

Gravity drainage systems inside buildings —

Part 1: General and performance requirements

The European Standard EN 12056-1:2000 has the status of a
British Standard

ICS 01.040.91; 91.140.80

National foreword

This British Standard is the official English language version of EN 12056-1:2000.

The UK participation in its preparation was entrusted by Technical Committee B/505, Wastewater engineering, to Subcommittee B/505/21, Roof drainage and sanitary pipework, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 17 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

This British Standard, having been prepared under the direction of the Sector Committee for Building and Civil Engineering, was published under the authority of the Standards Committee and comes into effect on 15 September 2000

© BSI 09-2000

ISBN 0 580 36444 5

Amendments issued since publication

Amd. No.	Date	Comments

English version

Gravity drainage systems inside buildings - Part 1: General and performance requirements

Réseaux d'évacuation gravitaire à l'intérieur des bâtiments
- Partie 1: Prescriptions générales et de performance

Schwerkraftentwässerungsanlagen innerhalb von
Gebäuden - Teil 1: Allgemeine und
Ausführungsanforderungen

This European Standard was approved by CEN on 27 October 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword	4
1 Scope	5
2 Normative references	5
3 Definitions	6
3.1 General	6
3.1.1 Waste water	6
3.1.2 Domestic waste water	6
3.1.3 Trade effluent	6
3.1.4 Grey water	6
3.1.5 Black water	6
3.1.6 Rainwater	6
3.1.7 Flood level	6
3.1.8 Drainage system	6
3.1.9 Combined system	6
3.1.10 Separate system	6
3.2 Pipes and fittings	6
3.2.1 Sanitary pipework	6
3.2.2 Nominal diameter (DN)	7
3.2.3 Internal diameter (d_i)	7
3.2.4 External diameter (d_a)	7
3.2.5 Minimum internal diameter ($d_{i \min}$)	7
3.2.6 Branch discharge pipe	7
3.2.7 Square entry	7
3.2.8 Swept entry	7
3.2.9 Connection bend	7
3.2.10 Discharge stack	7
3.2.11 Stack offset	7
3.2.12 Drain	7
3.2.13 Filling degree	7
3.3 Ventilating pipework	7
3.3.1 Ventilating pipe	7
3.3.2 Branch ventilating pipe	7
3.3.3 Stack vent	7
3.3.4 Ventilating stack	7
3.3.5 Air admittance valve	7
3.4 Appliances	8
3.4.1 Domestic sanitary appliances	8
3.4.2 Non-domestic sanitary appliances	8
3.4.3 Floor gully	8
3.4.4 Trap	8
3.4.5 Depth of water seal (H)	8
3.5 Calculation	8
3.5.1 Discharge unit (DU)	8
3.5.2 Frequency factor (K)	8
3.5.3 Waste water flow rate (Q_{ww})	8
3.5.4 Continuous flow rate (Q_c)	8
3.5.5 Pumped water flow rate (Q_p)	9
3.5.6 Total flow rate (Q_{tot})	9

3.5.7	Hydraulic capacity (Q_{\max})	9
3.5.8	Air flow rate (Q_a)	9
4	General requirements	9
4.1	Energy and water consumption	9
4.2	Gravity drainage	9
4.3	Combined and separate systems	9
4.4	National and local conditions	9
4.5	Condensates	9
4.6	Quality and quantity requirements of effluents	9
5	Performance requirements	10
5.1	General	10
5.2	Function	10
5.3	Hygiene	10
5.4	Safety	10
5.4.1	Prevention of spread of fire and smoke	10
5.4.2	Water and gas tightness	10
5.4.3	Location of pipework	10
5.5	Flooding	11
5.5.1	Flooding from the external drainage system	11
5.5.2	Flooding within the building drainage system	11
5.5.3	Flooding prevention	11
5.6	Performance considerations	11
5.6.1	Capacity of the system	11
5.6.2	Noise	11
5.6.3	Ventilation of the drainage system	11
5.6.4	Durability	11
5.6.5	Condensation	11
5.6.6	Accessibility for inspection, testing and maintenance	11
5.7	Mechanical resistance and stability	12
5.7.1	Chemical and physical resistance	12
5.7.2	Stability during construction	12
5.7.3	Stability during operation	12
5.8	Frost protection	12
6	Testing	12
Annex A	(informative)	13
A.1	National and local regulations and practice	13

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 165, Waste water 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 December 2000, and conflicting national standards shall be withdrawn at the latest by June 2001.

This part is the first in a series relating to the functional requirements of gravity drainage systems inside buildings. There will be five parts, as follows: Gravity drainage systems inside buildings -

Part 1: General and performance requirements;

Part 2: Sanitary pipework - Layout and calculation;

Part 3: Roof drainage - Layout and calculation;

Part 4: Waste water lifting plants - Layout and calculation;

Part 5: Installation and testing, instructions for operation, maintenance and use.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

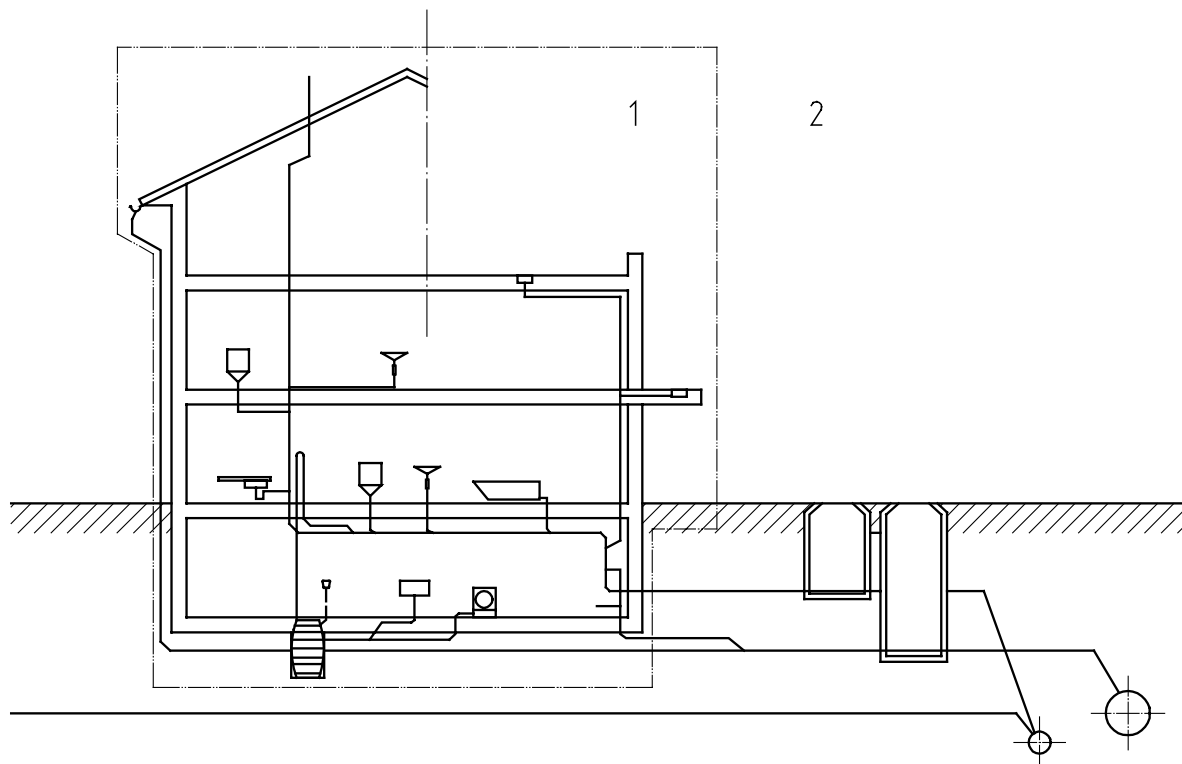
1 Scope

This European Standard applies to waste water drainage systems which operate under gravity. It is applicable for drainage systems inside dwellings, commercial, institutional and industrial buildings. The field of application of this European Standard is shown in Figure 1.

Differences in plumbing within Europe have led to a variety of systems being developed. Some of the major systems in use are described but this standard has not attempted to detail the intricacies of each system. Detailed information additional to that contained in this standard may be obtained by referring to the technical documents listed in annex A.

This first part of the standard establishes the general and performance requirements for waste water gravity drainage systems. It makes limited provision for pipework conveying trade effluent and for fluids removed by pumps.

All drawings in this standard are given as examples and are not intended to exclude any other system configuration.



- 1 Gravity drainage systems inside buildings
- 2 Gravity drainage systems outside buildings

Figure 1 — Field of application

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- EN 12056-2: Gravity drainage systems inside buildings - Part 2: Sanitary pipework - Layout and calculation.
- EN 12056-3: Gravity drainage systems inside buildings - Part 3: Roof drainage - Layout and calculation.
- EN 12056-4: Gravity drainage systems inside buildings - Part 4: Waste water lifting plants - Layout and calculation.
- EN 12056-5 Gravity drainage systems inside buildings - Part 5: Installation and testing, instructions for operation, maintenance and use.

3 Definitions

For the purposes of this European Standard, the following definitions apply.

3.1 General

3.1.1 waste water

water which is contaminated by use and all water discharging into the drainage system, e.g. domestic and trade effluent, condensate water and also rainwater when discharged in a waste water drainage system

3.1.2 domestic waste water

water which is contaminated by use and normally discharged from WC, showers, baths, bidets, wash basins, sinks and floor gullies

3.1.3 trade effluent

water after industrial use and processes contaminated/polluted water including cooling water

3.1.4 grey water

waste water not containing faecal matter or urine

3.1.5 black water

waste water containing faecal matter or urine

3.1.6 rainwater

water resulting from natural precipitation that has not been deliberately contaminated

3.1.7 flood level

maximum level to which waste water can rise within a drainage system

3.1.8 drainage system

a system composed of drainage equipment, and other components collecting waste water and discharging by means of gravity. Effluent lifting plant may be part of a gravity drainage system

3.1.9 combined system

a drainage system for both rain and waste water in a single pipe

3.1.10 separate system

a drainage system for draining rain and waste water separately by dedicated pipework

3.2 Pipes and fittings

3.2.1 sanitary pipework

arrangement of discharge pipework, with or without ventilating pipes, connected to a drainage system

Note: For the purposes of this standard, "pipework" include pipes and fittings.

- 3.2.2 nominal diameter (DN)**
numerical designation of size which is a convenient round number approximately equal to the diameter in mm
- 3.2.3 internal diameter (d_i)**
mean internal diameter of the pipe barrel at any cross-section
- 3.2.4 external diameter (d_a)**
mean external diameter of the pipe barrel at any cross-section
- 3.2.5 minimum internal diameter ($d_{i\min}$)**
smallest internal diameter allowed with maximum tolerance
- 3.2.6 branch discharge pipe**
pipe connecting sanitary appliances to a discharge stack or drain
- 3.2.7 square entry**
equal branch junction that is more than 45°, or has a centre line radius less than the internal pipe diameter
- 3.2.8 swept entry**
equal branch junction that is at 45° or less, or has a centre line radius not less than the internal pipe diameter
- 3.2.9 connection bend**
first fitting in direction of flow after trap outlet
- 3.2.10 discharge stack**
main (generally vertical) pipe, conveying discharges from sanitary appliances
- 3.2.11 stack offset**
non-vertical part of a discharge stack
- 3.2.12 drain**
near horizontal pipe suspended within a building or buried in the ground to which stacks or ground floor appliances are connected
- 3.2.13 filling degree**
proportion of water depth (h) to the inside diameter (d_i)
- 3.3 Ventilating pipework**
- 3.3.1 ventilating pipe**
pipe provided to limit the pressure fluctuations within the discharge pipe system
- 3.3.2 branch ventilating pipe**
ventilating pipe connected to a branch discharge pipe
- 3.3.3 stack vent**
extension of a vertical discharge pipe above the highest branch discharge pipe connection that terminates in an end, open to the atmosphere
- 3.3.4 ventilating stack**
main vertical ventilating pipe, connected to a discharge stack, to limit pressure fluctuations within the discharge stack
- 3.3.5 air admittance valve**
valve that allows air to enter the system but not to escape in order to limit pressure fluctuations within the sanitary pipework

3.4 Appliances

3.4.1 domestic sanitary appliances

fixed appliances supplied with water and used cleaning or washing. For example: baths, showers, wash basins, bidets, WCs, urinals, sinks, dishwashers, washing machines

3.4.2 non-domestic sanitary appliances

special sanitary appliances used in commercial kitchens, laundries, laboratories, hospitals, hotels, swimming-pools, etc.

3.4.3 floor gully

discharge fitting intended to receive water from floors either through apertures in a grating or from pipes connected to the body of the gully. A gully may include a trap

3.4.4 trap

device that prevents the passage of foul air by means of water seal

3.4.5 depth of water seal (H)

the depth of water which would have to be removed from a fully charged trap before gases and odours at atmospheric pressure could pass through the trap shown as H in Figure 2

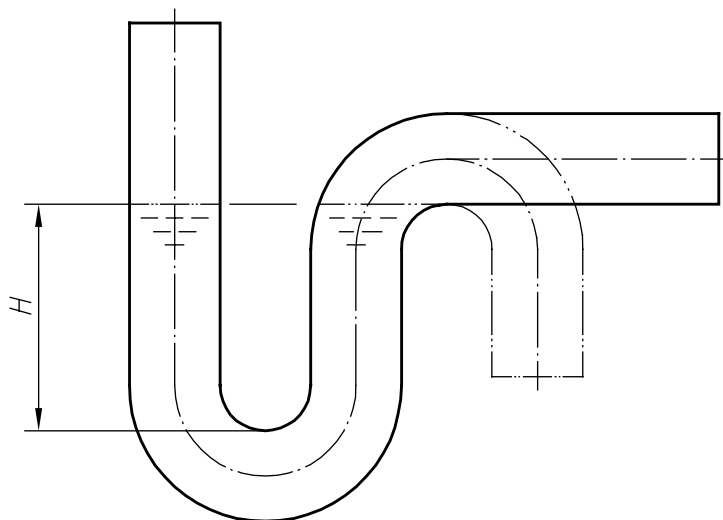


Figure 2 — Water depth in trap

3.5 Calculation

3.5.1 discharge unit (DU)

the average discharge rate of a sanitary appliance expressed in litres per second (l/s)

3.5.2 frequency factor (K)

variable to take into account the frequency of use of sanitary appliances (dimensionless)

3.5.3 waste water flow rate (Q_{ww})

total design flow rate from sanitary appliances in a drainage system or in a part of a drainage system in litres per second (l/s)

3.5.4 continuous flow rate (Q_c)

flow rate of all continuous flows, e.g. cooling water, etc. in litres per second (l/s)

3.5.5 pumped water flow rate (Q_p)

discharge rate of waste water pumps in litres per second (l/s)

3.5.6 total flow rate (Q_{tot})

the total flow rate is the sum of the waste water flow rate (Q_{ww}) and continuous flow rate (Q_c) and pumped water flow rate (Q_p), in litres per second (l/s)

3.5.7 hydraulic capacity (Q_{max})

maximum flow rate of water permitted in a branch, stack or drain in litres per second (l/s)

3.5.8 air flow rate (Q_a)

minimum flow rate of air through a ventilating pipe or air admittance valve, measured at 250 Pascal (Pa) pressure drop, in litres per second (l/s)

4 General requirements

4.1 Energy and water consumption

Low water and energy consumption shall be prime considerations together with hygiene and functional requirements.

4.2 Gravity drainage

Drainage systems lying above the flood level should be drained by gravity. Waste water from gullies and sanitary appliances above flood level shall not be drained through anti-flooding devices and only in special cases, e.g. refurbishment, by a waste water lifting plant. Waste water from sanitary appliances and floor gullies below flood level shall be drained by waste water lifting plants, or via an anti-flooding device (see EN 12056-4).

4.3 Combined and separate systems

Domestic waste water and rain water shall be discharged in separate systems and may only be combined outside the building subject to national and local regulations and practice.

4.4 National and local conditions

Design and installation shall take into account the effect of local climatic, geographic and social conditions.

4.5 Condensates

The condensate discharge from fuel burning appliances shall only be introduced into those parts of the drainage system which are resistant to a pH value of 6.5 and lower. National and local regulations and practice may require treatment of the condensate before discharge.

4.6 Quality and quantity requirements of effluents

The quality requirements and flow rates for the waste water which discharges directly to the public sewer are subject to national and local regulations and practice. Substances that reduce the efficiency of the system or those not acceptable to the local authority shall be prevented from entering the system.

National and local regulations and practice may allow the use of waste disposal units (macerators).

Special plant, e.g. separators, shall be provided for waste water containing dangerous, toxic, noxious or other matter which may attack the materials of the pipe system and may affect the operation of the waste water treatment.

5 Performance requirements

5.1 General

Drainage systems shall be designed and installed from components and materials which comply with the requirements of the relevant European Directives.

Where applicable European Standards or a European Technical Approval exist, products complying with such standards or approvals shall be used.

In the absence of such European Standards or European Technical Approvals, the products shall comply with the National Standards or National Approvals that apply within that area.

Waste water drainage systems shall be designed and installed so that there is adequate hydraulic capacity, and structural and chemical resistance.

5.2 Function

Drainage systems shall be designed, installed and maintained in such a way that they do not cause danger or nuisance nor endanger property such as the building structure, supply systems or other appliances within the building with normal predictable use. The pipework shall be designed to be self-cleansing in accordance with EN 12056-2.

5.3 Hygiene

Drainage systems shall be designed and installed so that the health and safety of the users and occupiers of the building is not affected by:

- Leakage;
- Waste water flooding into the building;
- Penetration of toxic or noxious odours into the building;
- Contamination of the drinking water from the system.

5.4 Safety

Waste water systems shall be designed and installed so that there is protection against:

- Escape of odours see 5.4.2;
- Mechanical failure see 5.7;
- Frost see 5.8;
- Flooding see 5.5.1 and 5.5.3;
- Corrosion see 5.7;
- Spread of fire see 5.4.1.

5.4.1 Prevention of spread of fire and smoke

Where pipes pass through walls, floors or ceilings subject to specific fire resistance requirements, special precautions shall be taken in accordance with national and local regulations and practice.

5.4.2 Water and gas tightness

Drainage systems shall be water and gas tight against the operational pressures. Pipework systems installed inside buildings shall not release vapours and foul air into the building.

5.4.3 Location of pipework

The pipework shall be routed to minimize the risk and effect of any consequential damage due to leakage. Systems or parts of them with a specific high risk of consequential damage resulting from leakage, e.g. pipe runs in hospitals, computer rooms, etc. shall be designed in such a way that the leakage is readily detected and that repairs can be carried out.

5.5 Flooding

5.5.1 Flooding from the external drainage system

If there is a risk of flooding from the external drainage system, provision shall be made to avoid flooding into the building. See EN 12056-4.

In the absence of any other data, the flood level should be taken as that of the ground level in the area of the connection to the sewer.

5.5.2 Flooding within the building drainage system

The design of a drainage system shall minimize the risk of blockage with normal predictable usage of the system. The design of drainage systems shall avoid cross-flow from one sanitary appliance to another.

5.5.3 Flooding prevention

Waste water collected or stored below flood level shall be discharged into the drainage system via an automatic waste water lifting plant. In exceptional cases, anti-flooding valves may be permitted (see EN 12056-4).

5.6 Performance considerations

In the design of any system the following aspects of performance shall be considered.

5.6.1 Capacity of the system

Requirements for the discharge rates into the system and frequency of use shall be a primary consideration of the designer. Traps and pipework shall be such that the discharge from sanitary appliances is not restricted below design discharge rates. Pipes serving more than one appliance shall be sized taking account of the probability of simultaneous discharge. The volume of the waste water and roof drainage shall be calculated in accordance with EN 12056-2, -3, and -4.

5.6.2 Noise

Noise shall be taken into consideration in the design and installation of the drainage system in combination with the building structure. For acceptable levels, refer to national and local regulations and practice.

5.6.3 Ventilation of the drainage system

In order to ensure the functioning of the drainage system and sewers, ventilation shall be provided. The top of open stacks shall terminate outside the building structure and be positioned where odours and vapours from the system will not enter the building. Ventilating pipes shall only serve the drainage system. Where air admittance valves are used, they shall be installed in accordance with national and local regulations and practice.

5.6.4 Durability

The drainage system shall be made with materials and components to meet the intended life of the system.

5.6.5 Condensation

Drainage systems shall be installed in such a way that condensation deleterious to the pipework or the building fabric does not occur. In buildings, drainage pipes carrying cold water (e.g. rain water) shall be insulated against condensation if climatic and indoor temperatures and humidity make it necessary.

5.6.6 Accessibility for inspection, testing and maintenance

Adequate access shall be provided to enable testing, inspection and maintenance work to be carried out. Parts of the system which for operational reasons may need repair or replacement should be accessible and replaceable.

5.7 Mechanical resistance and stability

See also EN 12056-5.

5.7.1 Chemical and physical resistance

The external surfaces of pipework components shall not come into contact with materials likely to attack them, e.g. electrolytic or chemical action. When installed in floors, walls or fill, the components shall be permanently protected if necessary, taking into account any expansion or shrinkage of surrounding material.

5.7.2 Stability during construction

The system shall be designed and built in such a way that it resists the loading that are liable to act on it during its installation and following building works.

5.7.3 Stability during operation

Fixings for pipework shall be secure, stable and not cause damage to pipework or to any other part or element of the building. The effects of thermal movement and internal pressure shall be taken into account.

5.8 Frost protection

Drainage systems shall be designed and installed to avoid the risk of damage or loss of function due to freezing.

6 Testing

Both tightness and performance tests may be required by national and local regulations and practice or as a contractual requirement.

Annex A (informative)

A.1 National and local regulations and practice

The following documents contain details which should be considered within the framework of this standard. This list was correct at the time of publication of this standard but should not be considered to be exhaustive. Users of this standard should check for the latest applicable.

Austria

ÖNORM B 2501 "Entwässerungsanlagen für Gebäude und Grundstücke; Bestimmungen für Planung und Ausführung"

ÖNORM B 2506-1 "Regenwasser-Sickeranlagen für Abläufe von Dachflächen und befestigten Flächen - Teil 1: Anwendung, hydraulische Bemessung, Bau und Betrieb"

ÖWAV Regelblatt 5 "Richtlinien für die hydraulische Berechnung von Abwasserkanälen"

ÖWAV Regelblatt 11 "Richtlinien für die abwassertechnische Berechnung von Schmutz-, Regen- und Mischwasserkanälen"

Belgium

According to the Royal Decree of 24.06.1988 on the municipalities, drainage installations inside buildings are of the competence of the municipalities. Drainage systems have thus to comply with the municipal regulations.

Denmark

Bygningsreglement BR 1995. Udgivet af By- og Boligministeriet.
Danish Building Regulation BR 1995. Published by the National Building and Housing Agency.
available from Schultz Information
 Herstedvang 10
 DK-2620 Albertslund
 Telephone: + 45 43 63 23 00
 Telefax: + 45 43 63 19 69

DS 432:1994 Norm for afløbsinstallationer.
DS 432:1994 Code of Practice for sanitary drainage - Waste water installations.

DS 432:1995/Ret.1 Norm for afløbsinstallationer.
DS 432:1995/Corr.1 Code of Practice for sanitary drainage - Waste water installations.

France

Règlement sanitaire départemental, titre III "Locaux d'habitation et assimilés" (circulaire du 9 août 1978 modifiée par les circulaires des 26 avril 1982, 20 janvier 1983, 18 mai 1984, 31 juillet 1995, 22 mai 1997).

Germany

National regulations require drainage system 1 to be used.
For EN 12056-1 refer to DIN 1986-1 and -2, DIN EN 1610 and DIN 18381.
For EN 12056-2 refer to DIN 1986-1 and -2, DIN EN 1610 and DIN 18381.
For EN 12056-3 refer to DIN 1986-1 and -2, DIN EN 1610 and DIN 18381.
For EN 12056-4 refer to DIN 1986-1 and -2 and DIN EN 12050-1 to -4.
For EN 12056-5 refer to DIN 1986-1 and -2 and DIN EN 1610 and DIN 18381.

Ireland

National Regulations: Building Regulations 1997 Technical Guidance Document H Drainage and Waste Water Disposal.

Local Regulations: Local Authorities have different requirements concerning the use of types of drainage systems, and the use of air admittance valves. Drainage System No 1 is the accepted method of gravity drainage inside buildings in Ireland.

Italy

LEGGE n.319 (Legge Merli) 10-05-76
Norme per la tutela delle acque dall'inquinamento coordinate con le modifiche ed integrazioni apportate dalla Legge 8/10/1976 n.690, dalla Legge 24/12/1979, n.650, dalla Legge 23/4/1981, n.153. G.U. n.48 del 21/2/1977

Decreto Legge n. 544, 10-08-76
Proroga dei termini di cui agli articoli 15, 17 e 18 della Legge 319 (Legge Merli) del 10/5/1976, recante G.U. n.211 dell'11/8/1976

Delibera MINISTERO LL.PP. COMITATO MINISTRI TUTELA ACQUE, 4-02-77
Criteri, metodologie e norme tecniche generali di cui all'Art. 2 lettera b), d), e) della legge 319 (Legge Merli) del 10/5/1976, recante norme per la tutela delle acque dall'inquinamento

Decreto Legge n.467, 24-09-79
Proroga dei termini ed integrazioni delle Leggi 171 del 16/4/1973 e 319 (Legge Merli) del 10/5/1976, in materia di tutela delle acque dallo inquinamento, G.U. n.263 del 25/9/1979

LEGGE n.650, 24-12-79
Integrazioni e modifiche delle Leggi n.171 del 16/4/1973 e n.319 del 10/5/1976 (Legge Merli) in materia di tutela delle acque dall'inquinamento, G.U. n.352 del 29/12/1979

Decreto Legge n.620, 4-11-81
Provvedimento urgenti in materia di tutela delle acque dallo inquinamento, G.U. n.303 del 4/11/1981

LEGGE n.62, 5-03-82
Conversione in legge, con modificazioni, del D.L. 30/12/1981 n. 801 concernente provvedimenti urgenti in materia di tutela delle acque dallo inquinamento, G.U. n.63 del 5/3/1982

Circolare n.3035/SI/AC del MINISTERO DELL'AMBIENTE, 27-07-87
Indagine sugli impianti di depurazione delle acque reflue, G.U. n.183 del 7/8/1987

Decreto Legislativo n.132, 27-01-92
Attuazione della direttiva CEE n.80/68 concernente la protezione delle acque sotterranee dall'inquinamento provocato da alcune sostanze pericolose, Suppl. Ord. n.24 alla G.U. n.41 del 19/2/1992

Decreto n.309 del PRESIDENTE DELLA REPUBBLICA, 27-07-87
Regolamento per l'organizzazione del Servizio per la tutela delle acque, la disciplina dei rifiuti, il risanamento del suolo e la prevenzione dell'inquinamento di natura fisica e del Servizio per l'inquinamento acustico, atmosferico e per le industrie a rischio del Ministero dell'ambiente, G.U. n.136 dell'11/6/1992

Decreto Legge n.454, 15-11-93
Modifica alla disciplina degli scarichi delle pubbliche fognature e degli insediamenti civili che non recapitano in pubbliche fognature, G.U. n.268 del 15/11/1993

Decreto Legge n.31, 14-01-94
Modifica alla disciplina degli scarichi delle pubbliche fognature e degli insediamenti civili che non recapitano in pubbliche fognature, G.U. n.13 del 18/1/1994

Decreto Legge n.177, 17-03-94
Modifiche alla disciplina degli scarichi delle pubbliche fognature e degli insediamenti civili che non recapitano in pubbliche fognature, G.U. n.64 del 18/3/1994

Decreto Legge n.292, 16-05-94
Modifiche alla disciplina degli scarichi delle pubbliche fognature e degli insediamenti civili che non recapitano in pubbliche fognature, G.U. n.114 del 18/5/1994

Decreto Legge n.449, 15-07-94
Modifiche alla disciplina degli scarichi delle pubbliche fognature e degli insediamenti civili che non recapitano in pubbliche fognature, nonché riorganizzazione degli organi collegiali del Ministero dell'Ambiente, G.U. n.166 del 18/7/1994

Decreto Legge n.537, 17-09-94
Modifiche alla disciplina degli scarichi delle pubbliche fognature e degli insediamenti civili che non recapitano in pubbliche fognature, G.U. n.218 del 17/9/1994

Decreto Legge n.629, 16-11-94
Modifica alla disciplina degli scarichi delle pubbliche fognature e degli insediamenti civili che non recapitano in pubbliche fognature, G.U. n.269 del 17/11/1994

Decreto Legge n.9, 16-01-95
Modifica alla disciplina degli scarichi delle pubbliche fognature e degli insediamenti civili che non recapitano in pubbliche fognature, G.U. n.12 del 16/1/1995

LEGGE n.135, 23-05-97
Conversione in Legge, con modificazioni, del Decreto Legge 25 marzo 1997, n.67, recante disposizioni urgenti per favorire l'occupazione, G.U. n.119 del 24/5/1997

Netherlands

- NEN 3215 Binnenriolering in woningen en woongebouwen - mei 1997
Eisen en bepalingmethoden
Sewerage inside dwellings - Requirements and determination methods
- NTR 3216 Binnenriolering - Richtlijn voor ontwerp en uitvoering
Sewerage inside dwellings - Guideline for design and installation

Sweden

- Boverkets Byggregler BBR 94
Swedish Building Regulations 94 with mandatory provisions and general advisory notes
- Boverkets Författningssamling BFS 1993:57, kapitel 6: Hygien, hälsa och miljö
Code of Statutes 1993:57 of the Swedish National Board of Housing, Building and Planning,
chapter 6: Hygiene, Health and Environment
- VA-handboken 10- Vatten och avlopp (Svensk Byggtjänst)
Water Supply and Sewer System Handbook 10 (Svensk Byggtjänst)

Switzerland

1. National regulations require drainage system I to be used.
2. The permission of air admittance valves is subject to local bodies.
3. Swiss Standard SN 592000 is applicable for all layout rules which are not contained in EN 12056 Parts 1 to 5.

United Kingdom

1. Building Regulations 1991; Approved Document H
available from Department of the Environment, Transport and the Regions (DETR)
HMSO Publications Centre
PO Box 276
London
SW8 5DT
Great Britain
Telephone: + 44 171 873 9090
Telefax: + 44 171 873 8200
2. Technical Standards for Compliance with the Building Standards
(Scotland) Regulations 1990; Part M: Drainage and sanitary facilities.
available from Scottish Office (SO)
New St Andrew's House
Edinburgh
EH1 3TG
Great Britain
Telephone: + 44 131 244 4553
3. The Building Regulations (Northern Ireland) 1994; Technical booklet N: Drainage.
available from Department of the Environment for Northern Ireland (DON)
c/o HMSO Bookshops
16 Arthur Street
Belfast
BT1 4GD
Great Britain
Telephone: + 44 1232 238451
Telefax: + 44 1232 235401
4. National annexes to BS EN 12056-2
5. National annexes to BS EN 12056-3

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: 020 8996 7002. Fax: 020 8996 7001.

Copyright

Copyright subsists in all BSI publications. BSI also holds the copyright, in the UK, of the publications of the international standardization bodies. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI.

This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols, and size, type or grade designations. If these details are to be used for any other purpose than implementation then the prior written permission of BSI must be obtained.

If permission is granted, the terms may include royalty payments or a licensing agreement. Details and advice can be obtained from the Copyright Manager. Tel: 020 8996 7070.