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Wastewater treatment plants - Part 15: Measurement of the oxygen transfer in clean water in aeration tanks of activated sludge plants

Wastewater treatment plants - Part 15:
Measurement of the oxygen transfer in clean water in aeration tanks of activated sludge plants

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN 12255-15:2004 sisaldab Euroopa standardi EN 12255-15:1999 ingliskeelset teksti. Käesolev dokument on jõustatud 20.02.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 12255-15:2004 consists of the English text of the European standard EN 12255-15:1999. This document is endorsed on 20.02.2004 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This European Standard specifies the non-steady state measurement of the oxygen transfer rate and the oxygen transfer efficiency of aeration systems in activated sludge aeration tanks (see EN 12255-6) when filled with clean water.	**Scope:** This European Standard specifies the non-steady state measurement of the oxygen transfer rate and the oxygen transfer efficiency of aeration systems in activated sludge aeration tanks (see EN 12255-6) when filled with clean water.

ICS 13.060.30

Võtmesõnad:

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EUROPEAN STANDARD

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English version

Wastewater treatment plants - Part 15: Measurement of the oxygen transfer in clean water in aeration tanks of activated sludge plants

Stations d'épuration - Partie 15: Mesure de performances des aérateurs

Kläranlagen - Teil 15: Messung der Sauerstoffzufuhr in Reinwasser in Belüftungsbecken von Belebungsanlagen

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Foreword

This document (EN 12255-15:2003) 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of an identical text or by endorsement, at the latest by June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

It is the fifteenth Part prepared by the Working Groups CEN/TC 165/WG 42 and 43 relating to the general requirements and processes for treatment plants for a total number of inhabitants and population equivalents (PT) over 50. EN 12255 with the generic title "Wastewater treatment plants" consists of the following Parts:

— *Part 1: General construction principles*

— *Part 3: Preliminary treatment*

— *Part 4: Primary settlement*

— *Part 5: Lagooning processes*

— *Part 6: Activated sludge process*

— *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 — Treatment of wastewater by precipitation/flocculation*

— *Part 14: Disinfection*

— *Part 15: Measurement of the oxygen transfer in clean water in aeration tanks of activated sludge plants*

— *Part 16: Physical (mechanical) filtration*

NOTE For requirements on pumping installations at wastewater treatment plants, provided initially as *Part 2: Pumping installations for wastewater treatment plants*, see EN 752-6 *Drain and sewer systems outside buildings — Part 6: Pumping installations*.

The parts EN 12255-1, EN 12255-3 to EN 12255-8 and EN 12255-10 and EN 12255-11 were implemented together as a European package (Resolution BT 152/1998).

Annex A is normative.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies the non-steady state measurement of the oxygen transfer rate and the oxygen transfer efficiency of aeration systems in activated sludge aeration tanks (see EN 12255-6) when filled with clean water.

NOTE 1 This is known as the clean water test.

NOTE 2 Since the method is based on completely mixed tanks or tanks with evenly distributed aerators or diffusers test results from certain aeration installations can be incorrect.

NOTE 3 Under process conditions with mixed liquor the oxygen transfer rate and the oxygen transfer efficiency can be different from the clean water test results. This is expressed by the α-factor.

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 (including amendments).

EN 1085, *Wastewater treatment — Vocabulary.*

EN 25814, *Water quality — Determination of dissolved oxygen — Electrotechnical probe method (ISO 5814:1990).*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1085 and the following apply.

3.1
standard oxygen transfer rate (SOTR, kg/h)
mass of oxygen transferred per hour at standard conditions (water temperature T = 20 °C, barometric pressure p = 1 013 hPa, zero dissolved oxygen concentration), to an aeration tank filled with clean water (Volume V, m³) equipped with an aeration device or system and operated at a specified aeration setting. It is obtained as:

$$SOTR = V \times k_L a_{20} \times C_{S,20} / 1000 \quad (1)$$

3.2
standard aeration efficiency (SAE, kg/kWh)
ratio of standard oxygen transfer rate and total wire power uptake (P, kW) measured during the test

3.3
specific standard oxygen transfer efficiency (SSOTE, %/m)
percent oxygen absorbed per metre diffuser submergence (h_D, m). SSOTE may also be expressed in g/(m³·m)[1]

[1] The volume expressed in m^3 is applicable to standard conditions (dry air, zero humidity, p=1013 hPa, T=0°C), see also 3.9.

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