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Vattenundersökningar – Prestandakrav och provningsmetoder för analysutrustning för vatten – Automatiserade provtagare för vatten och avloppsvatten

Water quality – Performance requirements and conformity test procedures for water monitoring equipment – Automated sampling devices (samplers) for water and waste water

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The European Standard EN 16479:2014 has the status of a Swedish Standard. This document contains the official version of EN 16479:2014.

Denna standard är framtagen av kommittén för Kemiska vattenundersökningar, SIS/TK 424.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 16479

July 2014

ICS 13.060.45

English Version

Water quality - Performance requirements and conformity test procedures for water monitoring equipment - Automated sampling devices (samplers) for water and waste water

Qualité de l'eau - Exigences de performance et modes opératoires d'essai de conformité pour les équipements de surveillance de l'eau - Dispositifs d'échantillonnage automatiques (échantillonneurs) pour l'eau et les eaux usées

Wasserbeschaffenheit - Leistungsanforderungen und Konformitätsprüfungen für Geräte zum Wassermonitoring - Automatische Probenahmegeräte für Wasser und Abwasser

This European Standard was approved by CEN on 22 May 2014.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 16479:2014) has been prepared by Technical Committee CEN/TC 230 “Water analysis”, 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of an identical text or by endorsement, at the latest by January 2015, and conflicting national standards shall be withdrawn at the latest by January 2015.

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

This document was submitted to the Formal Vote with the reference FprEN 16479-1.

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Introduction

This European Standard is a product standard for automated sampling devices (samplers) for water and waste water. It defines general requirements, performance requirements, and procedures for the conformity testing of samplers. Samplers that are shown, by means of the tests, to conform with the specified requirements are considered to be fit for purpose. However, this European Standard does not cover the installation and on-going use of samplers.

The requirements of this European Standard are intended to be independent of measurement technology and applicable to all automated sampling devices.

Water monitoring equipment is widely used for compliance monitoring purposes under national and European regulations. This European standard supports the requirements of the following EU Directives:

— Industrial Emissions Directive (2010/75/EU) [6].

— Urban Waste Water Treatment Directive (UWWTD) (91/271/EEC and 98/15/EEC) [7].

— Water Framework Directive (2000/60/EC) [8].

— Marine Strategy Framework Directive (2008/56/EC) [9].

1 Scope

This European Standard defines general requirements, performance requirements and conformity test procedures for automated sampling devices (samplers) for water and waste water that:

— sample water and waste water from non-pressurized (i. e. open to atmosphere) channels or vessels;

— sample over extended periods to collect discrete or composite samples based on time, event or flow proportional sampling.

Specific sample integrity requirements are defined for samplers to be used for the collection of samples of final effluent or influent for the purpose of monitoring the performance of waste water treatment works, as required under the Urban Waste Water Treatment Directive (UWWTD). Samplers to be used for other industrial applications do not have to be assessed against these specific sample integrity requirements.

This European Standard does not cover the installation and on-going use of samplers.

2 Normative References

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 5667-3:2012, *Water quality - Sampling - Part 3: Preservation and handling of water samples (ISO 5667-3:2012)*

EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025)*

3 Terms and definitions

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

3.1
automated sampling device for water and waste water
automated sampler
equipment for collecting and storing samples of water or waste water for subsequent analysis

3.2
bias
estimate of a systematic measurement error

Note 1 to entry: The systematic measurement error is a component of measurement error that in replicate measurements remains constant or varies in a predictable manner.

[SOURCE: ISO/IEC Guide 99:2007, 2.18, modified — Note 1 to entry has been added.]

3.3
composite sample
two or more samples or sub-samples, mixed together in appropriate known proportions (either discretely or continuously), from which the average result of a desired requirement may be obtained

Note 1 to entry: The proportions are usually based on time or flow measurements.

[SOURCE: ISO 6107-2:2006/AMD, 1:2012, 29]

3.4
constant volume variable time sampling
C.V.V.T
flow proportional sampling based on collecting equal volumes of sample at frequencies proportional to flow

3.5
constant time variable volume sampling
C.T.V.V
flow proportional sampling based on collecting samples at fixed time intervals but where the volume of sample is varied in proportion to the flow

3.6
constant time constant volume sampling
C.T.C.V
equal volumes of sample or sub-sample collected at equal increments of time

3.7
determinand
property/substance that is required to be measured and to be reflected by/present in a calibration solution

[SOURCE: EN ISO 15839:2006, 3.13]

3.8
discrete sample
single sample taken from a body of water

[SOURCE: ISO 6107-2:2006, 40, modified – “process, whereby” deleted]

3.9
measurement error
error of measurement
error
measured quantity value minus a reference quantity value

Note 1 to entry: The concept of “measurement error” can be used both:

a) when there is a single reference quantity value to refer to, which occurs if a calibration is made by means of a measurement standard with a measured quantity value having a negligible measurement uncertainty or if a conventional quantity value is given, in which case the measurement error is known, and

b) if a measurand is supposed to be represented by a unique true quantity value or a set of true quantity values of negligible range, in which case the measurement error is not known.

Note 2 to entry: Measurement error is not be confused with production error or mistake.

[SOURCE: ISO/IEC Guide 99:2007, 2.16]

3.10
rated operating conditions
minimum to maximum values of any environmental, fluid or electrical parameter within which the sampler is designed to operate without adjustment and with errors within performance limits

3.11
lift height
vertical distance between the surface of the fluid being sampled and the highest point to which the sample is lifted

Note 1 to entry: Sometimes called “sampling head” or “suction height”.

Note 2 to entry: The maximum lift height for samplers using vacuum pumps (e.g. pneumatic samplers and peristaltic samplers) is set to an atmospheric pressure of 1 000 mbar. At low atmospheric pressure the maximum lift height will be consequentially lower.

3.12
precision
closeness of agreement between indications or measured quantity values obtained by replicate measurements on the same or similar objects under specified conditions

Note 1 to entry: Measurement precision is usually expressed numerically by measures of imprecision, such as standard deviation, variance, or coefficient of variation under specified conditions of measurement.

Note 2 to entry: The “specified conditions” can be, for example, repeatability conditions of measurement, intermediate precision conditions of measurement, or reproducibility conditions of measurement (see ISO 5725-3:1994).

Note 3 to entry: Measurement precision is used to define measurement repeatability, intermediate measurement precision, and measurement reproducibility.

Note 4 to entry: Sometimes “measurement precision” is erroneously used to mean measurement accuracy.

[SOURCE: ISO/IEC Guide 99:2007, 2.15]

3.13
sampling interval
time between successive sampling events

3.14
sampling line
conduit from intake point to inlet of dosing system

[SOURCE: ISO 6107-2:2006/AMD, 1:2012, 115, modified – “sampling probe” was replaced by “intake point” and delivery point was replaced by “inlet of dosing system”]

4 General requirements for samplers

See 6.3 for details on verification by inspection.

A sampler shall:

a) have an unique designation that unambiguously identifies it (e.g. model, serial number);

b) be designed (including its operating methodology) and constructed to ensure that the composition of the sample is, as far as is practicable, not altered by the sampling procedure;

It can be impracticable to prevent the loss of volatile substances during sampling with vacuum and peristaltic samplers.

c) have a rated maximum lift height at which all of the performance requirements of this standard are fulfilled. The rated maximum lift height shall be inscribed on the sampler or declared in the operating manual published by the manufacturer;

Conformity testing of the sampler shall be based on a range of lift heights up to and including the sampler’s rated maximum lift height.

d) have provision for the user to set the volume of a discrete sample;

e) have rated minimum and maximum sample volumes of a discrete sample inscribed on the sampler or declared in the operating manual published by the manufacturer;