

STN	Miestne systémy na úžitkovú vodu Časť 1: Systémy na použitie dažďovej vody	STN EN 16941-1 75 8800
------------	---	--

On-site non-potable water systems - Part 1: Systems for the use of rainwater

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 06/24

Obsahuje: EN 16941-1:2024

Oznámením tejto normy sa ruší
STN EN 16941-1 (75 8800) z novembra 2018

138597



EUROPEAN STANDARD

EN 16941-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2024

ICS 93.025

Supersedes EN 16941-1:2018

English Version

On-site non-potable water systems - Part 1: Systems for the use of rainwater

Réseaux d'eau non potable sur site - Partie 1 : Systèmes pour l'utilisation de l'eau de pluie

Vor-Ort-Anlagen für Nicht-Trinkwasser - Teil 1: Anlagen für die Verwendung von Regenwasser

This European Standard was approved by CEN on 15 January 2024.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN 16941-1:2024 (E)

Contents	Page
European foreword	4
Introduction	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions.....	7
4 Functional elements of rainwater harvesting systems	8
5 Design.....	8
5.1 Collection	8
5.1.1 General.....	8
5.1.2 Collection surfaces	9
5.1.3 Collection piping system	9
5.2 Treatment.....	10
5.2.1 General.....	10
5.2.2 Preliminary treatment.....	10
5.2.3 Treatment in storage device	10
5.2.4 Additional treatment.....	11
5.3 Storage	11
5.3.1 General.....	11
5.3.2 Materials	11
5.3.3 Dimensions.....	11
5.3.4 Capacity	11
5.3.5 Structural behaviour	11
5.3.6 Watertightness	12
5.3.7 Connections and internal pipe system	12
5.3.8 Access.....	12
5.3.9 Overflow	12
5.4 Back-up water supply.....	13
5.4.1 General.....	13
5.4.2 Backflow protection device.....	13
5.5 Pumping	16
5.5.1 General.....	16
5.5.2 Submerged pump.....	16
5.5.3 Non-submerged pump.....	17
5.5.4 Expansion vessel	17
5.5.5 Pump control unit.....	17
5.6 System control with monitoring.....	18
5.7 Metering	18
5.8 Distribution.....	18
5.9 Risk assessment	19
6 Sizing	19
6.1 Storage device	19
6.1.1 General.....	19
6.1.2 Determination of the available volume of rainwater	20
6.1.3 Determination of the non-potable water demand.....	21

6.1.4	Calculation methods	22
6.2	Back-up water supply	22
7	Installation	23
8	Differentiation and identification	24
9	Commissioning	24
10	Quality of non-potable water	25
11	Maintenance	25
Annex A (informative)	Examples of calculation methods for storage capacity	26
A.1	General	26
A.2	Examples of calculation methods	26
A.2.1	Basic approach with annual time step	26
A.2.2	Detailed approach	27
Annex B (informative)	Examples of rainwater harvesting systems with different back-up supply arrangements	31
Annex C (informative)	Example for a commissioning sheet	34
Annex D (informative)	Example of dye testing for distribution pipework cross-connections	36
Annex E (informative)	Inspection and maintenance	37
E.1	Inspection and maintenance instruction sheet	37
E.2	Logbook	38
Bibliography	39

EN 16941-1:2024 (E)**European foreword**

This document (EN 16941-1:2024) 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 September 2024, and conflicting national standards shall be withdrawn at the latest by September 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 16941-1:2018.

EN 16941-1:2024 includes the following significant technical changes with respect to EN 16941-1:2018:

— necessary technical and editorial updates and alignments with EN 16941-2:2021.

EN 16941, *On-site non-potable water systems* consists of the following parts:

— *Part 1: Systems for the use of rainwater*

— *Part 2: Systems for the use of treated greywater*

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Introduction

Ecological and sustainable water management is a goal of rainwater management. It is to be expected that the natural water supplies, especially by precipitation, will change in the course of climate change. Whereas evenly distributed seasonal rainwater supply over the year may decrease locally, as it was recorded during recent years in many European areas, sudden rainstorm events with high intensity and great volumes of water during short periods of time occur more often. To foster local resilience to water scarcity it is feasible to harvest and collect rainwater for later use. Herein rainwater harvesting and infiltration, as well as the decentralized detention of rainwater, are alternatives to the customary drainage of rainwater. Rainwater harvesting also reduces the potable water demand and the discharge of water.

To sustain the natural cycle of water, excess water from the rainwater harvesting system can be infiltrated or otherwise evacuated in line with national or regional requirements.

On-site collection and use of rainwater covers a variety of non-potable applications like toilet flushing, laundry, irrigation, climate control of buildings, cleaning, etc. at private and rented properties, residential areas, community developments, industrial sites, hotels, streets, parks, golf courses, theme parks, car parks, stadia, etc.

A generic flow chart of rainwater use on-site is presented in Figure 1.

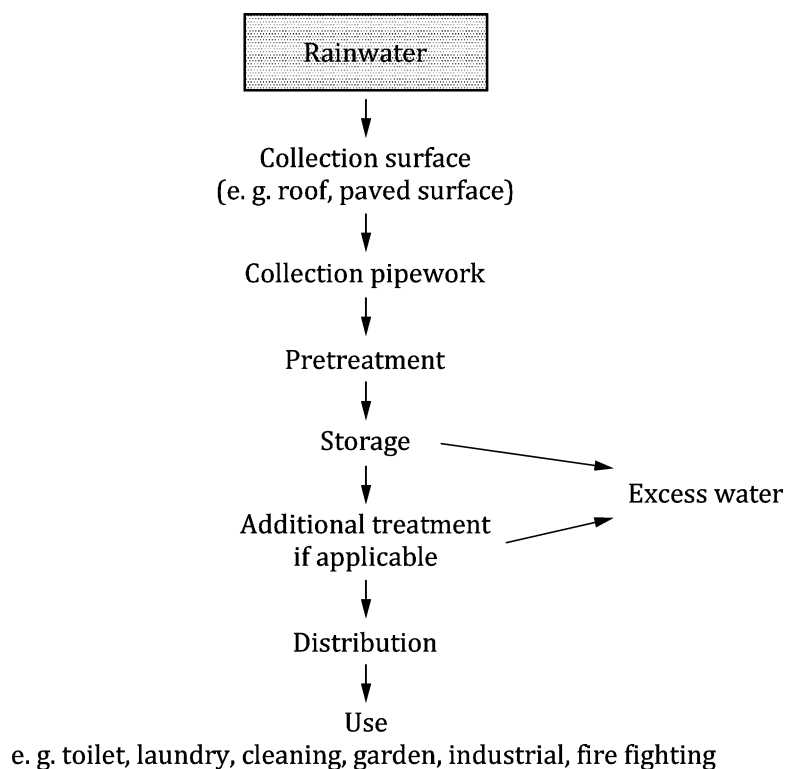


Figure 1 — Generic flow chart of rainwater use

EN 16941-1:2024 (E)

1 Scope

This document specifies the requirements and gives recommendations for the design, sizing, installation, identification, commissioning and maintenance of rainwater harvesting systems for the use of rainwater on-site as non-potable water. This document also specifies the minimum requirements for these systems.

Excluded from the scope of this document are

- the use as drinking water and for food preparation,
- the use for personal hygiene purposes,
- attenuation and
- infiltration.

NOTE Conformity with the document does not exempt from compliance with the obligations arising from local or national regulations.

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 476, *General requirements for components used in drains and sewers*

EN 805, *Water supply — Requirements for systems and components outside buildings*

EN 806 (all parts), *Specification for installations inside buildings conveying water for human consumption*

EN 809, *Pumps and pump units for liquids — Common safety requirements*

EN 1295-1, *Structural design of buried pipelines under various conditions of loading — Part 1: General requirements*

EN 1610, *Construction and testing of drains and sewers*

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

EN 12050 (all parts), *Wastewater lifting plants for buildings and sites*

EN 12056-1, *Gravity drainage systems inside buildings — Part 1: General and performance requirements*

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: Wastewater lifting plants — Layout and calculation*

EN 12056-5, *Gravity drainage systems inside buildings — Part 5: Installation and testing, instructions for operation, maintenance and user*

EN 12566-3, *Small wastewater treatment systems for up to 50 PT — Part 3: Packaged and/or site assembled domestic wastewater treatment plants*

EN 13076, *Devices to prevent pollution by backflow of potable water — Unrestricted air gap — Family A — Type A*

EN 13077, *Devices to prevent pollution by backflow of potable water — Air gap with non-circular overflow (unrestricted) — Family A — Type B*

EN 13564 (all parts), *Anti-flooding devices for buildings*

EN 16323:2014, *Glossary of wastewater engineering terms*

EN 60335-2-41, *Household and similar electrical appliances — Safety — Part 2-41: Particular requirements for pumps (IEC 60335-2-41)*

EN ISO 4064 (all parts), *Water meters for cold potable water and hot water [ISO 4064 (all parts)]*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN