SLOVENSKI STANDARD
SIST EN 16757:2017

01-september-2017

Trajnostnost gradbenih objektov - Okoljske deklaracije za proizvode - Pravila za kategorije proizvodov za beton in betonske elemente

Sustainability of construction works - Environmental product declarations - Product Category Rules for concrete and concrete elements

Nachhaltigkeit von Bauwerken - Umweltproduktdeklarationen - Produktkategorieregeln für Beton und Betonelemente

Contribution des ouvrages de construction au développement durable - Déclarations environnementales sur les produits - Règles régissant la catégorie de produits pour le béton et les éléments en béton

Ta slovenski standard je istoveten z: **EN 16757:2017**

ICS:

13.020.20	Okoljska ekonomija. Trajnostnost	Environmental economics. Sustainability
91.100.30	Beton in betonski izdelki	Concrete and concrete products

SIST EN 16757:2017 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16757

June 2017

ICS 91.100.30

English Version

Sustainability of construction works - Environmental product declarations - Product Category Rules for concrete and concrete elements

Contribution des ouvrages de construction au développement durable - Déclarations environnementales sur les produits - Règles régissant la catégorie de produits pour le béton et les éléments en béton

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Ref. No. EN 16757:2017 E

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European foreword

This document (EN 16757:2017) has been prepared by Technical Committee CEN/TC 229 “Precast Concrete Products”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by December 2017, and conflicting national standards shall be withdrawn at the latest by December 2017.

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Introduction

The European Standard EN 15804:2012+A1:2013 provides core rules for all construction products and services.

It provides a structure to ensure that all Environmental Product Declarations (EPD) of construction products, construction services and construction processes are derived, verified and presented in a harmonized way.

This European Standard provides additional rules for Environmental Product Declarations (EPD) specifically for concrete and concrete elements. It complements the core rules for all construction products and services as established in EN 15804:2012+A1:2013.

An EPD communicates verifiable, accurate, non-misleading environmental information for products and their applications, thereby supporting scientifically based, fair choices and stimulating the potential for market-driven continuous environmental improvement.

The standardization process has taken place in accordance with ISO 14025. All common issues are covered horizontally for all product types in order to minimize vertical (branch specific) deviations. All common issues are covered horizontally for all concrete and concrete elements in order to minimize intra-sectorial deviations.

EPD information is expressed in information modules as defined in EN 15804:2012+A1:2013, which allow easy organization and expression of data packages throughout the life cycle of concrete and concrete elements. The approach requires that the underlying data should be consistent, reproducible and comparable.

In line with EN 15804:2012+A1:2013 the EPD is expressed in a form that allows aggregation (addition) to provide complete information for buildings. This standard does not deal with aggregation at the building level nor does this standard describe the rules for applying EPD in a building assessment.

The standard deals with a limited number of quantifiable parameters as predefined in EN 15804:2012+A1:2013. Future revisions of EN 15804 may lead to the incorporation in this standard of additional predetermined parameters. This European Standard provides the means for developing a Type III environmental declaration of concrete and concrete elements in the context of the suite of standards that are intended to assess the sustainability of construction works.

This suite of standards includes:

— EN 15643-1, *Sustainability of construction works —Sustainability assessment of buildings — Part 1: General framework*

— EN 15643-2, *Sustainability of construction works — Assessment of buildings — Part 2: Framework for the assessment of environmental performance*

— EN 15978, *Sustainability of construction works — Assessment of environmental performance of buildings —Calculation methods*

— EN 15804:2012+A1:2013, *Sustainability of construction works — Environmental product declaration — Core rules for the product category of construction products*

— CEN/TR 15941, *Sustainability of construction works — Environmental product declarations — Methodology for selection and use of generic data*

— EN 15942, *Sustainability of construction works — Environmental product declarations — Communication format - business to business*

— CEN/TR 16970:2016, *Sustainability of construction works - Guidance for the implementation of* EN 15804

1 Scope

This European Standard complements the core rules for the product category of construction products as defined in EN 15804:2012+A1:2013 and is intended to be used in conjunction with that standard.

This European Standard applies to concrete and concrete elements for building and civil engineering, excluded autoclaved aerated concrete.

This document defines the parameters to be reported, what EPD types (and life cycle stages) to be covered, what rules to be followed in order to generate Life Cycle Inventories (LCI) and conduct Life Cycle Impact Assessment (LCIA) and the data quality to be used in the development of EPDs.

In addition to the common parts of EN 15804:2012+A1:2013, this European Standard for concrete and concrete elements:

— defines the system boundaries;

— defines the modelling and assessment of material-specific characteristics;

— defines allocation procedures for multi-output processes along the production chain;

— defines allocation procedures for reuse and recycling;

— includes the rules for calculating the LCI and the LCIA underlying the EPD;

— provides guidance/specific rules for the determination of the reference service life (RSL);

— gives guidance on the establishment of default scenarios;

— gives guidance on default functional units for concrete elements.

This document is intended to be used either for cradle to gate, cradle to gate with options or cradle to grave assessment, provided the intentions are properly stated in the system boundary description.

Within the construction works context, a cradle to grave declaration delivers a more comprehensive understanding of the environmental impact associated with concrete and concrete elements.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 206:2013+A1:2016, *Concrete - Specification, performance, production and conformity*

EN 15804:2012+A1:2013, *Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15804:2012+A1:2013 and the following apply.

3.1
environmental product declaration
EPD
fr: déclaration environnementale de produit
de: Umweltdeklaration
environmental declaration providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information

[SOURCE: ISO 21930:2007]

3.2
concrete
fr: béton
de: Beton
material formed by mixing cement, coarse and fine aggregate and water, with or without the incorporation of admixtures, additions or fibres, which develops its properties by hydration of cement and hydraulic additions as defined in EN 206, as appropriate

[SOURCE: EN 206:2013+A1:2016]

3.3
concrete element
fr: élément en béton
de: Betonelement

part of a construction work made of concrete, either precast or cast on site or a combination of both

3.4
precast (concrete) element
fr: élément préfabriqué (en béton)
de: vorgefertigtes Betonerzeugnis
concrete element cast and cured in a place other than the final location of use (factory produced or site manufactured)

[SOURCE: EN 206:2013+A1:2016]

3.5
precast (concrete) product
fr: produit préfabriqué (en béton)
de: Fertigteil (aus Beton)
product made of concrete and manufactured in accordance with EN 13369 or a specific product standard in a place different from the final destination of use, protected from adverse weather conditions during production

Note 1 to entry: The product is the result of an industrial process under a factory production control system and with the possibility of sorting before delivery.

[SOURCE: EN 13369:2013]

3.6
ready-mixed concrete
fr: béton prêt à l'emploi
de: Transportbeton
— concrete delivered in a fresh state by a person or body who is not the user; or

— concrete produced off site by the user; or

— concrete produced on site, but not by the user

[SOURCE: EN 206:2013+A1:2016]

3.7
site-mixed concrete
fr: béton de chantier
de: Baustellenbeton
concrete produced on the construction site by the user of the concrete for his own use

[SOURCE: EN 206:2013+A1:2016]

3.8
addition
fr: addition
de: Betonzusatzstoff
finely-divided-inorganic constituent used in concrete in order to improve certain properties or to achieve special properties

Note 1 to entry: The addition could be nearly inert (type I), pozzolanic or latent hydraulic addition (type II).

[SOURCE: EN 206:2013+A1:2016]

3.9
admixture
fr: adjuvant
de: Betonzusatzmittel
constituent added during the mixing process in small quantities related to the mass of cement to modify the properties of fresh or hardened concrete

[SOURCE: EN 206:2013+A1:2016]

3.10
aggregate
fr: granulat
de: Gesteinskörnung
granular material of natural, manufactured, or recycled origin used in construction

[SOURCE: EN 12620:2002+A1:2008]

3.11
cement
fr: ciment
de: Zement
finely ground inorganic material which, when mixed with water, forms a paste that sets and hardens by means of hydration reactions and processes and which, after hardening, retains its strength and stability even under water

[SOURCE: EN 197-1:2011]

3.12
binder
combination of cement and reactive (type II) additions

3.13
clinker
main constituent of most cement, made by heating at high temperature a homogeneous mixture of raw materials (mostly limestone and clay)

3.14
polymer fibre
fr: fibres polymères
de: Polymerfasern
straight or deformed piece of extruded, orientated and cut material, which are suitable to be homogenously mixed into concrete

[SOURCE: EN 14889-2 :2006]

3.15
steel fibre
fr: fibres d'acier
de: Stahlfasern
straight or deformed piece of cold-drawn steel wire, straight or deformed cut sheet fibres, melt extracted fibres, shaved cold drawn wire fibres or fibres milled from steel blocks, which are suitable to be homogeneously mixed into concrete

[SOURCE: EN 14889-1:2006]

3.16
reinforcement steel
steel (wire, strand or bars) subjected to pre- or post-tensioning, and steel (bars, wire, strand, welded mesh fabrics, lattice girder) not subjected to pre- or post-tensioning

3.17
cubic metre of concrete
fr: mètre cube de béton
de: Kubikmeter Beton
quantity of fresh concrete which, when compacted in accordance with the procedure given in EN 12350-6, occupies a volume of one cubic metre

3.18
truck mixer
fr: camion malaxeur
de: Fahrmischer
concrete mixer mounted on a self-propelled chassis capable of mixing and delivering a homogeneous concrete

[SOURCE: EN 206:2013+A1:2016]

3.19
falsework
fr: étayement
de: Lehrgerüst
temporary support for a part of a structure while it is not self-supporting and for associated service load

3.20
formwork
fr: coffrage
de: Schalung
structure, permanent or temporary, for containing poured concrete, moulding it to the required dimensions and supporting it until it is able to support itself

3.21
carbonation
fr: carbonatation
de: Carbonatisierung
chemical reaction, a natural process by which carbon dioxide in the ambient air penetrates and reacts with hydration products

3.22
estimated service life
fr: durée de vie estimée
de: voraussichtliche Nutzungsdauer
service life that a building or an assembled system (part of works) would be expected to have in a set of specific in-use conditions, determined from reference service life data after taking into account any differences from the reference in use conditions

[SOURCE: EN 15978]

4 Abbreviations

For the purposes of this document, the abbreviations given in EN 15804:2012+A1:2013 and the following apply.

GGBS Ground Granulated Blastfurnace Slag

PFA Pulverized Fuel Ash”

5 General aspects

5.1 Objective of this PCR

The objective of this PCR is to provide common rules specific for concrete and concrete elements for the application of EN 15804:2012+A1:2013, for building and civil engineering works.

In addition to the objectives of EN 15804:2012+A1:2013 this document aims to:

— define the parameters to be declared and the way in which they are collated and reported;

— describe which stages of a product's life cycle are considered in the EPD and which processes are to be included in the life cycle stages;

— define rules for the development of scenarios, including the rules for calculating the Life Cycle Inventory and the Life Cycle Impact Assessment underlying the EPD, including the specification of the data quality to be applied;

— communicate EPDs and environmental information about concrete and concrete elements;

— ensure that comparisons between construction products are carried out in the context of their use in the building on the basis of the functional unit.

5.2 Types of EPD with respect to life cycle stages covered

EN 15804:2012+A1:2013 shall apply.

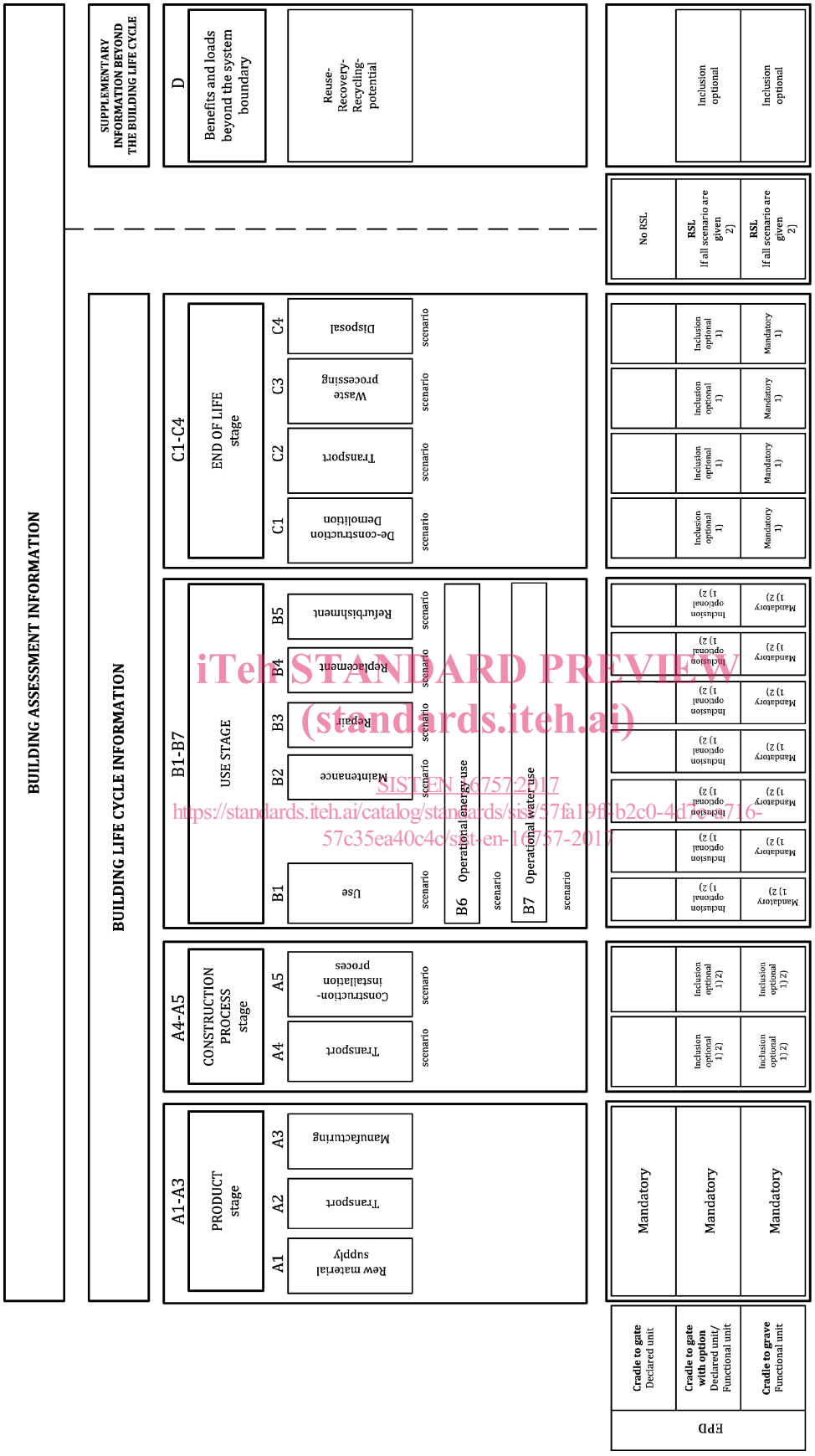

Figure 1 — Types of EPD with respect to life cycle stages covered

5.3 Comparability of EPD for construction products

EN 15804:2012+A1:2013 shall apply.

5.4 Additional information

EN 15804:2012+A1:2013 shall apply.

5.5 Ownership, responsibility and liability for the EPD

EN 15804:2012+A1:2013 shall apply.

5.6 Communication formats

EN 15804:2012+A1:2013 shall apply.

6 Product Category Rules for LCA

6.1 Product category

The product category referred to in this standard includes concrete and concrete elements for building and civil engineering works.

6.2 Life cycle stages and their information modules to be included

6.2.1 General

In addition to the text of EN 15804:2012+A1:2013:

As all life cycle stages (from A1 to C4) shall be included when assessing a construction work (building or civil engineering), it is recommended that EPDs prepared cover the same life cycle, i.e. cradle to grave.

A general description of the life cycle stages is given in Figure 1.

6.2.2 A1-A3, Product stage, information modules

In addition to the text of EN 15804:2012+A1:2013:

NOTE Concrete and concrete elements may contain the following constituents or products (not exhaustive list):

— aggregates;

— cement;

— water;

— admixtures;

— additions;

— fibres;

— reinforcing steel (for precast concrete elements).

When the full LCI of constituents is not available, impact indicators and aspects from the EPDs complying to EN 15804:2012+A1:2013 for the constituents or for ready-mixed concrete, covering modules A1 to A3, can be used for the assessment of module A1 of the concrete or concrete element. If