International Standard

ISO 13315-1

Environmental management for concrete and concrete structures —

Part 1: General principles

Management environnemental du béton et des structures en béton —

Partie 1: Principes généraux

Second edition
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 71, *Concrete, reinforced concrete and prestressed concrete*, Subcommittee SC 8, *Environmental management for concrete and concrete structures*.

This second edition cancels and replaces the first edition (ISO 13315-1:2012), which has been technically revised.

The main changes are as follows:

— the Scope has been revised to be succinct and partially moved to other clauses;

— references to ISO 13315-2 that was subsequently developed have been added to Figure 1, Figure 2, Clause 3 and 4.4.2;

— references to ISO 13315-4 that was subsequently developed have been added to Figure 1, Figure 2, Clause 3 and 4.5;

— references to ISO 13315-6 that was subsequently developed have been added to Figure 1, Figure 2, Clause 3 and 4.7;

— references to ISO 13315-8 that was subsequently developed have been added to Figure 1, Figure 2, Clause 3 and 4.9.

A list of all parts in the ISO 13315 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Environmental issues are serious subjects for the human race. The nature of the problem has been clearly recognized and the concept of "sustainable development" which can be regarded as an environmental revolution, has been created. This concept means development that meets the needs of not only present but also future generations without endangering the natural systems that support life on earth, the atmosphere, the waters, the soils and the living things, and at the same time acknowledging that global economic growth is a basis for future global welfare. The incorporation of the concept of sustainability is necessary in every aspect of social, economic, and cultural activities. The construction industry, which consumes enormous amounts of resources and energy to provide the infrastructure for the diversified activities of mankind, has a strong impact on the environment.

The ISO 14000 series on environmental management for goods and services as a system for improving the impact on the environment has already been published. This series of International Standards provides general rules for assessing the impact on the environment, as well as for environmental labels/declarations based on such an assessment. ISO 21931 and ISO 21930 are formulated to tailor this series to construction works and construction products and services, respectively.

Concrete is widely used as one of the key materials for constructing infrastructures such as buildings, bridges, dams, tunnels, etc., with its consumption being the second largest on the planet after water. While construction activities using concrete naturally entail adverse environmental impacts, they also provide environmental beneficial impacts. Improved infrastructures alleviate traffic congestion and prevent natural disasters. The development of compact cities can control the expansion of adverse environmental impacts. Industrial wastes and byproducts from other industries are used as materials, fuels, and supplementary materials for producing cement. Accurate assessment of environmental impacts is therefore essential for minimizing adverse environmental impacts derived from construction activities using concrete while maximizing beneficial environmental impacts.

Concrete structures consume large amounts of aggregates, cement and steel, which emit large amounts of CO_2 in their production processes. Concrete utilizes industrial waste and byproducts, and uses different aggregates in different regions. Concrete is delivered to the construction site in the form of partially finished products. Concrete structures are built in a wide variety of forms with specific requirements, used in various environments for a long time, and demolished, recycled and disposed of in various forms. The ISO 13315 series is intended to provide the basic rules on environmental management for concrete and concrete structures having such characteristics. It is also intended to contribute to continued improvement of the environmental impacts resulting from the activities related to concrete and concrete structures. This series ensures consistency with the existing environmental ISO 14000 series, as well as ISO 21930 and ISO 21931. Figure 1 shows the relationship between the ISO 13315 series and other existing ISO standards. Figure 2 shows the basic framework of the ISO 13315 series.

The ISO 13315 series covers all people involved in concrete and concrete structures: owners, designers, concrete manufacturers, constructors, users, certification bodies and those who develop environmental standard specifications.

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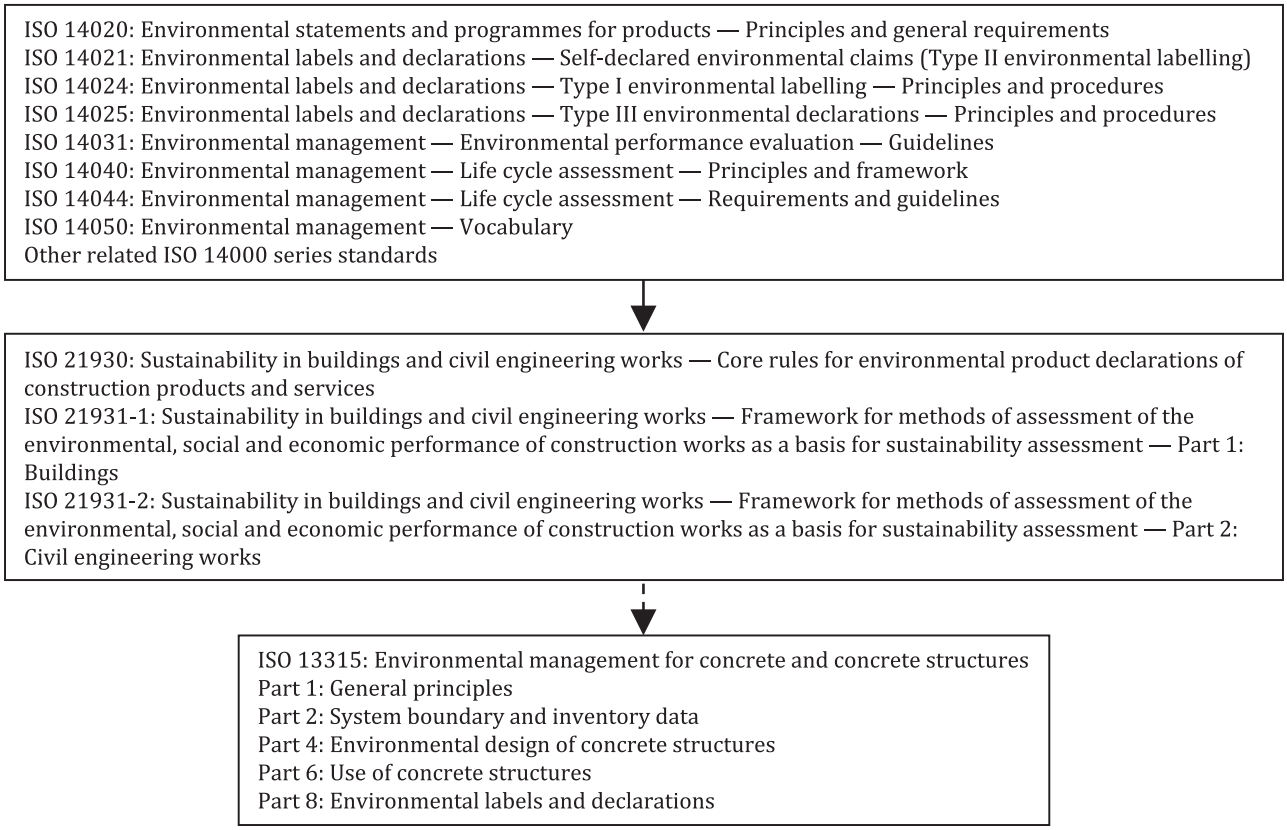


Figure 1 — Relationship between the ISO 13315 series and other existing ISO environmental standards

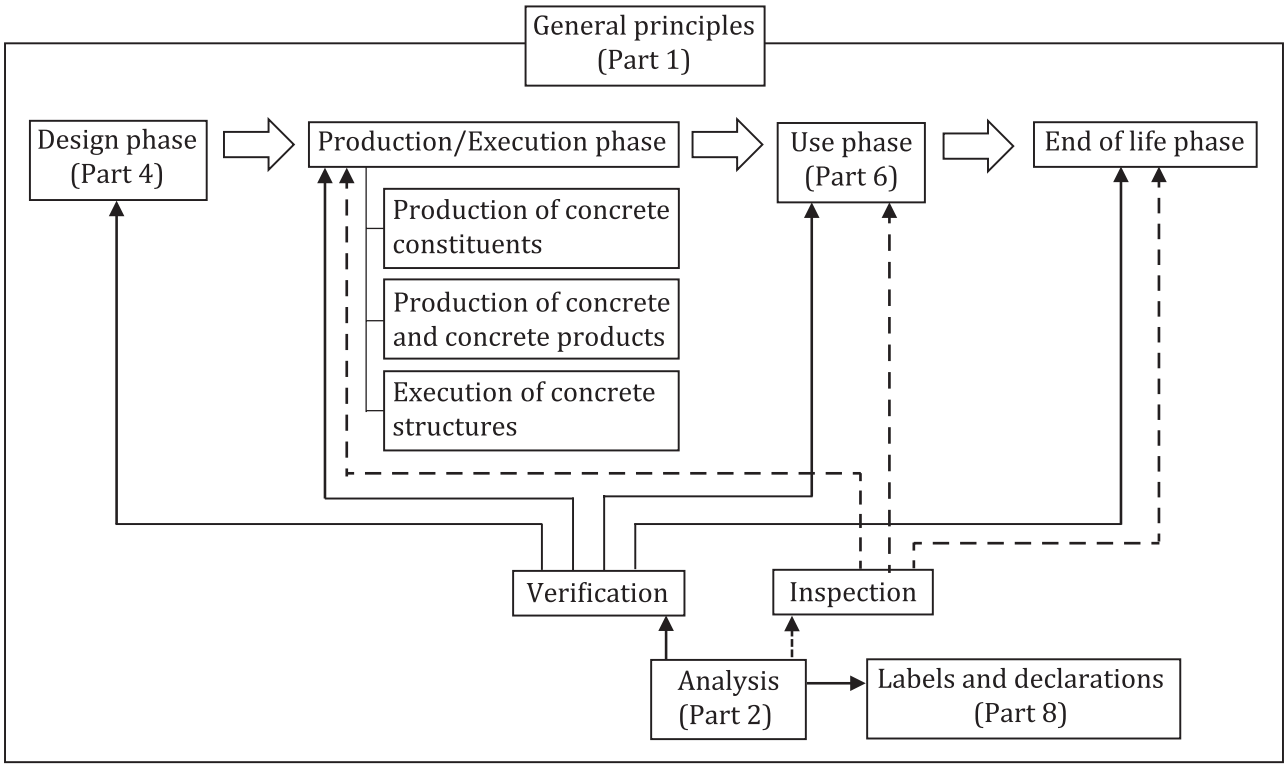


Figure 2 — Basic framework of the ISO 13315 series of standards

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Environmental management for concrete and concrete structures —

Part 1:
General principles

1 Scope

This document provides a framework and basic rules on environmental management related to concrete and concrete structures. This includes the assessment of the environmental impacts and methods of implementing environmental improvement based on the assessment.

This document is used for the environmental consideration in activities related to the production of concrete constituents, the production, recycling and disposal of concrete, and the design, execution, use and demolition of concrete structures. It is applied for their entire lifecycles, respective stages of the lifecycles, or certain ranges of the lifecycles. This document is applicable to newly produced concrete and newly constructed concrete structures, and also existing concrete and concrete structures.

This document applies to single concretes, concrete families, single concrete structures, and concrete structure complexes. For materials other than concrete, the related ISO standards are applied where available. In the case where no ISO standard is available, such materials are appropriately dealt with referring to this document and the normative references.

This document covers global, regional and local environments. This document does not directly deal with the environmental impacts resulting from the operation of equipment installed in concrete structures. However, the special properties of concrete and concrete structures affecting the operational efficiency of such equipment are considered in this document.

This document covers secondary effects of the production of concrete and execution of concrete structures.

NOTE The secondary effects of the production of concrete include the future possibility of leaching of heavy metals from concrete or the absorption of heavy metals from the environment, the effect of waste treatments on the environment, etc.

This document covers the economic and social effects of environmental consideration in the production of concrete and execution of concrete structures.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13315-2, *Environmental management for concrete and concrete structures — Part 2: System boundary and inventory data*

ISO 13315-4, *Environmental management for concrete and concrete structures — Part 4: Environmental design of concrete structures*

ISO 13315-6, *Environmental management for concrete and concrete structures — Part 6: Use of concrete structures*

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ISO 13315-8, *Environmental management for concrete and concrete structures — Part 8: Environmental labels and declarations*

ISO 14040, *Environmental management — Life cycle assessment — Principles and framework*

ISO 14044, *Environmental management — Life cycle assessment — Requirements and guidelines*

ISO 14050, *Environmental management — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13315-2, ISO 13315-4, ISO 13315-6, ISO 13315-8, ISO 14050, and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
byproduct
secondary substance produced by an industrial process

3.2
client's brief
working document which specifies at any point in time the relevant needs and aims, resources of the client and user, the context of the project and any appropriate design requirements

3.3
concrete demolition material
material generated in demolition of concrete structures

3.4
ecosystem
system of interrelations among nature, animals and human beings

3.5
environmental monetary cost
costs necessary to fulfil environmental requirements

3.6
environmental design
design of a structure in which *environmental impacts* (3.7) are considered

3.7
environmental impact
any change, which can be adverse or beneficial, to the environment, wholly or partially resulting from concrete-related activities

3.8
environmental performance
quantitative or qualitative results of environmental influence from activities related to concrete and concrete structures

3.9
execution
activities carried out for the physical completion of the work, and the inspection and documentation thereof

EXAMPLE Procurement, scaffolding, formwork, reinforcing, concreting, curing, erection of precast elements, etc.

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