

Subject: Deficiencies in harmonised product standard EN 12566-3+A1 ‘Small wastewater treatment systems for up to 50 PT – Part 3: Packaged and/or site assembled domestic wastewater treatment plants

## COMMENTS from the Head of the Finnish Delegation to SCC

### General

Some of the comments go beyond the role of the regulator but we believe that they improve clarity and user friendliness.

### Detailed comments

#### 1 Scope

Treatment plants for the treatment of pure grey water (domestic wastewater except toilet wastewater) shall be more clearly excluded from the scope of this standard. This can be done e.g. by modifying the last sentence of the first paragraph as follows:

*Small wastewater treatment plants according to this European Standard are used for the treatment of raw domestic wastewater **except pure grey water**.*

In addition answer to the mandate shall be modified to exclude treatment plants for the treatment of pure grey water.

Justification:

Treatment efficiency test method in this EN-standard is not applicable for the treatment of pure grey water.

#### 3 Terms and definitions

Definition for nominal designation shall be added, see prEN 12566-6.

#### 6 Requirements

New clause New clause 6.1.X Overall dimensions shall be added. See clause 6.1.2 in prEN 12566-6. Assessment of overall dimensions shall be done by measurement with accuracy of  $\pm 20$  mm.

Clause 6.1.1 This clause gives a requirement for the treatment plant to be provided with an alarm system to indicate operational failure. However, no test method is given how to verify the operational reliability of the alarm system.

Short term solution:

Alarm system is excluded from the scope of the standard and from clause 6.1.1. Then requirements for the alarm system can be given nationally following the NOTE in the Scope.

Long term solution:

TC 165 develops operational reliability test for the alarm system of the treatment plant where it is needed. Then alarm system is included in the scope of this standard and added to clause 6.1.1. In addition the proxy characteristic 'operational reliability of the alarm system' shall be added to Table ZA.1 and to the answer to the mandate.

- Clause 6.1.2 This clause shall be part of the harmonised standard. That is why Table ZA.1 shall make reference to clause 6.1.2 with a pass criterion. Answer to the mandate shall be modified accordingly. In addition accuracy requirement shall be added, see clause 6.1.3 in prEN 12566-6. Assessment of inlets and outlets shall be done by measurement with accuracy of  $\pm 1$  mm. Assessment of internal pipework and connections shall be done by visual control.

Justification:

Requirements in clause 6.1.2 have to be fulfilled to ensure reliable treatment efficiency.

- Clause 6.1.2 Inlet and outlet pipes shall be compatible with standardized pipe systems.

- Clause 6.1.3 This clause shall be part of the harmonised standard. That is why Table ZA.1 shall make reference to clause 6.1.3 with a pass criterion. Answer to the mandate shall be modified accordingly.

Justification:

Requirements in clause 6.1.3 have to be fulfilled to ensure reliable treatment efficiency.

- Clause 6.1.3 The size of the extension shafts shall have a minimum dimension of 600 mm for products for which there is a need to perform maintenance inside the treatment plant. The requirements related to the volume of the plant shall be deleted.

- Clause 6.2.1.1 Second paragraph is not acceptable. It is not allowed to state in the harmonised product standard that the structural calculation shall be made according to calculation methods accepted in place of use especially when European calculation methods are available. This is not harmonisation.

For plants made of concrete or of steel reference shall be made to EN Eurocodes which included applicable calculation methods also for treatment plants. For plants made of other materials reference may be temporarily made to calculation methods accepted in the place of use. TC 165 shall immediately start the preparation of European calculation methods for these other materials (PVC-U, PE, PP and GRP).

- Clause 6.5.2 Compressive strength shall be greater or equal to C 35/45, not exactly C 35/45.

Reference is made to Table A.2 and A.2 of EN 13369. However, Annex A in EN 13369 is informative giving just recommended values for the concrete cover of reinforcement. The concrete covers required are given in the National Annexes of EN 1992-1-1.

Clause 6.5.3 Steel parts in connection with wastewater shall be stainless steel in accordance with EN 10088-1, EN 10088-2 and EN 10088-3 and their corrosion resistance shall be at least equal to austenitic steel X5CrNi1810. Those duplex or ferrite stainless steels which have at least equal corrosion resistance as austenitic steel X5CrNi1810 may also be used.

Justification:

Reference to clause 6.2.3 in EN 858-1 is not correct since it covers also other steels than stainless steel. In addition minimum corrosion resistance requirement is given in clause 6.2.3 of EN 858-1 by reference to austenitic steel X6CrNi1810, which is wrong.

## 7 Calculation and test methods

Titles of clause 7 and 7.3 are misleading since no calculation methods are given, just rules how to determine some material characteristics needed as input values in the calculation.

## 9 Evaluation of conformity

Clause 9.2 Limit values shall be given how much tested organic daily load (BOD) may vary from the nominal organic daily load (e.g. from 65 % to 125%).

Clause 9.3 Factory production rules are very short and very general. Detailed FPC rules (including FPC testing frequencies) for each material shall be prepared. This is especially needed since AoC system is 3 with no intervention of notified body after ITT. Table 2 in prEN 12566-6 could be used as a model with some adjustment. Finnish proposal for a new Table to be incorporated in clause 9.3.4 is as follows:

Table X – Minimum frequency of FPC testing for prefabricated small wastewater treatment systems

Nr.	Characteristic	Test Method	Minimum frequency of test
1	Overall dimensions	According to 6.1.X	1/200 units
1	Inlets, outlets and connections	According to 6.1.2	1/200 units
1	Accessibility	According to 6.1.3	1/200 units
2	Watertightness	According to 6.4	1/500 units
3	Structural behaviour	Check list of raw materials	Every delivery of components
4	Treatment efficiency	-	-
5	Durability	Check list of raw materials  In addition minimum material requirements according to 6.5.	Every delivery of components  1/200 units

## Annex A

### Clauses A.2.2, A.3.1 and A.4.1

It shall be clarified that the extension shaft or structurally similar upper part shall be included in the test sample when the connection of the upper part with the treatment plant is under ground water level. In this case the manufacturer shall declare the maximum height of the ground water level in relation to the treatment plant.

Justification:

Water tightness tests do not secure that water tightness is achieved against outside water pressure (when plant is under ground water level) if the extension shaft is separate part connected to the plant with a joint.

## Annex B

Clause B.3.2 In the point c) total nitrogen (TN) should be accepted as well as Kjeldahl nitrogen (KN) and ammonium nitrogen (NH<sub>4</sub>-N). In Finland the total nitrogen is more commonly used method. We propose the following revised sentence in the point c):

*KN: 25 mg/l to 100 mg/l or TN: 25 mg/l to 100 mg/l or NH<sub>4</sub>-N: 22 mg/l to 80 mg/l;*

It should be defined in the standard what to do if the influent quality is not in the required limits. We propose the following addition after the first paragraph:

*During the testing the deviations from the influent limits of given parameter are acceptable if the mean value of sequence samples of this parameter is inside the limits and if the deviation is inside the accuracy of the test method. In the sequence where the mean value of sequence samples was not inside the limits additional samples should be taken so that the mean value of the sequence samples is inside the limits.*

Clause B.3.4.1 The following addition is proposed after the first paragraph:

*The order of the sequences in the test schedules is optional. Nominal, underloading, low occupation stress and overloading sequences may alternate with each other.*

Clause B.3.4.2 It should be defined when the measurement is taken after the overload. We propose the following sentence to be added after the first paragraph or to clause B.3.5:

*After 48 h overload the 1<sup>st</sup> sample shall be taken immediately after the overload and the 2<sup>nd</sup> one week from the 1<sup>st</sup> sample.*

Clause B.3.4.3 The method of peak flow discharge is not clear and should be clarified after the second paragraph or to clause B.3.5 as follows:

*The different peak flow discharges of 200 l shall be made consecutively N times (N is the number of peak flow discharges given in table B.4.)*

It should be defined when the measurement is taken after the peak flow discharge. We propose the following sentence to be added after the second paragraph or to clause B.3.5:

*After peak flow discharge a period of 3 days shall be allowed before sampling.*

Clause B.3.4.4 It should be defined when the measurement is taken after the 24 h power breakdown. We propose the following sentence to be added at the beginning of the second paragraph or to clause B.3.5:

*The 1<sup>st</sup> sample shall be taken after one week from the end of the power breakdown of 24 h.*

Clause B.4 Some of the measurement methods given in Table B.5 are not used anymore by the analyzing laboratories. They use modern analysis methods which are developing all the time. We propose the following sentence to be added after the first paragraph in B.4:

*If other analysis methods are used they should be according to ISO or EN –standards and they should be validated by the relevant sector group of Notified Bodies to ensure the accuracy and quality of the chosen methods.*

## Annex C

Title Title is misleading since no calculation methods are given, just rules how to determine some material characteristics needed as input values in the calculation.

Clause C.1 Too many alternative methods for the determination of structural behavior are given in Table C.1. There is no guarantee that they give equal results.

Method C.2 in Table C.1 can be used only in dry conditions. Crushing test for concrete plants does not consider the outside water pressure from ground water. This is relevant when plant is in wet condition under ground water level.

- Clause C.4.5 Reference to relevant standards is not acceptable. It shall be specified which EN standards can be used to obtain steel characteristics.
- Clause C.6.2 Pedestrian load cannot be decided by this standard. Pedestrian loads may vary since they are Nationally Determined Parameters of EN 1991-series. That is why reference shall be made to design pedestrian load of EN 1991-series with the used safety factor. Not to give a fixed value i.e. 2,5 kN/m<sup>2</sup>.
- Clause C.6.3 Pedestrian load used in the test shall be given in the test report and shall be declared in the CE-marking.

Requirement for the variation of the volume of the plant after pit test is too large. Requirement shall be lower than 20 %, e.g. 5 % or 10 %.

#### Annex ZA

- Clause ZA.1 The following proxy characteristics shall be added to Table ZA.1 (In addition the answer to the mandate shall be modified accordingly):  
Under mandated characteristic 'Effectiveness of treatment':
- Hydraulic design, reference to clause 6.1.2
  - Access, reference to clause 6.1.3
- Clause ZA.3 The following modifications are needed in item e)
- e) information on the relevant essential characteristics listed in Table ZA.1, as follows:*
- *effectiveness of treatment expressed as **mean treatment efficiency ratio of COD, BOD, SS, nitrogen parameters and total phosphorus obtained during nominal sequences together with the tested organic daily load (BOD<sub>x</sub>) with used power consumption and the mean temperature (liquid phase) of the wastewater in the test,***
  - *nominal designation ...*
  - *watertightness ...*
  - ***loadbearing capacity with the method used and maximum load deformation (as characteristic load bearing capacity) with dry, wet conditions, characteristic pedestrian load and the maximum embedding height and used Nationally Determined Parameters NDPs when relevant,***
  - *durability...*

#### Justification:

- 1) Power consumption is required to be declared in clause 6.3.
- 2) Nitrogen parameters and total phosphorus parameters are required by the Finnish national regulations. See also clause B.2.4 where they are also mentioned.
- 3) Treatment efficiency varies considerably with the temperature of wastewater used in the test. That is why it is necessary to declare the used temperature in the CE-marking. In the standard there should be coefficients how to compare test results achieved at different temperatures.
- 4) Different test methods (see Table C.1) are used for dry and wet conditions. That is why it is necessary to declare it in the CE-marking.
- 5) Pedestrian load varies in the Member States. That is why it is necessary to declare the used pedestrian load in the test in the CE-marking.

- 6) Manufacturers are allowed to change the height of the extension shaft compared to the one used in ITT. That is why it is necessary to declare in the CE-marking the maximum embedding height.
- 7) When EN Eurocodes calculation methods are used, all the used NDPs (except recommended values) shall be declared in the CE-marking.

Figure ZA.1 Example of the CE-marking shall be modified to cover the same information as required in item e) of clause ZA.3.

Also with the pit test load bearing capacity shall be declared. Not just declare 'pass'.

With best regards,

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