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**Navodilo za uvedbo okoljskih vidikov v standarde za proizvode in systemske standarde na področju projektiranja kanalizacijskih sistemov**

Guidance for the implementation of environmental aspects in product standards and system standards in the field of wastewater engineering

Anleitung zur Umsetzung von Umweltaspekten in Produkt- und Systemnormen im Bereich Abwassertechnik

Lignes directrices pour la mise en oeuvre des aspects environnementaux dans les normes produits et les normes systèmes du domaine de l'assainissement

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environnementaux dans les normes produits et les  
normes systèmes du domaine de l'assainissement

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Produkt- und Systemnormen im Bereich  
Abwassertechnik

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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## European foreword

This document (CEN/TR 16928:2016) has been prepared by Technical Committee CEN/TC 165 “Wastewater Engineering”, the secretariat of which is held by DIN.

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## 1 Scope

This document applies for the implementation of environmental aspects in product standards and system standards in the field of wastewater engineering. It provides a structure on how to identify and consider environmental aspects and potential environmental impacts of products and systems in the field of wastewater engineering throughout their life cycle.

NOTE Standards that are produced make environmental declarations voluntary where there are no national regulations. This is carried out by including for “No Performance Declared”.

This Technical Report gives guidance on how this life cycle should be considered in accordance with EN 15804.

The stages of Life Cycle Assessment (LCA) are given in Annex A.

## 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 15804, *Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products*

CEN Guide 4:2008, *Guide for addressing environmental issues in product standards*

## 3 Terms and definitions

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For the purposes of this document, the terms and definitions given in CEN Guide 4:2008 and the following apply.

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### 3.1

#### life cycle

consecutive and interlinked stages of a product system, from raw material acquisition or generation of natural resources to final disposal

Note 1 to entry: The term “product system” is defined and further explained in ISO 14040.

[SOURCE: ISO 14050:2009, definition 7.1]

## 4 General guidance

### 4.1 Provisions dealing with the introduction of environmental aspects into European Standards

European Standards concerning products and systems in the field of wastewater engineering currently exist without any direct reference for the user to environmental awareness and the possible environmental aspects and potential impacts. This does not necessarily lead to products and systems in the field of wastewater engineering which are less environmentally friendly, because the user has other incentives when considering environmental aspects, such as installation considerations, legal requirements etc. However, the inclusion of environmental provisions encourages the consideration of environmental aspects in cases where such incentives do not exist.

In many cases, it is sufficient to include the necessary provisions when revising European Standards dealing with products and systems in the field of wastewater engineering by the inclusion of a new

Clause or Subclause where the relevant environmental aspects are formulated or by reference to this Technical Report.

In standardization, environmental impacts should be considered together with other factors, such as:

- a) local circumstances (see EN 752);
- b) system objectives, functional requirements and performance indicators (see EN 752);
- c) system design and installation;
- d) product characteristics and production processes;
- e) operation and maintenance;
- f) total cost of ownership/life cycle costing;
- g) quality;
- h) legal constraints and regulatory requirements.

In order to determine how the product environmental aspects should be identified in wastewater standards, it is necessary to understand how the product interacts with the system and the environment during its life cycle. Environmental aspects are connected to impacts through a cause and effect relationship.

Examples of environmental aspects to consider include:

- emissions to air;
- discharges to water and soil;
- use of raw materials;
- energy and water consumption;
- land use.

Examples of environmental impacts that can be positively or negatively influenced by provisions in standards can include:

- climate change (through the emission of greenhouse gases);
- air pollution (through uncontrolled/untreated or accidental emissions of particulates and toxic gases to air); and
- depletion of non-renewable resources (consumption of fossil fuels, minerals).

NOTE Additional examples are given in EN 15804.

All environmental aspects outlined in this Clause also apply to services.

As a result of this consideration, substantial energy and CO<sub>2</sub> reduction and resource optimization can be possible without compromising the fitness for purpose and longevity of the pipe systems.

## 4.2 Life Cycle Assessment (LCA)

Any inclusion of environmental aspects into product and system standards should consider the life cycle of the product or system. As such, all stages of the life cycle of the relevant product or system should be considered, including:

- a) acquisition stage:

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- 1) raw materials and energy;
- 2) premanufactured materials and components;
- b) product stage:
  - 1) production from raw material;
  - 2) transport;
  - 3) manufacturing of final products;
- c) construction and installation process stage:
  - 1) transport of the products and laying to build a system;
- d) use stage:
  - 1) collection and transportation of wastewater;
  - 2) operation and maintenance of the system;
- e) end-of-life (including recycling).

Guidance on Life Cycle Assessment (LCA) is given in e.g. EN 15804, EN 15978 and EN ISO 14044, with special regard to recycling issues (see also Annex A). European Standards should specify requirements for re-use.

#### 4.3 Assessment of environmental impacts in standards

For the design of products and systems in the field of wastewater engineering, e.g. EN 752, EN 12056 (all parts), EN 12255 (all parts), EN 12566 (all parts) and the guidance given in ISO/TR 14062 should be considered.

In accordance with CEN Guide 4, additional environmental aspects, specific for the relevant design and product life cycle, should be identified by the applicable screening procedures as defined in EN 15804.

Assessment of the environmental impacts should be in accordance with construction product standards.

An environmental checklist should be completed, updated as appropriate and attached to draft standards during all stages of the development of a standard. The matrix provided in Table B.1, is particularly suitable to standards. In some cases, e.g. for services, or to accommodate regional or sector specific issues, other tools or another form of checklist can be more appropriate. For example, the life cycle stages can be modified to better reflect the typical steps of providing services. In other cases, where one product is described by a whole series of standards covering the whole life cycle, it can be more appropriate to complete the checklist not for each single standard, but for the whole series.

The purpose of the environmental checklist is to explain whether the proposal covers relevant product environmental aspects and, if so, how they are dealt with in the European Standard. The European Standard is published without the environmental checklist.



## 5 Overview of environmental aspects in wastewater standards

### 5.1 General

Environmental aspects should be considered for cases where requirements are specified for systems and products and in the field of wastewater engineering. These aspects can be addressed in the standards for:

- systems for drains and sewers outside buildings;
- systems for drains and sewers inside buildings;
- wastewater treatment plants (< 50 PT);
- wastewater treatment plants (> 50 PT);
- reuse of water.

For the most part, the main potential environmental impacts of products and systems are related to the energy consumption and the associated emissions in the operating stage. The energy consumption of a system depends e.g. on its head losses for pressure pipes, leakages, energy need of pumping systems.

Increasing the lifetime of the products reduces the environmental impacts, because more frequent rehabilitation (repair /renovation/replacement) means additional extraction of energy resources, emissions and waste. Trenchless applications can reduce environmental impact of installation. Other examples of beneficial environmental aspects are:

- a) the avoidance of unnecessary material should be a general requirement for the design of the products;
- b) reduction in traffic resulting in avoidance of traffic jams and delays and reduction in CO<sub>2</sub> emissions;
- c) high mechanical performance, i.e. the robustness of products and systems allow energy saving from the reduced mechanisation required during installation. Similarly, the need for imported material for bed and surround is avoided/minimised, with the subsequent savings associated with the unnecessary use of natural resources and transportation costs;
- d) recovery of energy.
- e) Environmental impacts are related to the inputs that are used and consumed, the processes employed and the outputs that are generated at all stages of the life cycle including options for the dismantling, decommissioning or demolition of wastewater systems.

### 5.2 Inputs

#### 5.2.1 General

Inputs include the use of resources that can be natural materials (e.g. minerals, water, gas, oil, coal, wood), those from the industrial environment (e.g. recycled materials, co-products, intermediate products, energy), or from land use.

For practical reasons, these different resources can be broadly categorized into “materials”, “water”, “energy” and “land use”.

#### 5.2.2 Materials

Material inputs play an important role in all stages of the life cycle, from raw material extraction to final disposal. They can produce a variety of environmental impacts. These impacts can include depletion of resources, detrimental land use, and environmental or human exposure to hazardous materials.