BS EN 12050-4:2015

BSI Standards Publication

Wastewater lifting plants for buildings and sites

Part 4: Non-return valves for faecal-free wastewater and wastewater containing faecal matter

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National foreword

This British Standard is the UK implementation of EN 12050-4:2015. It supersedes BS EN 12050-4:2001 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/505, Wastewater engineering.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Wastewater lifting plants for buildings and sites - Part 4: Non-return valves for faecal-free wastewater and wastewater containing faecal matter

Stations de relevage d'effluents pour les bâtiments et terrains - Partie 4 : Dispositifs anti-retour pour effluents contenant ou non des matières fécales

Abwasserhebeanlagen für die Gebäude- und Grundstücksentwässerung - Teil 4: Rückflussverhinderer für fäkalienfreies und fäkalienhaltiges Abwasser

This European Standard was approved by CEN on 17 January 2015.

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Foreword

This document (EN 12050-4:2015) 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of an identical text or by endorsement, at the latest by September 2015 and conflicting national standards shall be withdrawn at the latest by December 2016.

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 12050-4:2000.

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 the Regulation (EU) No. 305/2011.

For relationship with EU Regulation, see informative Annex ZA, which is an integral part of this document.

The standard series EN 12050 “*Wastewater lifting plants for buildings and sites*” consists of the following parts:

— Part 1: *Lifting plants for wastewater containing faecal matter*

— Part 2: *Lifting plants for faecal-free wastewater*

— Part 3: *Lifting plants for limited applications*

— Part 4: *Non-return valves for faecal-free wastewater and wastewater containing faecal matter*

The main changes with respect to the previous edition are listed below:

a) reaction to fire added;

b) paragraph title “Evaluation of conformity” changed to “Assessment and verification of constancy of performance – AVCP” and updated;

c) Annex ZA updated in accordance with “Implementation of the Construction Products Regulation (CPR) in harmonized standards” (adoption of the Regulation EU No. 305/2011);

d) editorially revised.

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 applies to non-return valves used for faecal-free wastewater and wastewater containing faecal matter lifting plants. This Standard specifies general requirements, basic construction and testing principles together with information on materials and the relevant assessment and verification of constancy of performance.

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 12050-1:2015, *Wastewater lifting plants for buildings and sites — Part 1: Lifting plants for wastewater containing faecal matter*

EN 12050-2:2015, *Wastewater lifting plants for buildings and sites — Part 2: Lifting plants for faecal-free wastewater*

EN 12050-3:2015, *Wastewater lifting plants for buildings and sites — Part 3: Lifting plants for limited applications*

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

EN 13823, *Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item*

EN ISO 20361, *Liquid pumps and pump units - Noise test code - Grades 2 and 3 of accuracy (ISO 20361)*

3 Terms, definitions, symbols and abbreviations

For the purposes of this document, the following terms and definitions apply.

3.1 Terms and definitions

3.1.1
non-return valve
part of a wastewater lifting plant that prevents backflow of wastewater from the discharge pipe system which is either integrated in or a separate part of the plant

3.1.2
integrated non-return valve
non-return valve which is a constructed part of the wastewater lifting plant - integrated in the plant or built in the plant by the manufacturer

3.1.3
backwash device
part of the non-return valve which allows draining of the discharge pipe system and venting of the pumping device

3.1.4
maximum pump operating pressure
maximum hydrostatic pressure that the pumping device is capable to create

3.2 Symbols and abbreviations

3.2.1 Symbols

d_i pipe internal diameter, in mm

D_S solids ball passage, in mm

Q flow rate, in l/s

H discharge head, in m

v flow velocity, in m/s

3.2.2 Abbreviations

AVCP assessment and verification of constancy of performance

DN nominal diameter

CWT classified without testing

CWFT classified without further testing

SBI single burn item

DoP declaration of performance

FPC factory production control

4 Materials and product characteristics

4.1 Materials

Materials used shall be adequate to meet the demands of installation and operation. Materials shall comply with the requirements given in 4.3 and shall not release dangerous substances (see 4.8). Examples of suitable materials for the construction of non-return valves are given in Annex A (informative).

Only corrosion resistant materials or materials with a corrosion resistant protective coating shall be used.

4.2 Mechanical resistance

When tested in accordance with 5.2.4 no visible leakage shall appear during the test. Connections to the discharge pipe system shall resist longitudinal forces and withstand the maximum pump pressure.

4.3 Effectiveness

4.3.1 General

Non-return valves shall automatically prevent wastewater flowing back from the discharge pipe system when the pumping operation stops. Non-return valves shall open automatically during pumping.

When tested in accordance with 5.2.1, 5.2.2, 5.2.4 and 5.2.5 the non-return valves shall continue to operate.

4.3.2 Connections

Connections to the discharge pipe system shall be capable of withstanding the maximum pump pressure of the wastewater lifting plant without leakage.

Non-return valves which are put on the market as a separate component shall have pipeline connections complying with relevant pipe standards.

4.3.3 Solids passage

Non-return valves shall ensure that solids present in wastewater, particularly fibrous materials, cannot be retained.

The ball passage (D_S) of a non-return valve shall be at least 80 % of the internal diameter (d_i) of the discharge pipe minus 4 mm i.e.:

$$D_S = 0{,}8 \times d_i - 4 \text{ mm}$$

where:

D_s is the ball passage, in millimetres;

d_i is the internal diameter of the discharge pipe, in millimetres.

4.3.4 Cleanability

It shall be possible to clean the non-return valves, though the cleaning possibility is not necessary in case of non-return valves of DN < 80.

4.3.5 Nominal pressure of non-return valves

Non-return valves shall at least comply with a nominal pressure of PN 4.

4.4 Internal leakage

When tested in accordance with 5.2.3 no more water than specified in Table 1 shall pass through the valve.

Table 1 — Relationship between valve size and maximum internal leakage

Size	Maximum internal leakage (in litres) during the test time of 10 min
DN < 32	0,5
32 ≤ DN ≤ 100	1
DN > 100	3

4.5 Reaction to fire

4.5.1 General

Where use of a non-return valve for faecal free wastewater and wastewater containing faecal matter is subject to national regulatory requirements on reaction to fire, its reaction to fire performance shall be considered as that 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 4.5.2, or otherwise;

b) Class A1 to E, defined according to the results of testing the non-return valve's constituent material(s), according to the standard(s) referred to in EN 13501-1, as specified in 4.5.3.

4.5.2 Non-return valves classified as Class A1 without the need for testing

The reaction to fire performance of a non-return valve for faecal free wastewater and wastewater containing faecal matter shall be declared as Class A1[1)] without the need for testing, provided that:

a) each of the non-return valve's constituent materials contains not more than 1 % of homogeneously distributed organic material, by mass or volume (whichever is the most onerous); and

b) any external coating, if applied over the surface area of the non-return valve, is made of inorganic material(s), which is/are also classified as Class A1.

4.5.3 Non-return valves classified according to test results

4.5.3.1 Principle

For the purpose of the reaction to fire performance of the non-return valve each of its constituent materials, including those in surface coating of the non-return valve, 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.

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

— a homogeneous non-return valve, its material, or

— a non-homogeneous non-return valve, its substantial component (i.e. a material that constitutes a significant part of such non-return valve). 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.

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.

In addition, with regard to the SBI test according to EN 13823, when applied, the test specimen shall be prepared and mounted as specified in 4.5.3.2.

4.5.3.2 Sizes and mounting of the test specimen

The test specimen of each constituent material shall be in accordance with EN 13823 in a flat-sheet form of the following sizes:

— short wing: (495 ± 5) mm × (1 500 ± 5) mm;

— long wing: (1 000 ± 5) mm × (1 500 ± 5) mm.

4.6 Durability

4.6.1 General

Non-return valves are products of known and stable performance for defined end use applications with respect to their established durability for which experience has been accumulated over a long period of time. Durability is ensured by meeting the requirements of this standard, which represent the state of the art.

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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)*.

For new materials the manufacturer has to take appropriate measures to verify that the non-return valve made of the new material is in accordance with the performance characteristics required by this standard.

4.6.2 Durability of watertightness

Durability of watertightness is ensured by meeting the requirements according to 4.4, when tested in accordance with 5.2.3.

4.6.3 Durability of effectiveness

Durability of effectiveness is ensured by meeting the requirements according to 4.3.1, when tested in accordance with 5.2.1, 5.2.2 and 5.2.5.

4.6.4 Durability of mechanical resistance

Durability of mechanical resistance is ensured by meeting the requirements according to 4.2, when tested in accordance with 5.2.4.

4.7 Noise level

For non-return valves as a separate component, the emitted airborne noise shall be measured according to EN ISO 20361 at a flow velocity of 0,7 m/s and a shut off with a vertical water column of 2 m above the valve outlet.

The manufacturer shall declare the A-weighted emission sound pressure level (to be measured at 1 m distance from the non-return valve). Measurements shall be performed according to EN ISO 20361.

If an A-weighted emission sound pressure level is above 80 dB, the sound power level shall be determined according to EN ISO 20361 and shall be declared.

Where the manufacturer declares that the A-weighted emission sound pressure level is equal to 70 dB, although it might be smaller, the manufacturer may state “70 dB(A)”.

If the manufacturer declares a lower value than 70 dB(A) the non-return valve shall be measured according to EN ISO 20361 and the corresponding test result shall be declared.

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.

5 Testing

5.1 General

Testing shall be carried out on a non-return valve that complies with the shape, dimensions and materials given in the testing documentation. The test shall demonstrate compliance with the effectiveness given in Clause 4.3. If the closure device consists of a ball, its diameter and mass shall be checked.

If the application of the non-return valves is not specified, valves shall be tested in accordance with both 5.2.1 and 5.2.2. The test has to be performed with the valves to be tested in the designated installation position.

5.2 Effectiveness testing

5.2.1 Faecal-free wastewater

The operation of non-return valves shall be tested in accordance with EN 12050-2:2015, 5.3, or EN 12050-3:2015, 5.5, as appropriate. After testing, the non-return valves shall be examined to ensure that they remain able to operate.

5.2.2 Wastewater containing faecal matter

The operation of non-return valves shall be tested in accordance with EN 12050-1:2015, 5.3, or EN 12050-3:2015, 5.4. The pieces of test material shall pass through the non-return valve. After the test the non-return valve shall be opened and checked that no test material has settled.

5.2.3 Internal leakage

Non-return valves shall be subjected to a back pressure of 0,2 bar for 10 min using clean water.

5.2.4 Pressure testing

The test, in accordance with the requirements of 4.2, shall be carried out with clean water for 10 min, in closed and open condition.

Non-return valves shall be able to withstand a pressure of at least 1,5 times the nominal pressure.

5.2.5 Testing of backwash devices

If there is a venting device, it shall be tested that it can also be opened at a counter pressure of 1 bar without damaging the function parts.

6 Assessment and verification of constancy of performance - AVCP

6.1 General

The compliance of non-return valves for faecal free wastewater and wastewater containing faecal matter with the requirements of this standard and with the performances declared by the manufacturer in the declaration of performance (DoP) shall be demonstrated by:

— determination of the product-type on the basis of type testing;

— factory production control by the manufacturer, including product assessment.

The manufacturer shall always retain the overall control and shall have the necessary means to take responsibility for the conformity of the product with its declared performance(s).

6.2 Type testing

6.2.1 General

All the performances related to characteristics included in this standard other than the essential characteristic shall be determined when the manufacturer intends to declare the respective performances unless the standard gives provisions for declaring them without performing tests. (e.g. use of previously existing data, CWFT and conventionally accepted performance).

Assessment previously performed in accordance with the provisions of this standard, may be taken into account provided that they were made to the same or a more rigorous test method, under the same AVCP

system on the same product or products of similar design, construction and functionality, such that the results are applicable to the product in question.

NOTE 1 Same AVCP system means testing by an independent third party.

For the purposes of assessment, the manufacturer's products may be grouped into families, where it is considered that the results for one or more characteristics from any one product within the family are representative for that same characteristics for all products within that same family.

NOTE 2 Products may be grouped in different families for different characteristics.

Reference to the assessment method standards should be made to allow the selection of a suitable representative sample.

In addition, the determination of the product type shall be performed for all characteristics included in the standard for which the manufacturer declares the performance:

— at the beginning of the production of a new or modified non-return valve for faecal free wastewater and wastewater containing faecal matter (unless a member of the same product range); or

— at the beginning of a new or modified method of production (where this may affect the stated properties); or

— they shall be repeated for the appropriate characteristic(s), whenever a change occurs in the non-return valve design, in the raw material or in the supplier of the components, or in the method of production (subject to the definition of a family), which would affect significantly one or more of the characteristics.

Where components are used whose characteristics have already been determined, by the component manufacturer, on the basis of assessment methods of other product standards, these characteristics need not be re-assessed. The specifications of these components shall be documented.

Products bearing regulatory marking in accordance with appropriate harmonized European specifications may be presumed to have the performances declared in the DoP, although this does not replace the responsibility on the non-return valve manufacturer to ensure that the non-return valve as a whole is correctly manufactured and its component products have the declared performance values.

6.2.2 Test samples, testing and compliance criteria

Type testing shall be carried out on one sample of all sizes and types/versions of non-return valves. See Table 2.

Table 2 — Number of samples to be tested and compliance criteria

Characteristic	Requirement	Assessment method	No. of samples	Compliance criteria
Reaction to fire	4.5	EN 13501	one	4.5
Watertightness — Internal leakage	4.4 and 4.6.2	5.2.3	one	4.4 and 4.6.2
Effectiveness — Connections — Solids passage — Nominal pressure	4.3	5.2.1 and 5.2.2	one	4.3
Mechanical resistance	4.6.4	5.2.4	one	4.6.4

Noise level	4.7	EN ISO 20361	one	4.7
Durability — of watertightness — of effectiveness — of mechanical resistance	4.6.2 4.6.3, 4.6.4	5.2.3 5.2.1, 5.2.2, 5.2.5 5.2.4	one	4.4 4.3 4.2
Dangerous substances	4.8	-	one	4.8

For type testing the following documentation shall be provided:

— drawings, including information on materials used;

— operating and maintenance instructions (acceptable in manuscript form).

6.2.3 Test reports

The results of the determination of the product type shall be documented in test reports. All test reports shall be retained by the manufacturer for at least 10 years after the last date of production of the non-return valve for faecal free wastewater and wastewater containing faecal matter to which they relate.

6.3 Factory production control (FPC)

6.3.1 General

The manufacturer shall establish, document and maintain an FPC system to ensure that the products placed on the market comply with the declared performance of the essential characteristics.

The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures.

This factory production control system documentation shall ensure a common understanding of the evaluation of the constancy of performance and enable the achievement of the required product performances and the effective operation of the production control system to be checked. Factory production control therefore brings together operational techniques and all measures allowing maintenance and control of the compliance of the product with the declared performances of the essential characteristics.

6.3.2 Requirements

6.3.2.1 General

The manufacturer is responsible for organizing the effective implementation of the FPC system in line with the content of this product standard. Tasks and responsibilities in the production control organization shall be documented and this documentation shall be kept up-to-date.

The responsibility, authority and the relationship between personnel that manages, performs or verifies work affecting product constancy, shall be defined. This applies in particular to personnel that need to initiate actions preventing product non-constancies from occurring, actions in case of non-constancies and to identify and register product constancy problems.

Personnel performing work affecting the constancy of performance of the product shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

In each factory the manufacturer may delegate the action to a person having the necessary authority to:

— identify procedures to demonstrate constancy of performance of the product at appropriate stages;

— identify and record any instance of non-constancy;

— identify procedures to correct instances of non-conformity.

The manufacturer shall draw up and keep up-to-date documents defining the factory production control. The manufacturer's documentation and procedures should be appropriate to the product and manufacturing process. The FPC system should achieve an appropriate level of confidence in the constancy of performance of the product. This involves:

a) the preparation of documented procedures and instructions relating to factory production control operations, in accordance with the requirements of the technical specification to which reference is made;

b) the effective implementation of these procedures and instructions;

c) the recording of these operations and their results;

d) the use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of non-conformity and, if necessary, revise the FPC to rectify the cause of non-conformity of performance.

Where subcontracting takes place, the manufacturer shall retain the overall control of the product and ensure that he receives all the information that is necessary to fulfil his responsibilities according to this European Standard.

If the manufacturer has part of the product designed, manufactured, assembled, packed, processed and/or labelled by subcontracting, the FPC of the subcontractor may be taken into account, where appropriate for the product in question.

The manufacturer who subcontracts all of his activities may in no circumstances pass the above responsibilities on to a subcontractor.

NOTE Manufacturers having an FPC system, which complies with EN ISO 9001 and which addresses the provisions of the present European Standard are considered as satisfying the FPC requirements of the Regulation (EU) No. 305/2011.

6.3.2.2 Equipment

6.3.2.2.1 Testing

All weighing, measuring and testing equipment shall be calibrated and regularly inspected according to documented procedures, frequencies and criteria.

6.3.2.2.2 Manufacturing

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process. Inspections and maintenance shall be carried out and recorded in accordance with the manufacturer’s written procedures and the records retained for the period defined in the manufacturer's FPC procedures.

6.3.2.3 Raw materials and components

The specifications of all incoming raw materials and components shall be documented, as shall the inspection scheme for ensuring their compliance. In case supplied kit components are used, the constancy of performance system of the component shall be that given in the appropriate harmonized technical specification for that component.

6.3.2.4 Traceability and marking

Individual non-return valves for faecal free wastewater and wastewater containing faecal matter shall be identifiable and traceable with regard to their production origin. The manufacturer shall have written procedures ensuring that processes related to affixing traceability codes and/or markings are inspected regularly.

6.3.2.5 Controls during manufacturing process

The manufacturer shall plan and carry out production under controlled conditions.

6.3.2.6 Product testing and evaluation

The manufacturer shall establish procedures to ensure that the stated values of the characteristics he declares, are maintained. The characteristics, and the means of control, are given in Table 3.

Table 3 — Product testing of finished products

Characteristic	Requirement	Assessment method	Frequency
Reaction to fire	4.5	Check: — inspection certificate of material delivered by supplier	Reception of every batch of material in factory
Internal leakage	4.4 and 4.6.2	5.2.3, with 0,2 bar over 10 min	Samples [a]
Effectiveness	4.3	5.2.1 and 5.2.2,	Samples [a]
Mechanical resistance	4.6.4	5.2.4, 1,5 times the nominal pressure over 10 min or 1,5 times the maximum pump pressure over 10 min	Samples [a]
Noise level	4.7	— EN ISO 20361	Every 5 years
Durability — of watertightness — of effectiveness — of mechanical resistance	4.6	5.2.3 5.2.1, 5.2.2,5.2.5 5.2.4	Samples [a]
Dangerous substances	4.8	As relevant	As relevant

a The frequency and extent of sampling depends on the production program, the scale of production and the manufacturing process in each factory. At least one part per 100 or per production month and type shall, however, be checked. Where these characteristics have been determined by the components supplier, they need not be retested by the manufacturer.

6.3.2.7 Non-complying products

The manufacturer shall have written procedures which specify how non-complying products shall be dealt with. Any such events shall be recorded as they occur and these records shall be kept for the period defined in the manufacturer's written procedures.

Where the product fails to satisfy the acceptance criteria, the provisions for non-complying products shall apply, the necessary corrective action(s) shall immediately be taken and the products or batches not complying shall be isolated and properly identified.

Once the fault has been corrected, the test or verification in question shall be repeated.

The results of controls and tests shall be properly recorded. The product description, date of manufacture, test method adopted, test results and acceptance criteria shall be entered in the records under the signature of the person responsible for the control/test.

With regard to any control result not meeting the requirements of this European standard, the corrective measures taken to rectify the situation (e.g. a further test carried out, modification of manufacturing process, throwing away or putting right of product) shall be indicated in the records.

6.3.2.8 Corrective action

The manufacturer shall have documented procedures that instigate action to eliminate the cause of non-conformities in order to prevent recurrence.

6.3.2.9 Handling, storage and packaging

The manufacturer shall have procedures providing methods of product handling and shall provide suitable storage areas preventing damage or deterioration.

6.3.3 Product specific requirements

The FPC system shall address this European Standard and ensure that the products placed on the market comply with the declaration of performance.

The FPC system shall include a product specific FPC, which identifies procedures to demonstrate compliance of the product at appropriate stages, i.e.:

a) the controls and tests to be carried out prior to and/or during manufacture according to a frequency laid down in the FPC test plan;

and/or

b) the verifications and tests to be carried out on finished products according to a frequency laid down in the FPC test plan

If the manufacturer uses only finished products, the operations under b) shall lead to an equivalent level of compliance of the product as if FPC had been carried out during the production.

If the manufacturer carries out parts of the production himself, the operations under b) may be reduced and partly replaced by operations under a). Generally, the more parts of the production that are carried out by the manufacturer, the more operations under b) may be replaced by operations under a).

In any case the operation shall lead to an equivalent level of compliance of the product as if FPC had been carried out during the production.

NOTE Depending on the specific case, it can be necessary to carry out the operations referred to under a) and b), only the operations under a) or only those under b).

The operations under a) refer to the intermediate states of the product as on manufacturing machines and their adjustment, and measuring equipment etc. These controls and tests and their frequency shall be chosen based on product type and composition, the manufacturing process and its complexity, the sensitivity of product features to variations in manufacturing parameters etc.

The manufacturer shall establish and maintain records that provide evidence that the production has been sampled and tested. These records shall show clearly whether the production has satisfied the defined acceptance criteria and shall be available for at least three years.

6.3.4 Procedure for modifications

If modifications are made to the product, production process or FPC system that could affect any of the product characteristics declared according to this standard, then all the characteristics for which the manufacturer declares performance, which may be affected by the modification, shall be subject to the determination of the product type, as described in 6.2.1.

Where relevant, a re-assessment of the factory and of the FPC system shall be performed for those aspects, which may be affected by the modification. All assessments and their results shall be documented in a report.

7 Marking, labelling and packaging

7.1 Manufacturer's declaration

In the product accompanying documentation, the manufacturer shall state the size (DN), maximum allowable pressure and suitability for wastewater containing faecal matter or faecal free wastewater. The manufacturer shall declare the A-weighted emission sound pressure level and where relevant the sound power level.

Where regulatory marking provisions require this information, the provisions required in this clause are deemed to be met and the information needs not be repeated.

7.2 Marking

Non-return valves complying with this Standard shall be marked in a permanent and legible manner with the manufacturer's symbol[2)] and “EN 12050-4:2015”.

Where regulatory marking provisions require this information, the provisions required in this clause are deemed to be met and the information needs not be repeated.

NOTE An integrated non-return valve being part of a wastewater lifting plant does not need to be separately marked.

2) The manufacturer is the person under whose name the product is sold.

Annex A
(informative)

Recommended materials

Experience has shown that the materials as given in Table A.1 are suitable for non-return valves.

Table A.1 — Examples of materials suitable for non-return valves

Material	**Requirements according to**
Flake graphite cast iron	EN 1561
Cast iron with nodular graphite	EN 1563
Stainless steel	EN 10088–1
Mild steel	EN 10130 or EN 10025–1
Fibre glass reinforced plastic	–
Polyethylene (PE)	–
Polypropylene (PP)	–
Acrylonitrile-Butadiene-Styrol (ABS)	–
Acrylester-Styrol-Acrylonitrile (ASA)	–
Unplasticized poly vinyl chloride of high impact resistance (PVC-HI)	–
Nitrile rubber	–
Polyurethane (PUR)	–

Metallic materials according to Table A.1 which come into contact with the wastewater and are not themselves resistant to corrosion should have a minimum wall thickness of 4 mm.

In the case of plastic components, materials of unknown and unsupervised composition should not be used. Details of the composition of non-standardised materials should be retained by the manufacturer. Modifications to the specification should not be carried out. If any modifications are proposed, the manufacturer should consider the need for initial type testing according to Clause 6.2.

Annex ZA
(informative)

Clauses of this European Standard addressing the provisions of the EU Construction Products Regulation

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under Mandate M/118 “Wastewater engineering products” given to CEN by the European Commission and the European Free Trade Association.

If this European standard is cited in Official Journal of the European Union (OJEU), the clauses of this standard shown in this annex are considered to meet the provisions of the relevant mandate under the Regulation (EU) No. 305/2011.

This annex deals with the CE marking of non-return valves for faecal free wastewater and for wastewater containing faecal matter to be put on the market as a separate component and intended for the uses indicated in Table ZA.1 and shows the relevant clauses applicable.

This annex has the same scope as in Clause 1 of this standard related to the aspect covered by the mandate and is defined by Table ZA.1.

Table ZA.1 — Relevant clauses and intended uses for non-return valves for faecal-free wastewater and wastewater containing faecal matter to be put on the market as a separate component

Construction products: Non-return valves for faecal-free wastewater and wastewater containing faecal matter to be put on the market as a separate component **Intended use:** Automatic prevention of backflow of wastewater from the discharge pipe system when the pumping operation stops.			
Essential characteristics	**Clauses in this European Standard related to essential characteristics**	**Regu-latory classes**	**Notes**
Reaction to fire[a]	4.5	A1 to E	A1 WT or tested and classified in accordance with EN 13501–1
Watertightness			
— Internal leakage	4.4	None	Tested acc. to 5.2.3 expressed as “≤ nn l”, see Table 1
Effectiveness			
— Connections	4.3.2	None	Tested according to 5.1 expressed as “DN xx”
— Solids passage	4.3.3		Tested according to 5.1 expressed as “D_S xx mm”
— Nominal pressure	4.3.5		Tested according to 5.2.4 expressed as “PN xx”
Mechanical resistance			
— Withstanding the maximum pump pressure	4.2	None	Tested according to 5.2.4 expressed as “xx bar”

Durability			
— of watertightness	4.4	None	Tested acc. to 5.2.3 expressed as as "≤ nn l", see Table 1
— of effectiveness	4.3.2 4.3.3 4.3.5	None	Tested according to 5.1 expressed as "DN xx Tested according to 5.1 expressed as "D_S xx mm" Tested according to 5.2.4 expressed as "PN xx"
— of mechanical resistance	4.6.4	None	Tested according to 5.2.4 expressed as "xx bar"
Noise level	4.7	None	Tested according to 4.7 (where required) expressed as "declared dB(A) value",
Dangerous substances[b]	4.8	None	As relevant, see 4.8

[a] Of the constituent material.

[b] Only to be declared when there is a specific substance required by the national regulations in the country of destination.

The declaration of the product performance related to certain essential characteristics is not required in those Member States (MS) where there are no regulatory requirements on these essential characteristics for the intended use of the product.

In this case, manufacturers placing their products on the market of these MS are not obliged to determine nor declare the performance of their products with regard to these essential characteristics and the option "No performance determined" (NPD) in the information accompanying the CE marking and in the declaration of performance (see ZA.3) shall be used for those essential characteristics.

ZA.2 Procedure for AVCP of non-return valves for faecal-free wastewater and wastewater containing faecal matter

ZA.2.1 System(s) of AVCP

The system of attestation of conformity of non-return valves as a separate component for faecal-free wastewater and wastewater containing faecal matter indicated in Table ZA.1, established by EC Decision 97/464/EC of 1997-06-27 (see OJEU L 198 of 1997-07-25), as amended by 2004/663/EC of 2004-09-20 (see OJEU L 302 of 2004-09-29), as given in Annex III of the mandate M/118 "Wastewater engineering products", is shown in Table ZA.2 for the indicated intended use(s) and relevant level(s) or class(es) of performance.

Table ZA.2 — System(s) of AVCP

Product(s)	Intended use(s)	Level(s) or class(es) of performance	AVCP system(s)
Kits and elements for wastewater pumping stations and effluent lifting plants	For use inside buildings	–	3
	For all use(s) when subject to regulations on reaction to fire	A1(*), A2(*), B(*) and C(*)	1
		A1(**), A2(**), B(**), C(**), D and E	3
		A1(***) to E(***), F	4
System 1: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.2. System 3: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.4. System 4: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.5.			
(*) 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). (**) Products using Table 1 and products/materials not covered by footnote (*) (***) Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A1 according to Commission Decision 96/603/EC).			

The AVCP of non-return valves for faecal-free wastewater and wastewater containing faecal matter in Table ZA.1 shall be according to the AVCP procedures indicated in Tables ZA.3.1 to ZA.3.3 resulting from application of the clauses of this or other European Standard indicated therein. The content of tasks of the notified body shall be limited to those essential characteristics as provided for, if any, in Annex III of the relevant mandate and to those that the manufacturer intends to declare.

Table ZA.3.1 — Assignment of AVCP tasks for non-return valves as a separate component for faecal-free wastewater and wastewater containing faecal matter under System 1 (Reaction to fire) and System 3

Task		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to essential characteristics listed in Table ZA.1 relevant for the intended use which are declared	6.3
	Further testing of samples taken at factory according to the prescribed test plan	Essential characteristics listed in Table ZA.1 for characteristics which are declared, namely reaction to fire, (for classes A1*, A2*, B* and C*)[a]	6.3
Task for the notified testing laboratory	Determination of the product type on the basis of type testing (based on sampling carried out by the manufacturer), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics listed in Table ZA.1 relevant for the intended use which are declared except reaction to fire	6.2
Tasks for the notified product certification body	Determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics listed in Table ZA.1 for characteristics which are declared, namely, reaction to fire (for classes A1*, A2*, B* and C*)[a]	6.2
	Initial inspection of manufacturing plant and of FPC	Parameters related to essential characteristics listed in Table ZA.1 for the relevant intended use, namely reaction to fire (for classes A1*, A2*, B* and C*)[a] Documentation of FPC	6.3
	Continuous surveillance, assessment and evaluation of FPC	Parameters related to essential characteristics listed in Table ZA.1 for the relevant intended use, namely reaction to fire (for classes A1*, A2*, B* and C*)[a] Documentation of FPC	6.3

[a] See footnote (*) to Table ZA.2, to be applied only for uses when subject to regulations on reaction to fire.

Table ZA.3.2 — Assignment of AVCP tasks for non-return valves as a separate component for faecal-free wastewater and wastewater containing faecal matter for System 3 (Reaction to fire) and System 3

Task		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to essential characteristics listed in Table ZA.1 relevant for the intended use which are declared	6.3
Tasks for the notified testing laboratory	Determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics listed in Table ZA.1 relevant for the intended use which are declared including reaction to fire, (for classes A1(**), A2(**), B(**), C(**), D and E) [a]	6.2
[a] See footnote (**) to Table ZA.2, to be applied only for uses when subject to regulations on reaction to fire.			

Table ZA.3.3 — Assignment of AVCP tasks for non-return valves as a separate component for faecal-free wastewater and wastewater containing faecal matter for System 4 (Reaction to fire) and System 3

Task		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to essential characteristics listed in Table ZA.1 relevant for the intended use which are declared	6.3
	Determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics listed in Table ZA.1 relevant for the intended use which are declared namely reaction to fire, (for classes A1(***) to E(***), F [a]	6.2
Task for the notified testing laboratory	Determination of the product type on the basis of type testing (based on sampling carried out by the manufacturer), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics listed in Table ZA.1 relevant for the intended use which are declared except reaction to fire	6.2
[a] See footnote (***) to Table ZA.2, to be applied only for uses when subject to regulations on reaction to fire.			

ZA.2.2 Declaration of performance (DoP)

ZA.2.2.1 General

The manufacturer draws up the DoP and affixes the CE marking on the basis of the different AVCP systems set out in Annex V of the Regulation (EU) No. 305/2011:

In case of products under system 1

— the factory production control and further testing of samples taken at the factory according to the prescribed test plan, carried out by the manufacturer; and

— the certificate of constancy of performance issued by the notified product certification body on the basis of determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product; initial inspection of the manufacturing plant and of factory production control and continuous surveillance, assessment and evaluation of factory production control.

In case of products under system 3

— the factory production control carried out by the manufacturer; and

— the determination of the product-type on the basis of type testing (based on sampling carried out by the manufacturer), type calculation, tabulated values or descriptive documentation of the product, carried out by the notified testing laboratory.

In case of products under system 4

— the factory production control carried out by the manufacturer;

— the determination by the manufacturer of the product-type on the basis of type testing, type calculation, tabulated values or descriptive documentation of the product.

ZA.2.2.2 Content

The model of the DoP is provided in Annex III of the Regulation (EU) No. 305/2011.

According to the Regulation (EU) No. 305/2011, the DoP shall contain, in particular, the following information:

— the reference of the product-type for which the declaration of performance has been drawn up;

— the AVCP system or systems of the construction product, as set out in Annex V of the CPR;

— the reference number and date of issue of the harmonized standard which has been used for the assessment of each essential characteristic;

— where applicable, the reference number of the Specific Technical Documentation used and the requirements with which the manufacturer claims the product complies.

The DoP shall in addition contain:

a) the intended use or uses for the construction product, in accordance with the applicable harmonized technical specification;

b) the list of essential characteristics, as determined in the harmonized technical specification for the declared intended use or uses;

c) the performance of at least one of the essential characteristics of the construction product, relevant for the declared intended use or uses;

d) where applicable, the performance of the construction product, by levels or classes, or in a description, if necessary based on a calculation in relation to its essential characteristics determined in accordance with the Commission determination regarding those essential characteristics for which the manufacturer shall declare the performance of the product when it is placed on the market or the Commission determination regarding threshold levels for the performance in relation to the essential characteristics to be declared;

e) the performance of those essential characteristics of the construction product which are related to the intended use or uses, taking into consideration the provisions in relation to the intended use or uses where the manufacturer intends the product to be made available on the market;

f) for the listed essential characteristics for which no performance is declared, the letters “NPD” (No Performance Determined).

Regarding the supply of the DoP, Article 7 of the Regulation (EU) No. 305/2011 applies.

The information referred to in Article 31 or, as the case may be, in Article 33 of Regulation (EC) No. 1907/2006, (REACH) shall be provided together with the DoP.

ZA.2.2.3 Example of DoP

The following gives an example of a filled-in DoP for non-return valves for faecal-free wastewater and wastewater containing faecal matter

DECLARATION OF PERFORMANCE
No. [DoP-identification number decided by manufacturer] **00001-CPR-567**

1. Unique identification code of the product-type:

Non-return valve for faecal-free wastewater and wastewater containing faecal matter
Product-type: BWV 714

2. Type, batch or serial number or any other element allowing identification of the construction product as required under Article 11(4):

Non-return valve for faecal-free wastewater and wastewater containing faecal matter
Product-type: BWV 714 (see serial number on product)

3. Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:

Automatic prevention of backflow of wastewater from the discharge pipe system when the pumping operation stops.

4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required under Article 11(5):

AnyCo SA,
PO Box 21
B-1050 Brussels, Belgium
Tel. +32987654321
Fax: +32123456789
Email: anyco.sa@provider.be

5. Where applicable, name and contact address of the authorized representative whose mandate covers the tasks specified in Article 12(2):

Anyone Ltd
24, Flower St.
West Hamfordshire WH12CD
United Kingdom
Tel. +44987654321
Fax: +44123456789
e-mail: anyone.ltd@provider.uk

6. System or systems of assessment and verification of constancy of performance of the construction product as set out in CPR, Annex V:

System 3

System 4

7. In case of the declaration of performance concerning a construction product covered by a harmonized standard:

Notified laboratory [Name and No. xxx] performed the determination of the product-type on the basis of type testing and issued a test report

If more than one notified laboratory performed the determination, this text shall be repeated for each laboratory.

8. not applicable

9. Declared performance

Essential characteristics	**Performance**	**Harmonized technical specification**
Reaction to fire	E	EN 12050–4:2015
Watertightness — Internal leakage	≤ 0,5 l	
Effectiveness		
— Connections — Solids passage — Nominal pressure	DN 32 D_S 20 mm PN 4	
Mechanical resistance		
— Withstanding the maximum pump pressure	3,5 bar	
Noise level	70 dB(A)	
Durability		
— of watertightness — of effectiveness — of mechanical resistance	≤ 0,5 l DN 32, D_S 20 mm PN 4 3,5 bar	
Dangerous substances	NPD	

10. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9.

This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4. Signed for and on behalf of the manufacturer by:

……

(name and function)

……..…… ……..……

(place and date of issue) (signature)

ZA.3 CE marking and labelling

The CE marking symbol shall be in accordance with the general principles set out in Article 30 of Regulation (EC) No 765/2008 and shall be affixed visibly, legibly and indelibly:

— to the non-return valve for wastewater containing faecal matter or faecal free wastewater; or

— to a label attached to it.

Where this is not possible or not warranted on account of the nature of the product, it shall be affixed:

— to the packaging; or

— to the accompanying documents.

The CE marking shall be followed by:

— the last two digits of the year in which it was first affixed;

— the name and the registered address of the manufacturer, or the identifying mark allowing identification of the name and address of the manufacturer easily and without any ambiguity;

— the unique identification code of the product-type;

— the reference number of the declaration of performance;

— the level or class of the performance declared;

— the dated reference to the harmonized technical specification applied;

— the identification number of the notified body;

— the intended use as laid down in the harmonized technical specification applied.

The CE marking shall be affixed before the construction product is placed on the market. It may be followed by a pictogram or any other mark notably indicating a special risk or use.

Figure ZA.1 gives an example of the information to be given on the commercial documents (especially both name and registered address of the manufacturer appear).

CE **8910**		*"CE" marking consisting of the "CE"- symbol* *Identification number of the notified test laboratory*
Any Co Ltd, P.O. Box 21, B–1050 **14** 00001-CPR-567		*Name and registered address of the manufacturer or identifying mark* *Last two digits of the year in which the marking was affixed* *Reference number of the DoP*
EN 12050–4:2015 Non-return valves for faecal-free wastewater and wastewater containing faecal matter - Product's reference code: "BWV 714" - Material: ABS		*Dated number of the European Standard* *Unique identification code of the product type* *Intended use of the product as laid down in the EN*
Reaction to fire	E	*Level or class of the performance declared*
Watertightness		
— Internal leakage	≤ 0,5 l	
Effectiveness		
— Connections — Solids passage — Nominal pressure	DN 32 Ds 20 mm PN 4	
Mechanical resistance		
— Withstanding the maximum pump pressure	3,5 bar	
Noise level	70 dB(A)	
Durability		
— of watertightness — of effectiveness — of mechanical resistance	≤ 0,5 l DN 32, D_s 20 mm, PN 4 3,5 bar	
Dangerous substances	NPD	

Figure ZA.1 — Example of the CE marking to be shown in the accompanying documents

Figure ZA.2 gives an example of the information related to products subject to AVCP under each of the different systems to be given on the product.

CE **8910**	*"CE" marking consisting of the "CE"- symbol* *Identification number of the notified test laboratory*
AnyCo Ltd **14** 00001-CPR-567	*Name and registered address of the manufacturer or identifying mark* *Last two digits of the year in which the marking was affixed* *Reference number of the DoP*
EN 12050–4:2015	*Number of the European Standard*

Figure ZA.2 – Example of the CE marking to be affixed on the product

Bibliography

[1] EN 1561, *Founding - Grey cast irons*

[2] EN 1563, *Founding - Spheroidal graphite cast irons*

[3] EN 10025-1, *Hot rolled products of structural steels - Part 1: General technical delivery conditions*

[4] EN 10088-1, *Stainless steels - Part 1: List of stainless steels*

[5] EN 10130, *Cold rolled low carbon steel flat products for cold forming - Technical delivery conditions*

[6] EN ISO 9001, *Quality management systems - Requirements (ISO 9001)*

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