SIST

SLOVENSKI STANDARD
SIST EN 12566-7:2017

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Nadomešča:
SIST EN 12566-7:2013

Male čistilne naprave do 50 PE - 7. del: Predizdelane čistilne enote za terciarno čiščenje

Small wastewater treatment systems for up to 50 PT - Part 7: Prefabricated tertiary treatment units

Kleinkläranlagen für bis zu 50 EW - Teil 7: Vorgefertigte Anlagen für eine dritte Reinigungsstufe

Petites installations de traitement des eaux usées pour une population totale équivalente (PTE) jusqu'à 50 habitants - Partie 7 : Unités préfabriquées de traitement tertiaire

Ta slovenski standard je istoveten z: EN 12566-7:2016

ICS:

13.060.30	Odpadna voda	Sewage water

SIST EN 12566-7:2017 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12566-7

August 2016

ICS 13.060.30

Supersedes EN 12566-7:2013

English Version

Small wastewater treatment systems for up to 50 PT - Part 7: Prefabricated tertiary treatment units

Petites installations de traitement des eaux usées jusqu'à 50 PTE - Partie 7: Unités préfabriquées de traitement tertiaire

Kleinkläranlagen für bis zu 50 EW - Teil 7: Im Werk vorgefertigte Einheiten für eine dritte Reinigungsstufe

This European Standard was approved by CEN on 25 June 2016.

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

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

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European foreword

This document (EN 12566-7:2016) has been prepared by Technical Committee CEN/TC 165 "Wastewater engineering", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by February 2017, and conflicting national standards shall be withdrawn at the latest by May 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12566-7:2013.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

The differences between this version and EN 12566-7:2013 are mainly editorial changes according to the Construction Product Regulation (CPR) and declaration of power consumption and desludging during treatment efficiency test.

The standard series EN 12566 "Small wastewater treatment systems for up to 50 PT" contains the following parts (see Figure 1):

— *Part 1: Prefabricated septic tanks*;

— *Part 3: Packaged and/or site assembled domestic wastewater treatment plants*;

— *Part 4: Septic tanks assembled in situ from prefabricated kits*;

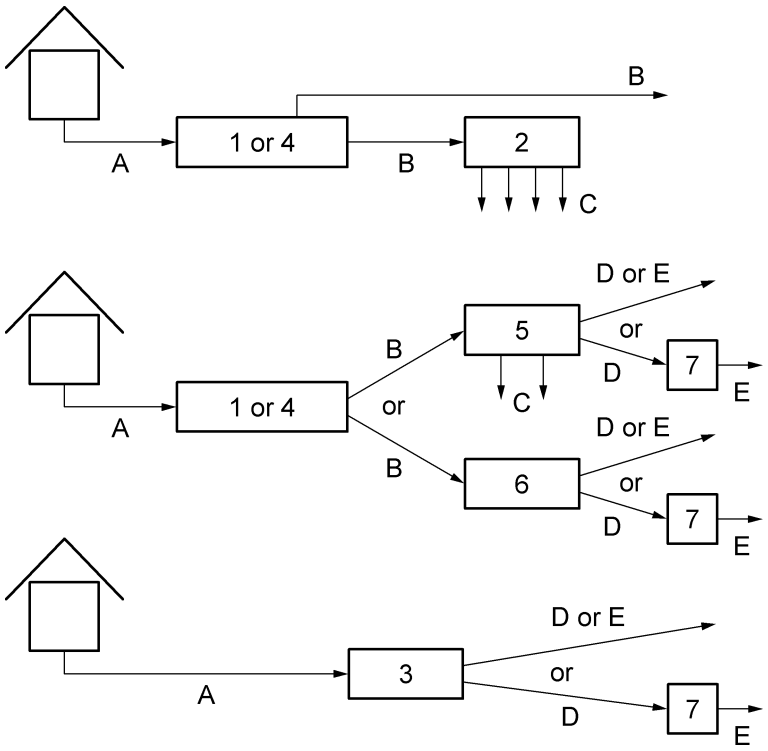
— *Part 6: Prefabricated treatment unit used for septic tank effluent*;

— *Part 7: Prefabricated tertiary treatment unit (this document).*

For filtration systems, CEN/TC 165 decided to publish the following CEN Technical reports, which are considered as Code of practices and do not specify treatment requirements:

— *Part 2: Soil infiltration systems;*

— *Part 5: Pre-treated Effluent Filtration systems.*



Key

A	domestic wastewater	1	prefabricated septic tank
B	septic tank effluent	2	soil infiltration system
C	treated infiltrated effluent	3	packaged and/or site assembled domestic wastewater treatment plant
D	treated wastewater	4	septic tank assembled *in situ* from prefabricated kit
E	tertiary treated wastewater	5	pre-treated effluent filtration system
		6	prefabricated treatment unit used for septic tank effluent
		7	prefabricated tertiary treatment unit

National regulations may specify different arrangements between the products described in the standard series EN 12566.

Figure 1 — Scheme related to the arrangement of the parts of EN 12566

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies requirements, test methods, the marking and evaluation of conformity for a packaged and/or site assembled tertiary treatment unit (see Figure 1).

It applies for tertiary treatment units that are placed on the market as complete units used for the tertiary treatment of domestic wastewater by biological, physical, chemical, electrical processes and coming from:

a) units in accordance with EN 12566-3 or EN 12566-6;

b) installations designed and constructed in accordance with CEN/TR 12566-5.

Equivalent secondary treated effluent may come from existing systems.

Package and/or site assembled tertiary treatment units according to this standard consist of one or more watertight tanks without any direct infiltration into the ground, made of concrete, corrosion resistant or coated steel, un-plasticised poly-vinyl chloride (PVC-U), polyethylene (PE), glass reinforced thermosetting plastics (GRP) based on polyester resin (UP) (GRP-UP), polypropylene (PP), polydicyclopentadiene (PDCPD) and flexible sheets (HDPE, PP, PVE and EPDM).

This standard applies to tertiary treatment units for use above ground (outside the building) or buried in the ground where no vehicle loads are applied to the unit.

This standard does not apply to tertiary treatment systems forming part of units covered by EN 12566-3 and EN 12566-6.

This standard does not cover the systems for microorganism reduction.

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 12566-3:2016, *Small wastewater treatment systems for up to 50 PT — Part 3: Packaged and/or site assembled domestic wastewater treatment plants*

CEN/TR 12566-5, *Small wastewater treatment systems up to 50 PT — Part 5: Pre-treated Effluent Filtration systems*

EN 12566-6:2016, *Small wastewater treatment systems for up to 50 PT — Part 6: Prefabricated treatment units for septic tank effluent*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 16323:2014, *Glossary of wastewater engineering terms*

3 Terms, definitions, symbols and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12566-3:2016, EN 12566-6:2016, EN 16323:2014 and the following apply.

3.1.1
tertiary treatment
additional treatment process which results in further purification than that obtained by applying primary and secondary treatment

Note 1 to entry: It is recommended that the expression for the treatment, e.g. nitrogen removal, phosphorus removal, polishing effects, suspended solid removal, is used since in some case the tertiary treatment can also be integrated in the secondary treatment.

3.1.2
packaged unit
prefabricated factory-built unit

3.1.3
site assembled unit
unit composed of prefabricated components assembled on site coming from one manufacturer

3.1.4
biological processes
processes in which the treatment is mainly carried out by micro-organism activity

3.1.5
physical processes
processes in which the treatment is mainly carried out by using the physical properties of a media

3.1.6
chemical processes
processes in which the treatment is mainly carried out by the addition of chemical agents

3.1.7
electrical processes
processes in which the treatment is mainly carried out by the use of electricity

3.1.8
product family
group of products in which, for the purpose of evaluation, the selected property(s) is/are similar for all products within the group

Note 1 to entry: The definition of family takes into account at least similar shape, equipment, materials and conditions of end use and ensures the minimum hydraulic efficiency and minimum structural behaviour for all the products in the range.

Note 2 to entry: The minimum level of performance (hydraulic efficiency and structural behaviour) are given by the test carried out on one model of the family.

3.1.9
tertiary treatment retrofit unit
tertiary treatment unit installed within an existing package and/or site assembled domestic wastewater treatment plant in accordance with EN 12566-3, or a secondary treatment unit in accordance with EN 12566-6 or a pre-treated effluent filtration system in accordance with CEN/TR 12566-5

Note 1 to entry: Where such a retrofit unit affects the declared performance of EN 12566–3 or EN 12566–6 unit in which it is installed, then the overall unit should be tested for its conformity with the relevant standard.

3.1.10
nominal designation
expressed as an integer giving the maximum number of population equivalent appropriate to the plant

3.2 Symbols and abbreviated terms

The following symbols and abbreviations are used in this standard:

BOD_5 (or BOD_7)	Biochemical oxygen demand at 5 days (or 7 days)
COD	Chemical oxygen demand
SS	Suspended solids
Total N	Total nitrogen
Total P	Total phosphorus
TOC	Total organic carbon
PP	Polypropylene
PDCPD	Polydicyclopentadiene
HDPE	High Density Polyethylene
PVC	Polyvinyl Chloride
EPDM	Ethylene Propylene Diene Monomer
PE	Polyethylene

4 Product characteristics

4.1 Design

4.1.1 General

Tertiary treatment units shall be designed to be structurally stable with the expected loads for the intended use. In addition, the units shall be durable, watertight and corrosion resistant.

Where electrical, mechanical or hydraulic malfunction of the unit could lead to any failure, it shall be provided with an alarm to indicate such failure. The functionality of the alarm shall be verified as referenced in Table A.2.

4.1.2 Overall dimensions

The overall dimensions of the prefabricated tertiary treatment unit (i.e. height, width, length, diameters, etc.) shall be measured and declared together with a tolerance.

Assessment of overall dimensions shall be done by measurement with accuracy of ± 0,5 % of the dimension.

4.1.3 Inlets, outlets, internal pipework and connections

The nominal diameters for inlet and outlet pipework of the prefabricated tertiary treatment unit shall be declared in the technical documentation. The hydraulic design of the unit, the internal pipework and the connections shall ensure that no accidental back-flows, blockage or surcharging occur during normal operation of the plant.

Inlet and outlet pipes shall be compatible with standardised pipe systems.

Assessment of inlets, outlets, internal pipework and connections shall be done by measurement with accuracy of ± 0,5 % of the dimension.

4.1.4 Access

The prefabricated tertiary treatment unit shall be designed to restrict unauthorised access (e.g. locking mechanism).

The design of the unit shall provide access to allow routine maintenance sampling, removal of sludge (where applicable), cleaning and maintenance. An opening with a dimension (i.e. length for rectangular section or diameter for circular section) of a minimum 400 mm shall be required. For open unit, access is not required.

For installation purposes of open units, there may be local regulations for maintenance access.

NOTE 1 For installation purposes of open units, there may be local regulations for maintenance access.

NOTE 2 The requirements to provide facility for the access of a person into the plant may depend on applicable regulations, valid in the member state for the intended end use conditions. For example, the minimum dimension of the opening for the access of a person in EN 476 is 600 mm.

Extension shafts, where applicable, and access covers of the prefabricated tertiary treatment unit shall be designed to be fit for purpose.

The access dimensions shall be declared. Assessment of access dimension shall be done by measurement with accuracy of 0,5 % of the dimension.

The plant shall be designed to restrict unauthorized access by one of the following means:

a) mass of the individual covers;

b) securing feature; or

c) locking accessory.

Where a locking accessory or securing feature is used, it shall be designed so that the cover cannot be easily opened with objects readily accessible by children.

4.2 Load bearing capacity

For units not including a tank, load bearing capacity assessment is not required.

Test methods and values for mechanical characteristics of the materials of the tank, used for calculation of the load bearing capacity of the tank, shall be in accordance with EN 12566-3:2016, Annex D.

The prefabricated tertiary treatment units shall resist the loads resulting from handling, installation and use including desludging and maintenance, for their design life.

When tested according to 5.1, the load bearing capacity is declared as:

— maximum allowed height of backfill (m);

— possibility to install the unit in water table or not, expressed as WET or DRY, respectively.

4.3 Tertiary treatment efficiency

For the purpose of determination of the tertiary treatment efficiency the tertiary treatment unit shall be determined by testing in accordance with Annex A.

If there is an effect of the tertiary treatment process on BOD_5 or BOD_7, COD, SS inlet concentrations and nitrogen parameters and total phosphorus, then that effect shall be declared.

All parameters relevant for the treatment process of upstream units according to EN 12566-3 or EN 12566-6 shall be measured even if not declared by the manufacturer for CE-marking.

The tertiary treatment efficiency shall be expressed in terms of tertiary treatment efficiency ratios with the indication of the organic load tested and the parameter to be reduced.

In addition, the number of desludging procedures carried out during the test according to Annex A, shall be declared.

Each tertiary treatment efficiency ratio shall be calculated according to 5.2.

4.4 Watertightness

The tertiary treatment unit shall be watertight. It shall be tested according to 5.3

For units not including a tank, watertightness test is not required.

4.5 Power consumption

The power consumption of the unit shall be declared according to 5.4.

The declared power consumption value shall be higher or equal to the measured value during the test in A.2.4.4.

4.6 Durability

4.6.1 General

The prefabricated tertiary treatment units, including all their internal components, shall be manufactured from materials that make them, from the durability aspects, suitable for use in a domestic wastewater environment.

Materials of the other components of the unit (i.e. filter material, pump, etc.) shall be in accordance with the specifications given by the manufacturer to the material/component supplier.

4.6.2 Concrete, steel, PVC-U, PE, GRP, PDCPD and flexible sheets

For concrete, steel, PVC-U, PE, GRP, PDCPD tank and flexible sheets (i.e. the parent material and the coatings, where relevant) the material shall comply with EN 12566-3:2016, 4.5.2 to 4.5.9, as appropriate.

4.7 Reaction to fire

4.7.1 General

Where use of a prefabricated tertiary treatment unit is subject to national regulatory requirements on reaction to fire, its reaction to fire performance shall be considered as one of its components (i.e. material approach) and shall be declared as one of the following classes, according to EN 13501-1:

a) Class A1, without the need for testing (CWT), when meeting the requirements, specified in 4.7.2, or otherwise; or

b) class, defined according to the results of testing of the material(s) used in the unit, according to the standard(s) referred to in EN 13501-1, as specified in 4.7.3.

NOTE In most cases Class E is considered to be sufficient as a minimum regulatory requirement for the reaction to fire performance of units used in buried (i.e. underground) applications.

Conversely, where use of such a unit is not subject to national regulatory requirements on reaction to fire, either class, determined according to a) or b) or "No Performance Determined" (NPD) may be declared.

4.7.2 Units classified as Class A1 without the need for testing

The reaction to fire performance of a unit shall be declared as Class A1[1)] without the need for testing, provided that:

a) each of the constituent materials that the tank of the unit is made of, contains not more than 1 % of homogeneously distributed organic material, by mass or volume (whichever is the most onerous), and

EXAMPLE In general, precast reinforced concrete used for prefabricated tertiary treatment unit might contain organic materials (e.g. admixtures, additives) if any, but their level is far below 1 %. Similarly also steel, used for the same purpose, is not used in a finely divided form. Thus, on account of their low level of combustibility and subject to the conditions set out (see Footnote 1)) both materials might be considered, without testing, as class A1 materials for their reaction to fire performance.

b) any external coating, if applied over the surface area of the tank, is made of inorganic material(s), classified class A1 without testing, with thickness ≥ 1,0 mm or mass per unit area ≥ 1,0 kg/m^2, which is/are also classified as Class A1.

4.7.3 Units classified according to the test results

For the purpose of the reaction to fire performance of the unit each of its constituent materials, including those in surface coating of the unit, if any, shall be classified according to EN 13501-1 and only the lowest class of such materials shall be declared. The class of an individual constituent material shall be obtained as the result of the test method(s), relevant to this class, and as specified in the standards referred to in EN 13501-1.

A constituent material of the unit is considered as the material, which may have a significant effect on the reaction to fire performance of such unit. According to the definitions given in EN 13501-1, this may be in case of:

— homogeneous unit: its material; or

— non-homogeneous unit: its substantial component, i.e. a material that constitutes a significant part of such unit. A layer with a mass per unit area ≥ 1,0 kg/m^2 or a thickness ≥ 1,0 mm is considered to be a substantial component.

EXAMPLE In general, this might be considered relevant for the unit where the tank is made from one or more of the following constituent materials: unplasticised polyvinylchloride (PVC-U), polyethylene (PE), glass reinforced polyester (GRP-UP), polypropylene (PP) and polydicyclopentadiene (PDCPD); or the container is made from flexible sheets (HDPE, PP, PVC, OR EPDM), with or without surface coating.

Test specimens used for the test methods, applicable for this classification, shall be prepared according to EN 13501-1 and to the relevant standards referred therein.

4.8 Dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this standard are placed on those markets.

In the absence of European harmonized test methods, verification and declaration on release/content should be done taking into account national provisions in the place of use.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction website on EUROPA accessed through: http://ec.europa.eu/enterprise/construction/cpd-ds/.

1) See Decision of the Commission 96/603/EC of 1996-10-04 (*see OJEU L 267 of 1996-10-19*), as twice amended by 2000/605/EC of 2000-09-26 (*see OJEU L 258 of 2000-10-12*) and by 2003/424/EC of 2003-06-06 (*see OJEU L 144 of 2003-06-12*).