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Characterization of sludge - Evaluation of sludge density

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

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English Version

Characterization of sludge - Evaluation of sludge density

Caractérisation des boues - Evaluation de la masse volumique des boues

Beurteilung der Schlammdichte

This European Standard was approved by CEN on 19 October 2018.

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

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European foreword

This document (EN 17183:2018) has been prepared by Technical Committee CEN/TC 308 “Characterization and management of sludge”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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.

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Introduction

Knowledge of density is critical to most unit operations in both (i) wastewater treatments which are affected by the difference of density between solid and liquid, e.g. sedimentation, floatation, and (ii) sludge management operations which are affected by bulk density, e.g. centrifugation, storage, spreading. In particular, the effectiveness of secondary clarifiers and sludge thickeners is enhanced by higher sludge floc density which also increases the dewatered cake concentration at the end of mechanical dewatering.

Density also affects the (i) sludge volume and, therefore, the transport costs, and (ii) the sludge fluid-dynamic behaviour and, consequently, the head losses in a pipeline or the thermal coefficient in case of turbulent flow, being the Reynolds number depending from it.

Density is also useful in modelling sewage bio-reactor, such as biofilm reactor (biofiltration, fluidzed beds).

Densities of the dry solids and of the liquid phase should also allow the sludge origin and its degree of decomposition or stabilization to be roughly evaluated, and density of the liquid could give useful indications on the soluble substrate concentration and on the presence of other substances lighter than water [6].

1 Scope

This document specifies a method for the determination of the sludge (bulk) density. The procedure to determine density of the liquid and of the solid fractions of a suspension is described in Annex C.

This document is applicable to sludge suspensions from:

— storm water handling;

— urban wastewater collecting systems;

— urban wastewater treatment plants;

— treating industrial wastewater similar to urban wastewater [7];

— water supply treatment plants.

This method is also applicable to sludge suspensions from other origin, provided the necessary verifications are done.

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 16720-1, *Characterization of sludges - Physical consistency - Part 1: Determination of flowability - Method by extrusion tube apparatus*