ICS: 91.010.30 ; 91.080.10

Geregistreerde Belgische norm

NBN EN 1999-1-2

2e uitg., augustus 2007

Normklasse: B 51

Eurocode 9 - Ontwerp en berekening van aluminiumconstructies - Deel 1-2 : Ontwerp en berekening van constructies bij brand (+ AC:2009)

Eurocode 9 - Calcul des structures en aluminium - Partie 1-2 : Calcul du comportement au feu (+ AC:2009)

Eurocode 9 - Design of aluminium structures - Part 1-2 : Structural fire design (+ AC:2009)

Toelating tot publicatie: 30 mei 2007

Vervangt NBN ENV 1999-1-2 (1998).

Deze Europese norm EN 1999-1-2:2007 heeft de status van een Belgische norm.

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

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

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Bureau voor Normalisatie - Birminghamstraat 131 - 1070 Brussel - België
Tel: +32 2 738 01 12 - Fax: +32 2 733 42 64 - E-mail: info@nbn.be - NBN Online: www.nbn.be
Bank 000-3255621-10 IBAN BE41 0003 2556 2110 BIC BPOTBEB1 BTW BE0880857592

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Eurocode 9 - Calcul des structures en aluminium - Partie 1-2 : Calcul du comportement au feu (+ AC:2009)

Eurocode 9 - Ontwerp en berekening van aluminiumconstructies - Deel 1-2 : Ontwerp en berekening van constructies bij brand (+ AC:2009)

Eurocode 9 - Design of aluminium structures - Part 1-2 : Structural fire design (+ AC:2009)

Autorisation de publication: 30 mai 2007

Remplace NBN ENV 1999-1-2 (1998).

La présente norme européenne EN 1999-1-2:2007 a le statut d'une norme belge.

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

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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Bureau de Normalisation - Rue de Birmingham 131 - 1070 Bruxelles - Belgique
Tél: +32 2 738 01 12 - Fax: +32 2 733 42 64 - E-mail: info@nbn.be - NBN Online: www.nbn.be
Banque 000-3255621-10 IBAN BE41 0003 2556 2110 BIC BPOTBEB1 TVA BE0880857592

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NATIONAAL VOORWOORD VAN NBN EN 1999-1-2:2007

1. De norm NBN EN 1999-1-2:2007 «Eurocode 9 : Ontwerp en berekening van aluminiumconstructies – Deel 1-2: Ontwerp en berekening van constructies bij brand» omvat de nationale bijlage NBN EN 1999-1-2 ANB:2011 met een normatief karakter in België. Hij vervangt vanaf de datum van de publicatie van zijn bekrachtiging in het Belgische Staatsblad de volgende norm:

NBN ENV 1999 1-2:1998	Eurocode 9: Ontwerp en berekening van aluminium-constructies – Deel 1-2: Algemene regels – Brandbeveiligend Ontwerp

2. De Nederlandstalige versie van EN 1999-1-2 is tot stand gekomen op basis van een voorkeurterminologie die in samenwerking tussen het NBN en het NEN is opgesteld. 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 synoniemen:

Oorspronkelijke term (Engels)	Verplichte term (Nederlands)	Synoniem (B); (N)
accidental situation	buitengewone situatie	bijzondere situatie (N); buitengewone toestand (B)

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	Nederlandstalige titel (NBN)
EN 485-2 Aluminium and aluminium alloys. Sheet, strip and plate. Part 2: Mechanical properties	EN 485-2 Aluminium en aluminium-legeringen - Plaat en band - Deel 2: Mechanische eigenschappen
EN 755-2 Aluminium and aluminium alloys. Extruded rod/bar, tube and profiles. Part 2: Mechanical properties	EN 755-2 Aluminium en aluminiumlegeringen - Geëxtrudeerde staven, buizen en profielen - Deel 2: Mechanische eigenschappen
EN 1990 Basis of structural design	EN 1990 Grondslagen van het constructief ontwerp
EN 1991-1-2 Basis of design and actions on structures Part 1-2: Actions on structures exposed to fire	EN 1991-1-2 Belastingen op constructies - Deel 1-2: Algemene belastingen - Belasting bij brand
EN 1999-1-1 Design of aluminium structures: Part 1-1: General structural rules	EN 1999-1-1 Ontwerp en berekening van aluminiumconstructies - Deel 1-1: Algemene regels
EN 1090-3 Execution of steel structures and aluminium structures – Part 3: Technical requirements for aluminium structures	EN 1090-3 Uitvoering van staalconstructies en aluminiumconstructies - Deel 3: Technische eisen voor aluminiumconstructies

EN 13501-2 Fire classification of construction products and building elements. Part 2 Classification using data from fire resistance tests	EN 13501-2 Brandclassificatie van bouwproducten en bouwdelen - Deel 2: Classificatie op grond van resultaten van brandwerendheidsproeven, behalve voor ventilatiesystemen
ENV 13381-1 Fire tests on elements of building construction: Part 1: Test method for determining the contribution to the fire resistance of structural members: By horizontal protective membranes	ENV 13381-1 Proeven ter bepaling van de bijdrage tot de vuurweerstand van dragende bouwdelen - Deel 1: Horizontale vuurwerende bekledingen
ENV 13381-2 Fire tests on elements of building construction. Part 2: Test method for determining the contribution to the fire resistance of structural members: By vertical protective membranes.	ENV 13381-2 Proeven ter bepaling van de bijdrage tot de vuurweerstand van dragende bouwdelen - Deel 2: Verticale vuurwerende bekledingen
ENV 13381-4 Fire tests on elements of building construction. Part 4: Test method for determining the contribution to the fire resistance of structural members: By applied protection to steel structural elements.	ENV 13381-4 Proeven ter bepaling van de bijdrage tot de vuurweerstand van dragende bouwdelen - Deel 4: Vuurwering aangebracht op stalen bouwdelen

3. Een corrigendum (EN 1999-1-2:2007/AC:2009) werd opgesteld door CEN en dient samen met NBN EN 1999-1-2 en zijn ANB gebruikt te worden.

AVANT-PROPOS NATIONAL
À LA NBN EN 1999-1-2:2007

1. La norme NBN EN 1999-1-2:2007 «Eurocode 9 : Calcul des structures en aluminium – Partie 1-2 : Calcul du comportement au feu» comprend l'annexe nationale NBN EN 1999-1-2 ANB:2011 qui a un caractère normatif en Belgique. Elle remplace à partir de la date de publication de l'homologation de la norme au Moniteur Belge la norme suivante :

NBN ENV 1999-1-2:1998	Eurocode 9 : Conception et dimensionnement des structures en aluminium – Partie 1-2 :Règles générales - Calcul du comportement au feu

Le corrigendum EN 1999-1-2:2007/AC:2009, tel que publié par le CEN, est joint à cette norme.

2. La version de langue française de l'EN 1999-1-2 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 1999-1-2	Terme équivalent en Belgique
client	le maître de l'ouvrage assisté de ses bureaux d'architectes, d'ingénierie et de consultance
poteau	colonne

3. Un corrigendum (EN 1999-1-2:2007/AC:2009) est établi au CEN et doit être utilisé avec la NBN EN 1999-1-2 et son ANB.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1999-1-2

February 2007

ICS 91.010.30; 91.080.10

Supersedes ENV 1999-1-2:1998

English Version

Eurocode 9 - Design of aluminium structures - Part 1-2: Structural fire design

Eurocode 9 - Calcul des structures en aluminium - Partie 1-2: Calcul du comportement au feu

Eurocode 9 - Bemessung und Konstruktion von Aluminiumtragwerken - Teil 1-2: Tragwerksbemessung für den Brandfall

This European Standard was approved by CEN on 18 September 2006.

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 CEN 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 CEN Management Centre has the same status as the official versions.

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

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 1999-1-2:2007: E

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Foreword

This European Standard (EN 1999-1-2:2007) has been prepared by Technical Committee CEN/TC 250 "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 August 2007, and conflicting national standard shall be withdrawn at the latest by March 2010.

This European Standard supersedes ENV 1999-1-2:1998

CEN/TC 250 is responsible for all Structural Eurocodes

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and 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 1980s.

In 1989, the Commission and the Member States of the EU and EFTA decided, on the basis of an agreement[1] 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 standards (e.g. the Council Directive 89/106/EEC on construction products - CPD - 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 0:	Basis of Structural Design
EN 1991	Eurocode 1:	Actions on structures

[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).

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 No.1 – Mechanical resistance and stability, and Essential Requirement No 2 – Safety in case of fire

— as a basis for specifying contracts for the execution of construction works and related engineering services

— as a framework for drawing up harmonised technical specifications for construction products (En's and ETA's)

The Eurocodes, as far as they concern the construction works themselves, have a direct relationship with the Interpretative Documents[2] referred to in Article 12 of the CPD, although they are of a different nature from harmonised product standards[3]. Therefore, technical aspects arising from the Eurocodes work need to be adequately considered by CEN Technical Committees and/or EOTA Working Groups working on product standards with a view to achieving 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.

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[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 harmonised ENs 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.

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 (informative).

The National Annex (informative) 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;

— geographical and climatic data specific to the Member State, e.g. snow map;

— the procedure to be used where alternative procedures are given in the Eurocode;

— references to non-contradictory complementary information to assist the user to apply the Eurocode.

Links between Eurocodes and harmonised technical specifications (EN's and ETA's) for products

There is a need for consistency between the harmonised technical specifications for construction products and the technical rules for works[4]. Furthermore, all the information accompanying the CE Marking of the construction products which refer to Eurocodes shall clearly mention which Nationally Determined Parameters have been taken into account.

Additional information specific to EN 1999-1-2

EN 1999-1-2 describes the principles, requirements and rules for the structural design of buildings exposed to fire, including the following aspects.

Safety requirements

EN 1999-1-2 is intended for owners of construction works (e.g. for the formulation of their specific requirements), designers, contractors and relevant authorities.

The general objectives of fire protection are to limit risks with respect to the individual and society, neighbouring property, and where required, environment or directly exposed property, in the case of fire.

Construction Products Directive 89/106/EEC gives the following essential requirement for the limitation of fire risks:

"The construction works must be designed and build in such a way, that in the event of an outbreak of fire

— the load bearing resistance of the construction can be assumed for a specified period of time;

— the generation and spread of fire and smoke within the works are limited;

— the spread of fire to neighbouring construction works is limited;

[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.