



**SLOVENSKI STANDARD**  
**oSIST prEN 12255-11:2021**  
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**Čistilne naprave za odpadno vodo - 11. del: Zahtevani splošni podatki**

Wastewater treatment plants - Part 11: General data required

Kläranlagen - Teil 11: Erforderliche allgemeine Angaben

Stations d'épuration - Partie 11: Informations générales exigées

**Ta slovenski standard je istoveten z: prEN 12255-11**

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**ICS:**

13.060.30      Odpadna voda      Sewage water

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 12255-11**

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ICS 13.060.30

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English Version

## Wastewater treatment plants - Part 11: General data required

Stations d'épuration - Partie 11: Informations  
générales exigées

Kläranlagen - Teil 11: Erforderliche allgemeine  
Angaben

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 165.

If this draft becomes a European Standard, 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.

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

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

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## European foreword

This document (prEN 12255-11:2021) has been prepared by Technical Committee CEN/TC 165 “Waste water engineering”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12255-11:2001.

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 EU Directive(s).

This is the eleventh part of the EN 12255 series prepared by Working Group CEN/TC 165/WG 40, relating to the general requirements and processes for treatment plants for a total number of inhabitants and population equivalents (PT) over 50.

The EN 12255 series with the generic title “Wastewater treatment plants” consists of the following parts:

- *Part 1: General construction principles*
- *Part 2: Storm management systems*
- *Part 3: Preliminary treatment*
- *Part 4: Primary settlement*
- *Part 5: Lagooning processes*
- *Part 6: Activated sludge processes*
- *Part 7: Biological fixed-film reactors*
- *Part 8: Sludge treatment and storage*
- *Part 9: Odour control and ventilation*
- *Part 10: Safety principles*
- *Part 11: General data required*
- *Part 12: Control and automation*
- *Part 13: Chemical treatment*
- *Part 14: Disinfection*
- *Part 15: Measurement of the oxygen transfer in clean water in activated sludge aeration tanks*
- *Part 16: Physical (mechanical) filtration*

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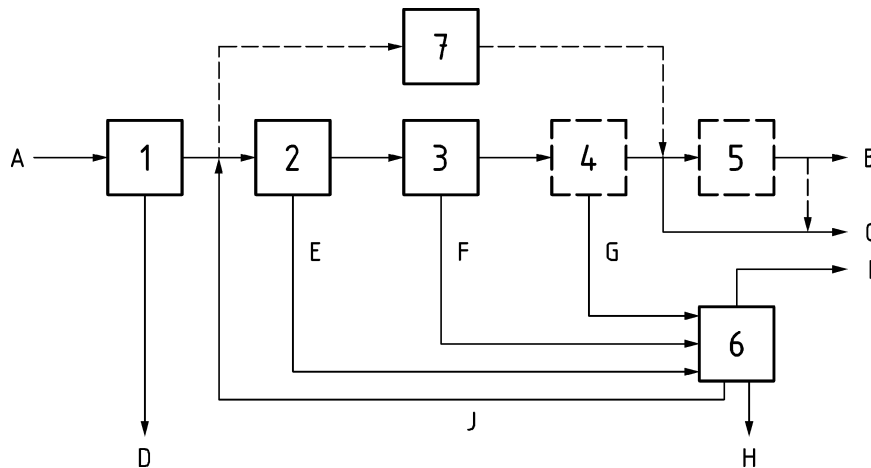
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## Introduction

Differences in wastewater treatment throughout Europe have led to a variety of systems being developed. This document gives fundamental information about the systems; this document has not attempted to specify all available systems. A generic arrangement of wastewater treatment plants is illustrated below.



### Key

- 1 preliminary treatment
- 2 primary treatment
- 3 secondary treatment
- 4 tertiary treatment
- 5 additional treatment (e.g. disinfection or removal of micropollutants)
- 6 sludge treatment
- 7 lagoons (as an alternative)
- A raw wastewater
- B effluent for re-use (e.g. irrigation)
- C discharged effluent
- D screenings and grit
- E primary sludge
- F secondary sludge
- G tertiary sludge
- H digested sludge
- I digester gas
- J returned water from dewatering

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**Figure 1 — Schematic diagram of wastewater treatment plants**

The primary application is for wastewater treatment plants designed for the treatment of domestic and municipal wastewater.

NOTE For requirements on pumping installations at wastewater treatment plants see EN 752, *Drain and sewer systems outside buildings* and EN 16932, *Drain and sewer systems outside buildings — Pumping systems*:

- *Part 1: General requirements;*
- *Part 2: Positive pressure systems;*
- *Part 3: Vacuum systems.*

## 1 Scope

This document specifies data which is necessary for the planning, design, bidding, performance guarantees, construction, start-up and compliance testing of a wastewater treatment plant or parts of it. Differences in wastewater treatment throughout Europe have led to a variety of practices being developed. This document gives fundamental information about the practices; this document has not attempted to specify all available practices.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

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

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

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

### 3.1

#### relevant plant

new wastewater treatment plant; rebuild, upgrade or extension of an existing wastewater treatment plant or a part of a new or extended wastewater treatment plant (e.g. sludge handling facilities)

### 3.2

#### client

municipality, city or other organization which intends to build a wastewater treatment plant or parts thereof, or its representative

[SOURCE: EN 12255-1]

### 3.3

#### functional tender

tender document that contains the design loads, a description of the site where the relevant plant is to be erected, the relevant discharge limits and any additional requirements

### 3.4

#### sectional tender

separate tender documents prepared for different sections of work that may be constructed by different entities

Note 1 to entry: Examples of sections of work can include: earth work, concrete work, mechanical equipment, electrical installations, buildings etc.

**prEN 12255-11:2021 (E)****3.5****consulting engineer**

independent engineer or engineering company commissioned by the client designing a wastewater treatment plant or parts of it and/or supervising the construction

Note 1 to entry: The consulting engineer may assist the client with any work preparing all or part of the tender documents. The consulting engineer supervises the construction and checks the time schedule and costs. The consulting engineer has knowledge and experience in planning, design and operational aspects of wastewater treatment plants. In some countries a special certification may be required

**3.6****turn-key contractor**

builder who agrees to complete a facility so that it is ready for use when delivered to the other contracting party

Note 1 to entry: The turn-key contractor is typically a company which has knowledge and experience in planning, design, construction and operational aspects of wastewater treatment plants.

**4 Symbols and abbreviations**

COD chemical oxygen demand

BOD<sub>5</sub> biochemical oxygen demand in 5 days

TKN total Kjeldahl nitrogen

NH<sub>4</sub>-N ammonium-nitrogen

NO<sub>3</sub>-N nitrate-nitrogen

COD/N ratio of COD and nitrogen

COD/P ratio of COD and phosphorus

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**5 Requirements****5.1 Contract strategy**

The client may decide whether a functional tender or a sectional tender shall be prepared. The client may commission a consulting engineer to carry out one or more of the following:

- establish the design loads and data as described in 5.2;
- prepare the tender documents for a functional tender;
- design the plant and estimate the costs and prepare the tender documents for the sectional tender;
- inspect the construction in case of functional tendering;
- supervise and coordinate the construction in case of sectional tendering;
- evaluate the bids on the tenders and to propose which contractor or contractors (in case of sectional tendering) should be commissioned.



## 5.2 Provision of loading data

### 5.2.1 General

Where applicable the following basic data either measured or estimated shall be provided by the client or his representative e.g. consulting engineer.

### 5.2.2 Sewerage system

The data on the sewerage system should include:

- areas served by combined and/or separate sewers;
- proportions of flows and loads from separate and/or combined sewer systems in dry weather conditions;
- storage capacity for storm water within the sewerage system and details of flow control systems;
- potential to control and balance flows and loads within the sewerage system;
- infiltration flows in dry weather conditions and their seasonal fluctuations (where appropriate);
- septic and corrosive components of the wastewater.

### 5.2.3 Population served

The data on the population served shall include:

- current population connected to the sewerage system;
- population connected at start-up of the plant;
- population connected at design horizon;
- seasonal variations of population (e.g. holiday periods);
- weekly variations of population (e.g. movement of commuting population).

### 5.2.4 Significant trades and industries

A list of trades and industries which discharge significant loads to the sewerage system should include the following flows and loads e.g.:

COD, BOD<sub>5</sub>, TKN, NH<sub>4</sub>-N, NO<sub>3</sub>-N, total phosphorus, total suspended solids, organic suspended solids, salinity and alkalinity; shown as current, start-up, and design target data for:

- hourly peak (m<sup>3</sup>/h, kg/h);
- daily peak and daily average (m<sup>3</sup>/d, kg/d);
- weekly peak day (m<sup>3</sup>/d, kg/d);
- maximum weekly average (m<sup>3</sup>/d, kg/d);
- annual average (m<sup>3</sup>/a, kg/a);
- annual average and 85 %-percentile (m<sup>3</sup>/a, kg/a).

**prEN 12255-11:2021 (E)**

In addition, for trades and industries with seasonal fluctuations the periods of high and low loads shall be included preferably as an annual diagram. The client shall specify dischargers who handle hazardous, toxic or inhibitory material and identify which precautions are necessary to prevent that hazardous, toxic or inhibitory materials being discharged. Organic discharges with low biodegradability should be specified.

**5.2.5 Data from existing wastewater treatment plants**

The loading data and the operational results of the existing wastewater treatment plants contain valuable information. As a minimum the following data for at least the previous year shall be provided in the specifications:

- annual wastewater flow ( $\text{m}^3/\text{a}$ ) proportions treated physically, chemically and biologically;
- average quantity ( $\text{m}^3/\text{d}$ ) and composition of sludge with % solids, and % volatile solids content and heavy metals;
- annual quantity of screenings, grit and floatables;
- 15-min-peak quantity of raw screenings (assumed medium raw density  $1 \text{ Mg}/\text{m}^3$ );
- average volume of liquor from sludge treatment ( $\text{m}^3/\text{d}$ ) and organic and nutrient content;
- average quantity of digester gas ( $\text{m}^3/\text{d}$ );
- electrical energy produced from digester gas ( $\text{kWh}/\text{a}$ );
- electrical energy consumed ( $\text{kWh}/\text{a}$ );
- probability plots and diagrams showing the following over a year wastewater flows ( $\text{m}^3/\text{d}$ ) and the daily loads of COD,  $\text{BOD}_5$ , TKN,  $\text{NH}_4\text{-N}$ ,  $\text{NO}_3\text{-N}$ , total phosphorus, total suspended solids, organic suspended solids, salinity and alkalinity;
- seasonal temperature of the wastewater or biological reactor temperatures over a year;
- diurnal fluctuation of the wastewater flow at dry weather conditions;
- peak flow at storm water conditions ( $\text{m}^3/\text{h}$  or  $\text{l}/\text{s}$ );
- amount and loads of wastes other than wastewater being delivered to the plant (e.g. night soil); and
- performance of the treatment plant.

**5.2.6 Design flows and loads**

The design flows and loads shall be based on the present flows and loads considering growth or decrease of the population, the trades and the industries and future connections of other communities, trades and industries. If there are no means to measure the present flows and loads the design data may be based on the projected population. In addition to the population the specific dry weather flow,  $\text{l}/(\text{population d})$ , a peak factor considering storm water and infiltration water and the specific loads in  $\text{g}/(\text{population d})$  of COD,  $\text{BOD}_5$ , TKN,  $\text{NH}_4\text{-N}$ ,  $\text{NO}_3\text{-N}$ , total phosphorus, total suspended solids and organic suspended solids shall be provided. Flows and loads of trades and industries should be determined by measurements at the sites.