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European Assessment Document for

Sewage separators inside buildings



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This European Assessment Document (EAD) has been developed taking into account up-to-date technical and scientific knowledge at the time of issue and is published in accordance with the relevant provisions of Regulation (EU) 305/2011 as a basis for the preparation and issuing of European Technical Assessments (ETA).

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1 SCOPE OF THE EAD

1.1 Description of the construction product

The products covered by this EAD are sewage separators inside buildings, hereinafter referred to as separator. The separator uses water flow, centrifugal force and gravity to separate faeces and paper from sewage water. The separator has no moving parts.

The product is not covered by a harmonised European standard (hEN).

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

It is assumed that the product will be installed according to the Manufacturers Product Installation Information (MPII).

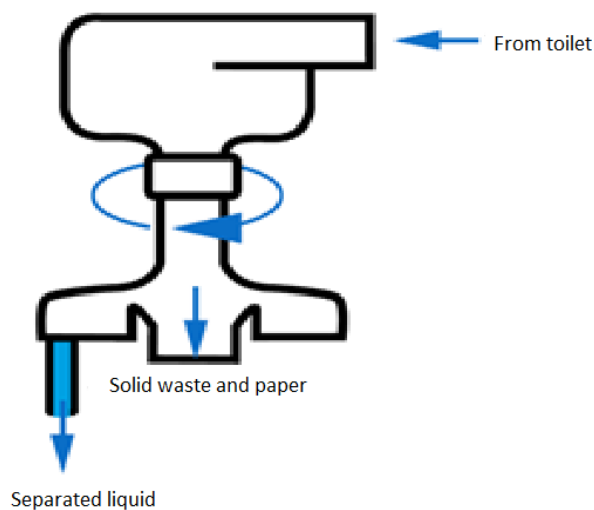
Relevant manufacturer's stipulations, e.g., with regard to the intended end use conditions, having influence on the performance of the product covered by this European Assessment Document shall be considered for the determination of the performance and detailed in the ETA as long as the details of the assessment methods as laid down in this EAD are respected.

1.2 Information on the intended use(s) of the construction product

1.2.1 Intended use(s)

The intended use of the separator is to separate water and urine from solid waste in sewage water. The separator is used inside buildings, placed on top of a bio composting chamber connected 1-10 WCs. The separator shall only be connected to WCs with included water traps. The separated liquid is connected to a pipe that is intended to take care of water and urine. The extent to which the separator separates solids, is determined by the hydraulic efficiency. The hydraulic efficiencies depend on the length and dimension of the discharge stack, the length and dimension of the stack offset and the inclination of the stack offset. To achieve a proper function each installation shall be in accordance with the MPII.

The bio composting chamber is not included in this product.



1.2.2 Working life/Durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer's request to take into account a working life of the separator for the intended use of 50 years when installed in the works (provided that the separator is subject to appropriate installation (see 1.1)). These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product, the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works¹.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD but are regarded only as a means for expressing the expected economically reasonable working life of the product.

1.3 Specific terms used in this EAD

1.3.1 Nominal size DN/OD

Nominal size, related to the outside diameter of the connecting pipe.

¹ The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than referred to above.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

All undated references to standards in this EAD are to be understood as references to the dated versions listed in chapter 4.

2.1 Essential characteristics of the product

Table 2.1.1 shows how the performance of separator is assessed in relation to the essential characteristics.

Table 2.1.1 Essential characteristics of the product and methods and criteria for assessing the performance of the product in relation to those essential characteristics

No	Essential characteristic	Assessment method	Type of expression of product performance
Basic Works Requirement 2: Safety in case of fire			
1	Reaction to fire	2.2.1	Class
Basic Works Requirement 3: Hygiene, health and the environment			
2	Hydraulic efficiency	2.2.2	Level (Hydraulic efficiency for water, toilet paper and solid material (%))
3	Watertightness	2.2.3	Description
Basic Works Requirement 4: Safety and accessibility in use			
4	Cleanability	2.2.4	Description
Basic Works Requirement 5: Protection against noise			
5	Noise level	2.2.5	Level (Flow rate (l/s) and airborne sound power ($L_{Wa,A}$ (db(A)))
Aspects of durability linked with the Basic Works Requirements			
6	Durability	2.2.6	Description

2.2 Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product

This chapter is intended to provide instructions for TABs. Therefore, the use of wordings such as “shall be stated in the ETA” or “it has to be given in the ETA” shall be understood only as such instructions for TABs on how results of assessments shall be presented in the ETA. Such wordings do not impose any obligations for the manufacturer and the TAB shall not carry out the assessment of the performance in relation to a given essential characteristic when the manufacturer does not wish to declare this performance in the Declaration of Performance.

2.2.1 Reaction to fire

The following options shall be used for the assessment of the reaction to fire performance of the separator and its components as described in the ETA:

1. The separator and its separate components, made from stainless steel, is considered to satisfy the requirements for performance class A1 in accordance with Commission Decision 96/603/EC, as amended by Commission Decisions 2000/605/EC and 2003/424/EC, without the need for testing on the basis of the fulfilling the conditions set out in that Decision and their intended uses being covered by that Decision.
Therefore, the performance of these parts is class A1.
2. The material of the separator body shall be tested, using the test methods relevant for the corresponding reaction to fire classes according to EN 13501-1. The product shall be classified according to Commission Delegated Regulation (EU) No 2016/364 in connection with EN 13501-1. The following conditions and parameters shall be taken into account when preparing test specimens and conducting the tests:
 - a) The necessary tests according to EN ISO 11925-2 shall be performed with edge exposure as well as with surface exposure on specimens as follows:
 - flat boards made from the material of the separator or cut sections of separator body, mounted in a free-hanging test position without any substrate behind
 - b) The necessary tests according to EN 13823 (SBI) shall be performed on specimens as follows:
 - flat boards made from the material of the separator body, which are placed side by side with closed butt joints on a sub-construction made of vertically positioned linear metal profiles (Z- or I-profiles are recommended) and are mounted in a free-standing test position (80 mm distance to the backing board of the SBI test rig), Each of the flat boards shall be mechanically fixed to the profiles of the sub-construction with four small metal nails or screws (one fixing in each corner of the boards);

Relevant product parameters to be considered in the tests are:

- Variations of a product family (as defined by a combination of certain raw materials and certain type of production process),²
- highest and lowest thickness, if relevant
- highest and lowest density, if relevant

The results of tests considering the aforementioned parameters in fully are valid for:

- all variations of the defined product family,
- the tested thickness or the whole range between those thickness values tested,
- the tested density or the whole range between those density values tested

² If the manufacturer provides sufficient information (e.g., on the basis of the composition of the products in question) this can allow the TAB to determine which material or material variants should be submitted to testing in order to reduce the number of tests.

2.2.2 Hydraulic efficiency

Purpose of the assessment

The hydraulic efficiency shall be assessed for sewage water with different properties.

Assessment method

Preparation for test and test procedure are described in Annex A.

Expression of results

Hydraulic efficiency for water, toilet paper and solid material is to be stated as described in Annex A, clause A.2.1.2, A.2.2.3 and A.2.3.3 in the ETA.

2.2.3 Watertightness

Purpose of the assessment

Watertightness shall be assessed for the separator.

Assessment method

The separator shall be placed on a level surface. The separator shall be subjected to a hydrostatic pressure of 0,3 bar \pm 10% for at least 3 minutes. The separator shall be deemed watertight if, for the duration of the test, no water leaks through the body walls, welds or joints.

Expression of results

Watertightness shall in the ETA be expressed as: Watertight or not watertight at 0,3 bar.

2.2.4 Cleanability

Purpose of the assessment

Consideration shall be given by the design to provide an access to the inlet and/or outlet areas for routine maintenance and cleaning.

Assessment method

When viewed without magnification the internal and external surfaces of separator shall be smooth, free from blistering and impurities. Inlet and outlet pipes shall be cleanly cut. The inlet to separator shall be compatible with DN/OD 110 pipes, outlet for liquid shall be compatible with DN/OD 50 - DN/OD 110 pipes.

Expression of results

It shall be stated in the ETA whether or not the internal and external surfaces of separator are smooth, free from blistering and impurities and that inlet and outlet pipes are cleanly cut.

2.2.5 Noise level

Purpose of the assessment

To specify the structure-borne sound produced by the separator in waste water.

Assessment method

The separator shall be tested according to standard EN 14366-1.

Expression of results

Test result shall be presented with flow rate (l/s) and airborne sound power $L_{Wa,A}$.

2.2.6 Durability

Purpose of the assessment

The separator shall be manufactured from materials that make them suitable for use in a waste water environment.

Assessment method

The used material shall be in accordance with EN 12566-3 clause 6.5.

Expression of results

Durability of the product shall be described according to EN 12566-3 clause 6.5 with respect to applicable subclause(s) 6.5.1-6.5.9 and concluded by words “durable” when set requirements have been met or “not durable” when this is not the case.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of assessment and verification of constancy of performance to be applied

For the products covered by this EAD the applicable European legal act is: Decision 2015/1959/EC.

The system is: 4 for any use except for uses subject to regulations on reaction to fire.

For uses subject to regulations on reactions to fire the applicable AVCP systems are 1, 3 or 4 depending on the conditions defined in the said Decision.”

3.2 Tasks of the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 3.2.1

Table 3.2.1 Control plan for the manufacturer; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC) [including testing of samples taken at the factory in accordance with a prescribed test plan]					
1	Control of surfaces	2.2.4	According to Control Plan	1	Each separator
2	Control of dimensions for pipe connections	2.2.4	According to Control Plan	1	Each separator
3	Control of water tightness	2.2.3	According to Control Plan	1	One separator per batch
4	Verification of raw material	Certificate for raw material shall be controlled to match raw material from initial type testing (ITT) (2.2.6)	According to Control Plan	100%	Each delivery of raw material
5	Reaction to fire	2.2.1	According to Control Plan	1	At least once per two years

3.3 Tasks of the notified body

The cornerstones of the actions to be undertaken by the notified body in the procedure of assessment and verification of constancy of performance for the separator are laid down in Table 3.3.1.

The intervention of the notified body under AVCP system 1 is only necessary for reaction to fire for products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g., an addition of fire retardants or a limiting of organic material).

Table 3.3.1 Control plan for the notified body; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Initial inspection of the manufacturing plant and of factory production control carried out by the manufacturer regarding the constancy of performance related to reaction to fire (for system 1 only)					
1	Where the intervention of the Notified Body is necessary only because the conditions for the applicability of system 1 are fulfilled for reaction to fire, the notified body will consider especially the clearly identifiable stage in the production process which results in an improvement of the reaction to fire classification (e.g., an addition of fire retardants or a limiting of organic material).	Verification of the complete FPC as described in the control plan agreed between the TAB and the manufacturer	As defined in the control plan agreed between the TAB and the manufacturer	As defined in the control plan agreed between the TAB and the manufacturer	When starting the production or a new line
Continuous surveillance, assessment and evaluation of factory production control carried out by the manufacturer regarding the constancy of performance related to reaction to fire (for system 1 only)					
2	Where the intervention of the Notified Body is necessary only because the conditions for the applicability of system 1 in the Decisions regarding reaction to fire are fulfilled, the notified body will consider especially the clearly identifiable stage in the production process which results in an improvement of the reaction to fire classification (e.g., an addition of fire retardants or a limiting of organic material)	Verification of the controls carried out by the manufacturer as described in the control plan agreed between the TAB and the manufacturer with reference to the raw materials, to the process and to the product as indicated in Table 3.2.1	As defined in the control plan agreed between the TAB and the manufacturer	As defined in the control plan agreed between the TAB and the manufacturer	1/year

4 REFERENCE DOCUMENTS

EN 13501-1:2018	Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests
EN 13823:2020 +A1:2022	Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item
EN ISO 11925-2:2020	Reaction to fire tests – Ignitability of products subjected to direct impingement of flame – Part 2: Single-flame source test
EN 12566-3:2005+A2:2013	Small wastewater treatment systems for up to 50 PT – Part 3: Packaged and/or site assembled domestic wastewater treatment plants
EN 14366-1:2023	Laboratory measurement of airborne and structure-borne sound from service equipment – Part 1: Application rules for waste water installations
EN 997:2018	WC pans and WC suites with integral trap

ANNEX A: HYDRAULIC EFFICIENCY

A.1 PREPARATION OF TEST

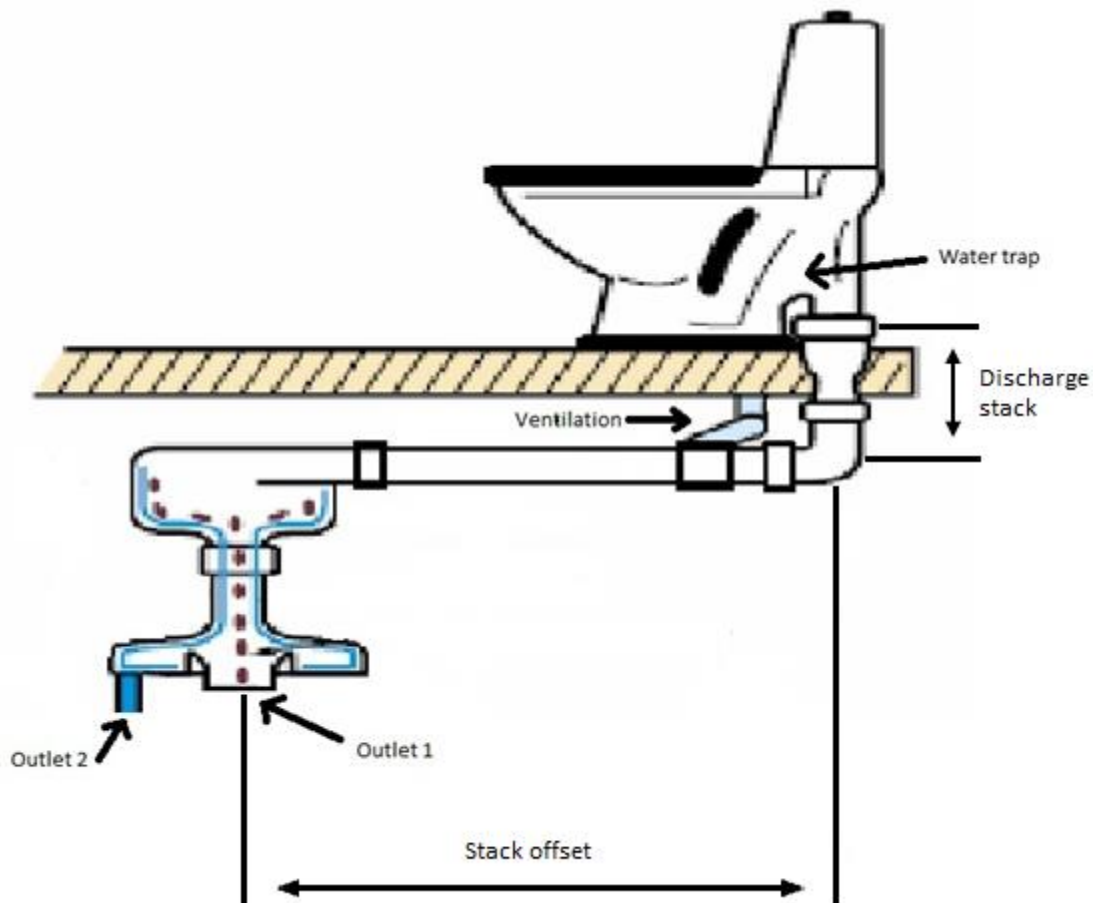
The MPII shall, by the manufacturer, be made available to the testing part before the preparation of the tests can commence. The MPII shall include all information relating to the installation of the product for the testing purposes.

The installation shall be performed exactly according to the instructions given by the MPII. The separator shall be connected to a pedestal WC suite with vertical outlet, EN 997 type 1 sub-type 6.

The test installation shall be described in full detail in the test report and shall include at least:

- the length and DN size of the discharge stack
- the length and DN size of the stack offset
- the inclination of the stack offset.

The flush volume of WC shall be adjusted to $6l \pm 0,2l$.



A.2 TEST PROCEDURES

A.2.1 Water test

A.2.1.1 Test method

Test with water:

Five flush cycles with 6l shall be made with 2 minutes pause between the cycles. Measure the total volume from outlet 1 and 2.

A.2.1.2 Expression of results

The volume from outlet 2 shall be expressed in % of the total volume.

A.2.2 Toilet paper test

A.2.2.1 Test material

Toilet paper shall have a size approximately 140mm x 100mm, the mass per unit surface of toilet paper shall be $(30 \pm 10) \text{ g/m}^2$.

A.2.2.2 Test method

Individually loosely crumple 6 sheets of toilet paper and drop them separately one after the other into the WC pan within a time of 14s to 18s. Operate the flushing mechanism within 2 s of the last sheet being dropped into the WC pan. Measure the total mass of wet toilet paper from outlet 1 and 2.

A.2.2.3 Expression of results

The mass of wet toilet paper from outlet 1 shall be expressed in % of the total mass of wet toilet paper.

A.2.3 Solid material test

A.2.3.1 Test material

Natural sponges with holes not larger than 8mm, the length of these cylindrical test objects shall be ~100mm, with a diameter of ~30mm.

A.2.3.2 Test method

The test objects shall be made from soaked sponges, and they shall be squeezed under water to ensure that they have no remaining pockets inside. Place two sponges into the WC bowl and flush. Five flush cycles with 6l shall be done. Count the total number of sponges from outlet 1 and 2.

A.2.3.3 Expression of results

The number of sponges from outlet 1 shall be expressed in % of the total number of sponges (10).