



BSI Standards Publication

Sanitary appliances – Drainage systems for the application of sanitary appliances

National foreword

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English Version

Sanitary appliances - Drainage systems for the application of sanitary appliances

Appareils sanitaires - Systèmes d'évacuation pour
l'application des appareils sanitaires

Sanitärausstattungsgegenstände -
Entwässerungssysteme für den Einsatz von
Sanitärausstattungsgegenstände

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European foreword

This document (CEN/TR 17426:2019) has been prepared by Technical Committee CEN/TC 163 “Sanitary appliances”, the secretariat of which is held by UNI.

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Introduction

Sewerage disposal is a very important task of building services engineering because of hygienic reasons.

The piping must drain waste water and rain water out of the building and lead it away from the building safely. Blockages must be avoided by proper design of the drainage system as well as the use of the appropriate selection of the sanitary appliances.

On one hand, harmonized European standards exist for a lot of sanitary appliances to be installed as a part of the drainage system. On the other hand, some links and requirements disappeared or went out of sight during the phase of harmonization.

This paper should close this gap and gives additional information on application conditions for sanitary appliances to avoid malfunction of the drainage system.

It is not intended to give guidance on the system standards like EN 12056.

1 Scope

This document describes the installation rules that must be followed to ensure proper functioning of the drainage system depending on the specified performance of the sanitary appliances.

These performance characteristics of sanitary appliances (defined in the harmonized standards EN 997, EN 13407, EN 14688, EN 14528 and EN 14527) are explained and brought into line with the application rules of standard series EN 12056.

According to Regulation (EU) 305/2011, legally binding information on building requirements must be provided by the National Product Information Point. Therefore, additional national requirements are mentioned informatively where information is available.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12056 (all parts), *Gravity drainage systems inside buildings*

EN 997, *WC pans and WC suites with integral trap*

EN 13407, *Wall-hung urinals — Functional requirements and test methods*

EN 14527, *Shower trays for domestic purposes*

EN 14528, *Bidets — Functional requirements and test methods*

EN 14688, *Sanitary appliances — Wash basins — Functional requirements and test methods*

EN 1717, *Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow*

EN 274 (all parts), *Waste fittings for sanitary appliances*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Drinking water installation

When choosing sanitary appliances, the rules for drinking water protection have to be taken into account as well. Such rules are defined, e.g. in EN 1717 and the corresponding product standards in case the product is concerned. Guidance will be given in this document.

Special aspects of national legislation have to be taken into account.

5 The drainage system

5.1 Types of sewage water: black water and rain water

Waste water or black water consists out of all sewage water from kitchen, bathroom, lavatory and other facilities.

The source of rain water is the roof drainage and other paved areas.

In case black water and rain water will be mixed, it is called combined waste water.

5.2 Types of building drainage system: separate sewerage system and combined sewerage system

For the discharge of wastewater inside buildings, several pipings from the sanitary appliances to the connecting piping, the connecting sewer and finally to the public sewage water system are used.

Separate sewerage system means the two piping's, one for rain water and one for waste water. It's not allowed using the waste water piping for rain water.

The size of the piping for waste water has to be calculated according to the amount of waste water linked to the sanitary appliances.

In case of a combined sewerage system, both types of sewage piping should be connected at the connecting piping or the connecting sewer only. It is recommended to do so as close as possible to the public sewage water system.

5.3 Drainage system: design and dimensioning

Design and dimensioning of the drainage system inside buildings is very important. It has to be taken into account:

- minimum slope,
- minimum flow rate,
- filling level, and
- ventilation

of the drainage system.

Only in case all aspects are respected properly the function of the drainage system is warranted, i.e. solids can be flushed out sufficient with the first flush and transported later on.

Wrong dimensioning will lead to failures such as:

- in case of too small pipes: the waste water system is not capable to take the complete waste water and also ventilation. This means: blockage occurs;
- in case of too big pipes: solid waste will not be transported sufficiently. Blockages will occur.

Pouring down more water in the drain is not the solution.

5.4 Basis for drainage systems

Basic standard for drainage systems in Europe is the series of standards EN 12056 (*Gravity drainage systems inside buildings*) consisting of:

- *Part 1: General and performance requirements*
- *Part 2: Sanitary pipework, layout and calculation*
- *Part 3: Roof drainage, layout and calculation*
- *Part 4: Wastewater lifting plants. Layout and calculation*
- *Part 5: Installation and testing, instructions for operation, maintenance and use*

The EN 12056 series has to be understood as a basic standard to be used as a European frame work. Additional national rules have to be taken into account. Special aspects of national legislation may overrule certain requirements of EN 12056.

If a reference to EN 12056 is made in the following, this refers to the series of the standard with all parts.

6 Types of drainage systems

6.1 General

Different types of drainage system are installed all over Europe. Variations are based on differing types of sanitary appliances, history of the installation and technical habits of building.

EN 12056 defines four types of drainage systems, which mainly differ in terms of allowed filling level in the connecting pipes.

6.2 System I: Single discharge stack system with partly filled branch discharge pipes

Sanitary appliances are connected to partly filled branch discharge pipes. The partly filled branch discharge pipes are designed with a filling degree of 0,5 (50 %) and are connected to a single discharge stack.

6.3 System II: Single discharge stack system with small bore discharge branch pipes

Sanitary appliances are connected to small bore branch discharge pipes. The small bore branch discharge pipes are designed with a filling degree of 0,7 (70 %) and are connected to a single discharge stack.

6.4 System III: Single discharge stack system with full bore branch discharge pipes

Sanitary appliances are connected to full bore branch discharge pipes. The full bore branch discharge pipes are designed with a filling degree of 1,0 (100 %) and each branch discharge pipe is separately connected to a single discharge stack.

6.5 System IV: Separate discharge stack system

Drainage systems Type I, II and III may also be divided into a black water stack serving WC's and urinals and a grey water stack serving all other appliances.

6.6 Area of application

In Annex A is shown the use of the drainage system by country.