

Geregistreeerde Belgische norm

NBN EN 1991-1-3

1e uitg., oktober 2003

Normklasse: B 03

Eurocode 1 : Belastingen op constructies - Deel 1-3: Algemene belastingen - Sneeuwbelasting (+ AC:2009)

Eurocode 1 - Actions sur les structures - Partie 1-3: Actions générales - Charges de neige (+ AC:2009)

Eurocode 1 - Actions on structures - Part 1-3: General actions - Snow loads (+ AC:2009)

Toelating tot publicatie: 05 september 2003

Vervangt NBN ENV 1991-2-3 (2002).

Deze Europese norm NBN EN 1991-1-3:2003 heeft de status van een Belgische norm.

Deze Europese norm bestaat in drie officiële versies (Duits, Engels, Frans).

Er is bij het NBN ook een Nederlandstalige versie beschikbaar, die dezelfde status heeft als de officiële versies.

Deze norm mag in België slechts samen met zijn nationale bijlage (ANB) worden toegepast. Deze laatste legt hoofdzakelijk de waarden van de parameters vast die op nationaal vlak worden bepaald.



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*norme belge
enregistrée*

NBN EN 1991-1-3

1e éd., octobre 2003

Indice de classement: B 03

Eurocode 1 - Actions sur les structures - Partie 1-3: Actions générales - Charges de neige (+ AC:2009)

Eurocode 1 : Belastingen op constructies - Deel 1-3: Algemene belastingen - Sneeuwbelasting (+ AC:2009)

Eurocode 1 - Actions on structures - Part 1-3: General actions - Snow loads (+ AC:2009)

Autorisation de publication: 05 septembre 2003

Remplace NBN ENV 1991-2-3 (2002).

La présente norme européenne NBN EN 1991-1-3:2003 a le statut d'une norme belge.

La présente norme européenne existe en trois versions officielles (allemand, anglais, français).

Une version en néerlandais, ayant le même statut que les versions officielles, est également disponible au NBN.

Cette norme ne peut être utilisée en Belgique qu'en combinaison avec son annexe nationale (ANB) qui fixe principalement la valeur des paramètres à déterminer au niveau national.



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NATIONAAL VOORWOORD van de NBN EN 1991-1-3:2003

1. De norm NBN EN 1991-1-3:2003 «Eurocode 1: Belastingen op constructies – Deel 1-3 Algemene belastingen - Sneeuwbelasting» omvat de nationale bijlage NBN EN 1991-1-3 ANB:2007 met een normatief karakter in België. Hij vervangt vanaf 1/8/2008 de volgende norm :

NBN ENV 1991-2-3 NTD:1995 "Eurocode 1 - Grondslag voor ontwerp en belasting op draagsystemen - Deel 2-3 : Belasting op draagsystemen – Sneeuwbelasting, samen met Belgische toepassingsrichtlijn" (gehomologeerde versie + NAD).

2. De Nederlandstalige versie van EN 1991-1-3 werd opgesteld in samenwerking tussen NBN en NEN. Daarbij werd voor elk begrip een unieke woordkeuze gemaakt. Dit heeft voor gevolg dat in de norm uitdrukkingen voorkomen die in één van de twee landen minder gebruikelijk zijn. Hierna volgt een lijst met gelijkwaardige termen :

Oorspronkelijke term (Engels)	Verplichte term (Nederlands)	Synoniem (B); (N)
accidental design situation	buitengewone ontwerpsituatie, buitengewone ontwerptoestand	bijzondere toestand
civil engineering work	civieltechnisch werk (kunstwerk)	werk van burgerlijke bouwkunde (B)
persistent design situation	blijvende ontwerpsituatie, blijvende ontwerptoestand	permanente ontwerptoestand (NL)
quasi-permanent value	quasi-blijvende waarde	quasi-permanente waarde
resistance	weerstand	capaciteit, sterkte
situation	situatie	toestand
valley	luwte	kiel

- 2bis** De Europese normen (EN) waarnaar de tekst van deze norm met hun Engelse titel verwijst, dragen in België de volgende Nederlandstalige titels :

Vermelde norm met Engelse titel

EN 1990:2002 Eurocode – Basis of structural design
 EN 1991-1-1:2002 Eurocode 1: Actions on structures – Part 1-1: General actions – Densities, self-weight, imposed loads for buildings
 NBN EN 1991-2:2004 Eurocode 1: Actions on structures – Part 2: Traffic loads on bridges

Nederlandstalige titel (NBN)

NBN EN 1990:2002 Eurocode – Grondslagen van het constructief ontwerp
 NBN EN 1991-1-1:2002 Eurocode 1: Belastingen op constructies – Deel 1-1: Algemene belastingen – Volumieke gewichten, eigen gewicht en opgelegde belastingen voor gebouwen
 NBN EN 1991-2:2004 Eurocode 1: Belastingen op constructies - Deel 2: Verkeersbelasting op bruggen

3. Aanvullende opmerkingen van het NBN : de volgende redactionele verbeteringen behoren te worden aangebracht, of werden reeds aangebracht, in de Nederlandstalige versie van de NBN EN 1991-1-3:2003 :

Oorsprong	Paragraaf	Te vervangen tekst	Nieuwe tekst
Commissie NBN E25001 en CEN SC1 N447H	Voorwoord 2 ^{de} par.	“... de strijdige nationale normen moeten uiterlijk in januari 2004 ingetrokken worden”	“... de strijdige nationale normen moeten uiterlijk in maart 2010 ingetrokken worden” <u>reeds aangebrachte verbetering</u>
NBN E25001 SC1 N447H	Lijst NDP's	Af te schaffen : 5.2(1) en 5.2(4) (in het Nederlands en het Engels; de Franse versie is correct)	Aan te vullen : 1.1(3), 4.1(2), 5.2(2), 5.2(8), 5.3.4(3) en D(2)
NBN E25001 SC1 N447H	5.3.6	Nummering (Frans) : 5.3.6(1) NOTE 1 5.3.6(2) NOTE 1 NOTE 2 5.3.6(3) 5.3.6(4)	Nummering (Engels en Nederlands) 5.3.6(1) OPMERKING 1 OPMERKING 2 OPMERKING 3 5.3.6(2) 5.3.6(3)
SC1 N447H	1.1(2)	“NOTE 1” moet “NOTE”	<u>reeds aangebrachte verbetering</u>
SC1 N447H	5.3.3(4)	“... in figuur 5.3, gevallen (ii) en (iii), tenzij voorgeschreven voor lokale omstandigheden”.	“... in figuur 5.3, gevallen (ii) en (iii), tenzij anders voorgeschreven vanwege lokale omstandigheden”. <u>reeds aangebrachte verbetering</u>
SC1 N447H	5.3.4(1)	“...en geïllustreerd in figuur 5.”	“...en geïllustreerd in figuur 5.4.” <u>reeds aangebrachte verbetering</u>
SC1 N447H	Fig. 5.7	“Dit geval is van toepassing als $b_2 < l_s$ ”	“Deze schikking van belastingen is van toepassing als $b_2 < l_s$ ”
SC1 N447H	B1(1)	Vervang “.” door “;” aan het einde van c)	<u>reeds aangebrachte verbetering</u>
SC1 N447H	B4(2)	“Indien de verticale verhoging ... niet groter is dan 1 m ² , ...”	“Indien de verticale verhoging ... niet groter is dan 1 m, ...”
SC1 N447H	C(3)	“De Europese sneeuwkaart ontwikkeld”	“De Europese sneeuwkaarten ontwikkeld”
SC1 N447H	D(4)	“... mag formule (D.1) ook zijn aangepast ...”	“... mag formule (D.1) ook zijn aangenomen ...”

AVANT-PROPOS NATIONAL à la NBN EN 1991-1-3:2003

1. La norme NBN EN 1991-1-3:2003 «Eurocode 1: Actions sur les structures - Partie 1-3: Actions générales - Charges de neige» comprend l'annexe nationale NBN EN 1991-1-3-ANB:2007 qui a un caractère normatif en Belgique. Elle remplace à partir du 1/8/2008 les normes suivantes :

NBN ENV 1991-2-3 NAD:1995 «Eurocode 1 - Bases du calcul et actions sur les structures - Partie 2-3 : Actions sur les structures - Charges de neige, y compris le document d'application belge» (version homologuée + DAN)

2. La version de langue française de l'EN 1991-1-3 a été rédigée en France par l'AFNOR. En conséquence, on y rencontre certaines expressions d'usage moins courant en Belgique.

Une liste de termes équivalents est donnée ci-après :

Terme de l'EN 1991-1-3	Terme équivalent en Belgique
client	le maître de l'ouvrage assisté de ses bureaux d'architectes, d'ingénierie et de consultance
acrotère	muret situé en bordure de toitures terrasses pour permettre le relevé d'étanchéité; utilisé ici pour traduire l'anglais «parapet» (garde-corps)

3. Note complémentaire du NBN : les corrections éditoriales suivantes sont à apporter à la version française de la NBN EN 1991-1-3:2003. Cette liste reprend aussi le Corrigendum N477H publié en juin 2007 par le CEN TC250 SC1, non encore approuvé début 2008.

Origine	Paragraphe	Texte à corriger	Nouveau texte
Commission NBN E25001 et CEN SC1 N447H	Avant-propos 2 ^{ème} alinéa	“...les normes nationales en contradiction devront être retirées au plus tard en janvier 2004.”	“.....les normes nationales en contradiction devront être retirées au plus tard en mars 2010.”
NBN E25001 SC1 N447H	Liste des NDP	Dans le texte néerlandais/anglais: supprimer 5.2(1) et 5.2(4) (le texte français est correct)	Dans le texte néerlandais/anglais : ajouter 1.1(3), 4.1(2), 5.2(2), 5.2(8), 5.3.4(3) et D(2)
NBN E25001 SC1 N447H	5.3.6	Numérotation (texte français) : 5.3.6(1) NOTE 1 5.3.6(2) NOTE 1 NOTE 2 5.3.6(3) 5.3.6(4)	Numérotation (texte néerlandais/anglais correct) 5.3.6(1) NOTE 1 NOTE 2 NOTE 3 5.3.6(2) 5.3.6(3)
SC1 N447H	1.1(2)	“NOTE 1”	“NOTE”

SC1 N447H	5.3.3(4)	“Les deux dispositions de charge avec accumulation qu’il convient de considérer sont représentées par les cas (ii) et (iii) de la Figure 5.3”	“Les deux dispositions de charge avec accumulation qu’il convient de considérer sont représentées par les cas (ii) et (iii) de la Figure 5.3, <u>sauf autres spécifications dues à des conditions locales.</u> ”
SC1 N447H	5.3.4(1)	“...représentés sur la Figure 5.1”	“...représentés sur la Figure 5.4”
SC1 N447H	Fig. 5.7	“ce cas s’applique lorsque $b_2 < l_s$ ”	“cette situation des charges s’applique lorsque $b_2 < l_s$ ”
SC1 N447H	B1(1)	Enumération, point c)	Remplacer “.” par “;” en fin de c)
SC1 N447H	B4(2)	“Si la surface verticale de l’obstacle... est inférieure à $1m^2$,”	“Si l’élévation verticale de l’obstacle... est inférieure à 1m.»
SC1 N447H	C(3)	“La carte européenne de neige établie par le groupe de recherche est divisée en”	“Les cartes européennes de neige établies par le groupe de recherche sont divisées en”
SC1 N447H	D(4)	(texte français correct)	

English version

Eurocode 1 - Actions on structures - Part 1-3: General actions - Snow loads

Eurocode 1 - Actions sur les structures - Partie 1-3: Actions
générales - Charges de neige

Eurocode 1 - Einwirkungen auf Tragwerke - Teil 1-3:
Allgemeine Einwirkungen-Schneelasten

This European Standard was approved by CEN on 9 October 2002.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 1991-1-3:2003) has been prepared by Technical Committee CEN/TC250 “Structural Eurocodes”, the Secretariat of which is held by BSI.

This European Standard shall be given the status of a National Standard, either by publication of an identical text or by endorsement, at the latest by January 2004, and conflicting National Standards shall be withdrawn at latest by January 2004.

This document supersedes ENV 1991-2-3:1995.

CEN/TC250 is responsible for all Structural Eurocodes.

Annexes A and B are normative. Annexes C, D and E are informative.

According to the CEN-CENELEC Internal Regulations, the National Standard Organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Background of the Eurocode programme

In 1975, the Commission of the European Community decided on an action programme in the field of construction, based on article 95 of the Treaty. The objective of the programme was the elimination of technical obstacles to trade and the harmonisation of technical specifications.

Within this action programme, the Commission took the initiative to establish a set of harmonised technical rules for the design of construction works which, in a first stage, would serve as an alternative to the national rules in force in the Member States and, ultimately, would replace them.

For fifteen years, the Commission, with the help of a Steering Committee with Representatives of Member States, conducted the development of the Eurocodes programme, which led to the first generation of European codes in the 1980's.

In 1989, the Commission and the Member States of the EU and EFTA decided, on the basis of an agreement¹ between the Commission and CEN, to transfer the preparation and the publication of the Eurocodes to the CEN through a series of Mandates, in order to provide them with a future status of European Standard (EN). This links *de facto* the Eurocodes with the provisions of all the Council's Directives and/or Commission's Decisions dealing with European

¹ Agreement between the Commission of the European Communities and the European Committee for Standardisation (CEN) concerning the work on EUROCODES for the design of building and civil engineering works (BC/CEN/03/89).

standards (e.g. the Council Directive 89/106/EEC on construction products and Council Directives 93/37/EEC, 92/50/EEC and 89/440/EEC on public works and services and equivalent EFTA Directives initiated in pursuit of setting up the internal market).

The Structural Eurocode programme comprises the following standards generally consisting of a number of Parts:

EN 1990	Eurocode:	Basis of Structural Design
EN 1991	Eurocode 1:	Actions on structures
EN 1992	Eurocode 2:	Design of concrete structures
EN 1993	Eurocode 3:	Design of steel structures
EN 1994	Eurocode 4:	Design of composite steel and concrete structures
EN 1995	Eurocode 5:	Design of timber structures
EN 1996	Eurocode 6:	Design of masonry structures
EN 1997	Eurocode 7:	Geotechnical design
EN 1998	Eurocode 8:	Design of structures for earthquake resistance
EN 1999	Eurocode 9:	Design of aluminium structures

Eurocode standards recognise the responsibility of regulatory authorities in each Member State and have safeguarded their right to determine values related to regulatory safety matters at national level where these continue to vary from State to State.

Status and field of application of Eurocodes

The Member States of the EU and EFTA recognise that EUROCODES serve as reference documents for the following purposes :

- as a means to prove compliance of building and civil engineering works with the essential requirements of Council Directive 89/106/EEC, particularly Essential Requirement N°1 – Mechanical resistance and stability – and Essential Requirement N°2 – Safety in case of fire ;
- as a basis for specifying contracts for construction works and related engineering services ;
- as a framework for drawing up harmonised technical specifications for construction products (ENs and ETAs)

The Eurocodes, as far as they concern the construction works themselves, have a direct relationship with the Interpretative Documents² referred to in Article 12 of the CPD, although they are of a different nature from harmonised product standards³. Therefore, technical aspects arising from the Eurocodes

² According to Art. 3.3 of the CPD, the essential requirements (ERs) shall be given concrete form in interpretative documents for the creation of the necessary links between the essential requirements and the mandates for hENs and ETAGs/ETAs.

³ According to Art. 12 of the CPD the interpretative documents shall :

- a) give concrete form to the essential requirements by harmonising the terminology and the technical bases and indicating classes or levels for each requirement where necessary ;
- b) indicate methods of correlating these classes or levels of requirement with the technical specifications, e.g. methods of calculation and of proof, technical rules for project design, etc. ;
- c) serve as a reference for the establishment of harmonised standards and guidelines for European technical approvals.

The Eurocodes, *de facto*, play a similar role in the field of the ER 1 and a part of ER 2.

EN 1991-1-3:2003 (E)

work need to be adequately considered by CEN Technical Committees and/or EOTA Working Groups working on product standards with a view to achieving a full compatibility of these technical specifications with the Eurocodes.

The Eurocode standards provide common structural design rules for everyday use for the design of whole structures and component products of both a traditional and an innovative nature. Unusual forms of construction or design conditions are not specifically covered and additional expert consideration will be required by the designer in such cases.

National Standards implementing Eurocodes

The National Standards implementing Eurocodes will comprise the full text of the Eurocode (including any annexes), as published by CEN, which may be preceded by a National title page and National foreword, and may be followed by a National Annex.

The National Annex may only contain information on those parameters which are left open in the Eurocode for national choice, known as Nationally Determined Parameters, to be used for the design of buildings and civil engineering works to be constructed in the country concerned, *i.e.* :

- values for partial factors and/or classes where alternatives are given in the Eurocode,
- values to be used where a symbol only is given in the Eurocode,
- country specific data (geographical, climatic etc.), e.g. snow map,
- the procedure to be used where alternative procedures are given in the Eurocode.

It may also contain

- decisions on the application of informative annexes,
- references to non-contradictory complementary information to assist the user to apply the Eurocode.

Links between Eurocodes and harmonised technical specifications (ENs and ETAs) for products

There is a need for consistency between the harmonised technical specifications for construction products and the technical rules for works⁴. Furthermore, all the information accompanying the CE Marking of the construction products which refer to Eurocodes should clearly mention which Nationally Determined Parameters have been taken into account.

Introduction - Additional information specific for EN 1991-1-3

EN 1991 1-3 gives design guidance and actions from snow for the structural design of buildings and civil engineering works.

⁴ see Art.3.3 and Art.12 of the CPD, as well as clauses 4.2, 4.3.1, 4.3.2 and 5.2 of ID 1.

EN 1991 1-3 is intended for clients, designers, contractors and public authorities.

EN 1991 1-3 is intended to be used with EN 1990:2002, the other Parts of EN 1991 and EN 1992- EN 1999 for the design of structures.

National Annex for EN1991-1-3

This standard gives alternative procedures, values and recommendations for classes with notes indicating where national choices may have to be made. Therefore the National Standard implementing EN 1991-1-3 should have a National Annex containing nationally determined parameters to be used for the design of buildings and civil engineering works to be constructed in the relevant country.

National choice is allowed in EN 1991-1-3 through clauses:

1.1(2), 1.1(4)

2(3), 2(4)

3.3(1), 3.3(3),

4.1(1), 4.2(1), 4.3(1)

5.2(1), 5.2(4), 5.2(5), 5.2(6), 5.2(7), 5.3.3(4), 5.3.4(3), 5.3.5(1), 5.3.5(3),

5.3.6(1), 5.3.6(3)

6.2(2), 6.3(1), 6.3(2)

A(1) (through Table A1)

1. Section 1 General

1.1. Scope

(1) EN 1991-1-3 gives guidance to determine the values of loads due to snow to be used for the structural design of buildings and civil engineering works.

(2) This Part does not apply for sites at altitudes above 1 500 m, unless otherwise specified.

NOTE 1: Advice for the treatment of snow loads for altitudes above 1 500 m may be found in the National Annex.

(3) Annex A gives information on design situations and load arrangements to be used for different locations.

NOTE: These different locations may be identified by the National Annex.

(4) Annex B gives shape coefficients to be used for the treatment of exceptional snow drifts.

NOTE: The use of Annex B is allowed through the National Annex.

(5) Annex C gives characteristic values of snow load on the ground based on the results of work carried out under a contract specific to this Eurocode, to DGIII / D3 of the European Commission.

The objectives of this Annex are:

- to give information to National Competent Authorities to help them to redraft and update their national maps;
- to help to ensure that the established harmonised procedures used to produce the maps in this Annex are used in the member states for treating their basic snow data.

(6) Annex D gives guidance for adjusting the ground snow loads according to the return period.

(7) Annex E gives information on the bulk weight density of snow.

(8) This Part does not give guidance on specialist aspects of snow loading, for example:

- impact snow loads resulting from snow sliding off or falling from a higher roof;
- the additional wind loads which could result from changes in shape or size of the construction works due to the presence of snow or the accretion of ice;
- loads in areas where snow is present all year round;
- ice loading;
- lateral loading due to snow (e.g. lateral loads exerted by drifts);
- snow loads on bridges.