



**NSAI**  
Standards

Irish Standard  
I.S. EN 206-1:2002

Concrete - Part 1: Specification,  
performance, production and conformity  
(Consisting of I.S. EN 206-1:2002 and the  
Irish National Annex)

## I.S. EN 206-1:2002

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English version

## Concrete - Part 1: Specification, performance, production and conformity

Béton - Partie 1: Spécification, performances, production et conformité

Beton - Teil 1: Festlegung, Eigenschaften, Herstellung und Konformität

This European Standard was approved by CEN on 12 May 2000.

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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.

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COMITÉ EUROPÉEN DE NORMALISATION  
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## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 104 "Concrete and related products", the secretariat of which is held by DIN.

This European Standard supersedes ENV 206:1990.

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of an identical text or by endorsement, at the latest by June 2001, and conflicting national standards shall be withdrawn at the latest by December 2003.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom

This Standard together with parts of ENV 13670-1 (Execution of concrete structures) supersedes the European Pre-standard ENV 206 : 1990 "Concrete - Performance, production, placing and compliance criteria" which was the basis for the preparation of this standard.

In particular, the following items were subject to revision when preparing this standard:

- extension of the classification system for concrete especially with respect to environmental conditions;
- requirements for durability;
- extension of strength classes;
- strength classes for light-weight concrete;
- consideration of additions in the determination of the w/c ratio and the cement content;
- identification of division of technical responsibility between the specifier, producer and user;
- reconsideration of accuracy of weighing equipment;
- reconsideration of curing requirements;
- provisions for conformity control, conformity criteria and identity testing;
- provisions for the evaluation of conformity.

Aspects relating to the execution have, in general, been moved to ENV 13670-1 or other relevant standards.

The context in which this Standard functions is illustrated in Figure 1.

This Standard is only operable with product standards or equivalent specifications for constituent materials (i. e. cement, aggregates, additions, admixtures and mixing water) and related test methods for concrete. Product standards and test method standards are under preparation by CEN but they will not all be available as European Standards at the date of publication of this Standard. For this reason, the latest date of withdrawal of national standards (dow) conflicting with this Standard will be the date when all standards listed below, together with the related standards for test methods, are available and implemented as European Standards or ISO Standards where appropriate or have the status required by this Standard.

EN 197-1

Cement - Composition, specifications and conformity criteria - Part 1: Common cements

EN 12620

Aggregates for concrete including those for use in roads and pavements

EN 13055-1

Light-weight aggregates - Part 1: Light-weight aggregates for concrete and mortar

EN 1008

Mixing water for concrete - Specifications for sampling, testing and assessing the suitability of water, including wash water from recycling installations in the concrete industrie, as mixing water for concrete

EN 934-2

Admixtures for concrete, mortar and grout - Part 2: Concrete admixtures - Definitions and requirements

EN 450

Fly ash for concrete - Definitions, requirements and quality control

EN 13263

Silica fume for concrete - Definitions, requirements and conformity control

The annexes A, B and C are normative. The annexes D, E, F, G, H, J and K are informative.

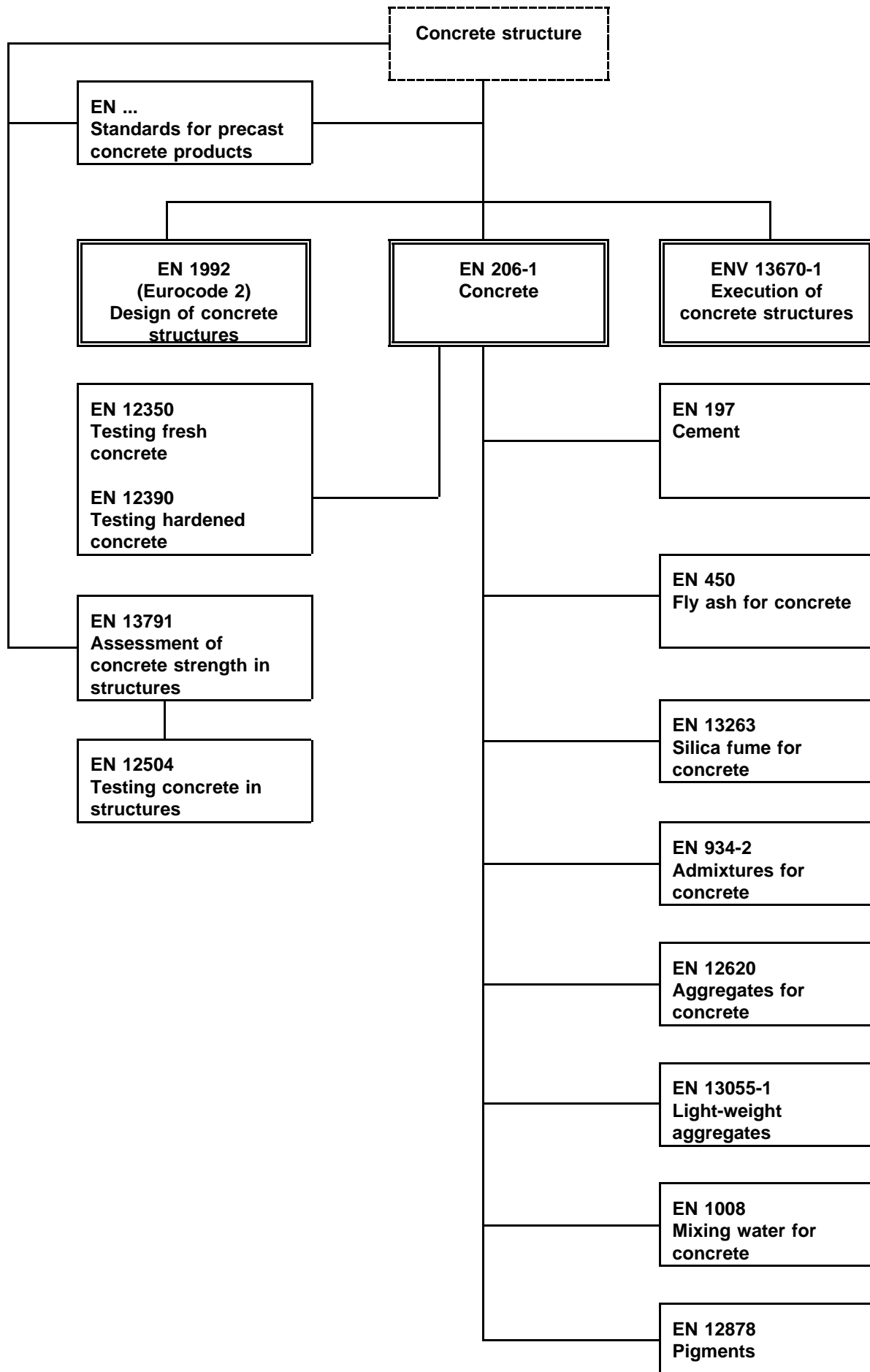


Figure 1 - Relationships between EN 206-1 and standards for design and execution, standards for constituent materials and test standards



## Introduction

This European Standard will be applied in Europe under different climatic and geographical conditions, different levels of protection and under different, well established, regional traditions and experience. Classes for concrete properties have been introduced to cover these situations. Where such general solutions were not possible, the relevant clauses contain permission for the application of national standards or provisions valid in the place of use of the concrete.

During the development of this European Standard, consideration was given to detailing a performance-related approach to the specification of durability. For this, a review of performance-related design and test methods has been undertaken. However, CEN/TC 104 concluded that these methods are not yet sufficiently developed for them to be detailed in this standard, but CEN/TC 104 recognised that some CEN Members have developed confidence in local tests and criteria. Therefore this standard permits the continuation and development of such practices valid in the place of use of the concrete as an alternative to the prescriptive approach. CEN/TC 104 will continue to develop performance-related methods for assessing durability at the European level.

This European Standard incorporates rules for the use of constituent materials that are covered by European standards. Other by-products of industrial processes, recycled materials etc. are in current use based on local experience. Until European specifications for these materials are available, this standard will not provide rules for their use, but instead refers to national standards or provisions valid in the place of use of the concrete.

This European Standard defines tasks for the specifier, producer and user. For example, the specifier is responsible for the specification of concrete, clause 6, and the producer is responsible for conformity and production control, clauses 8 and 9. The user is responsible for placing the concrete in the structure. In practice there may be several different parties specifying requirements at various stages of the design and construction process e.g. the client, the designer, the contractor, the concreting sub-contractor. Each is responsible for passing the specified requirements, together with any additional requirements, to the next party in the chain until they reach the producer. In the terms of this European Standard, this final compilation is known as the "specification". Conversely, the specifier, producer and user may be the same party (e.g. a contractor doing design and build). In the case of ready mixed concrete, the purchaser of the fresh concrete is the specifier and has to give the specification to the producer. This standard also covers the necessary exchange of information between the different parties. Contractual matters are not addressed. Where responsibilities are given for parties involved, these are technical responsibilities.

Notes and footnotes in tables of this standard are normative unless stated otherwise; other notes and footnotes are informative.

Further explanations and guidance on the application of this standard are given in other documents, such as CEN Reports.

## 1 Scope

This European Standard applies to concrete for structures cast in situ, precast structures, and structural precast products for buildings and civil engineering structures.

The concrete may be mixed on site, ready-mixed concrete or produced in a plant for precast concrete products.

This standard specifies requirements for:

- the constituent materials of concrete;
- the properties of fresh and hardened concrete and their verification;
- the limitations for concrete composition;
- the specification of concrete;
- the delivery of fresh concrete;
- the production control procedures;
- the conformity criteria and evaluation of conformity.

This European Standard applies to concrete compacted to retain no appreciable amount of entrapped air other than entrained air. This standard applies to normal-weight, heavy-weight and light-weight concrete.

Other European Standards for specific products e.g. precast products or for processes within the field of the scope of this standard may require or permit deviations from this standard.

Additional or different requirements may be given in further parts of this standard or in other specific European standards, for example:

- concrete to be used in roads and other trafficked areas;
- concrete using other materials (e.g. fibres) or constituent materials not covered by 5.1;
- concrete with an upper aggregate size of 4 mm or less (mortar);
- special technologies (e.g. sprayed concrete);
- concrete for disposal of liquids and gaseous waste;
- concrete for vessels for storage of polluting substances;
- concrete for massive structures (e.g. dams);
- dry mixed concrete.

NOTE As long as these standards are not available, provisions valid in the place of use of the concrete may apply. European standards are under preparation for:

- concrete to be used in roads and other trafficked areas;
- sprayed concrete.

This standard does not apply to:

- aerated concrete;
- foamed concrete;
- concrete with open structure ("no-fines" concrete);
- concrete with density less than 800 kg/m<sup>3</sup>;
- refractory concrete.

This standard does not cover health and safety requirements for the protection of workers during production and delivery of concrete.

## **2 Normative references**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

In the case of reference to European draft standards, provisions valid in the place of use of the concrete may be applied until the European Standard is available.

EN 196-2 , *Methods of testing cement - Part 2: Chemical analysis of cement*

EN 197-1, *Cement - Part 1: Composition, specifications and conformity criteria for common cements*

EN 450, *Fly ash for concrete - Definitions, requirements and quality control*

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