on bridge decks from ships - Static equivalent impact forces	Not relevant for building structures	
4.6.3(1)	Dynamic impact forces from seagoing ships - Static equivalent impact forces from seagoing ships	Not relevant for building structures	
4.6.3(3)	Friction coefficient μ	Not relevant for building structures	
4.6.3(4)P	Dimension and position of impact areas	Not relevant for building structures	
4.6.3(5)	Forces on superstructure - Impact forces from superstructures of vessels	Not relevant for building structures	
5.3(1)P	Procedures for internal explosion	National choice	
A4(1)	Details of effective anchorage	-	
Annex A (informative)	Design for consequences of localised failure in buildings from an unspecified cause	Annex A is not applied. Reference is made to the comple-	

		mentary rules given in Annex E of the National Annex to DS/EN 1990	
Annex B (informative)	Information on risk assessment	Annex B may be applied	
Annex C (informative)	Dynamic design for impact	Annex C may be applied	
Annex D (informative)	Internal explosions	Annex D may be applied	

NOTE Unchanged: Recommendations in the Eurocode are followed.

National choices

3.3(2) a) Design of key elements
Key elements are designed on the basis of the National Annex to DS/EN 1990, Annex E (informative).

3.3(2) c) Choice of strategies for limiting the consequences of localised failure
Approaches b) and c) are preferred to approach a) according to the rules of robustness in the National Annex to DS/EN 1990, Annex E (informative).

3.4 (1) Consequences classes
Consequences classes according to the National Annex to DS/EN 1990, Annex B (informative), are used.

3.4 (2) Design approaches for accidental design situations
Structures are designed for identified accidental actions (impact and explosion) using the accidental actions of clauses 4 and 5 and for unidentified accidental actions (robustness) according to the rules of robustness given in the National Annex to DS/EN 1990, Annex E (informative).

4.3.1(1) NOTE 1 Values of vehicle impact forces
Table 4.1 is replaced by the table below, changing the values for ”Roads in urban areas” and “Courtyards and parking garages":

Table 4.1 NA Indicative equivalent static design forces due to vehicular impact on members supporting structures over or adjacent to roadways

Category of traffic	Force F_{dx} [a] [kN]	Force F_{dy} [a] [kN]
Motorways and country national and main roads	1.000	500
Country roads in rural area	750	375
Roads in urban area	750	375
Courtyards and parking garages with access to: - Cars - Lorries [b]	 100 200	 50 100

[a] x = direction of normal travel, y = perpendicular to the direction of normal travel.

[b] The term ”lorry” refers to vehicles with maximum gross weight greater than 3,5 tonnes.

4.3.1(3) NOTE Conditions of impact from road vehicles
The recommended impact area is a = 0,5 m (height) x 1,50 m (width) or the member width.

4.4(1) NOTE Value of impact forces from forklift trucks
The note is replaced by:
"It is recommended that F is taken as 5W, where W is the sum of the net weight and hoisting load of a loaded truck (see DS/EN 1991-1.1, Table 6.5), applied at a height of 0,75 m above floor level. However, higher or lower values may be more appropriate in some cases."

5.3 (1)P Procedures for internal explosion
The actions due to explosion specified in Annex D are applied for

- dust explosions in rooms, vessels and bunkers;
- natural gas explosions in rooms.

Annex A (informative) Design for consequences of localised failure in buildings from an un-specified cause
Annex A is not applied. Reference is made to the complementary rules given in Annex E of the National Annex to DS/EN 1990.

Complementary (non-contradictory) information

None