SLOVENSKI STANDARD
oSIST prEN ISO 7027-2:2018

01-februar-2018

Kakovost vode - Ugotavljanje motnosti - 2. del: Semikvantitativne metode za ocenjevanje prosojnosti vode (ISO/DIS 7027-2:2017)

Water quality - Determination of turbidity - Part 2: Semi-quantitative methods for the assessment of transparency of waters (ISO/DIS 7027-2:2017)

Wasserbeschaffenheit - Bestimmung der Trübung - Teil 2: Semi-quantitative Verfahren (ISO/DIS 7027-2:2017)

Qualité de l'eau - Détermination de la turbidité - Partie 2: Méthodes semi-quantitatives pour l'évaluation de la transparence des eaux (ISO/DIS 7027-2:2017)

Ta slovenski standard je istoveten z: prEN ISO 7027-2

ICS:

13.060.60	Preiskava fizikalnih lastnosti vode	Examination of physical properties of water

oSIST prEN ISO 7027-2:2018 **en,fr,de**

DRAFT INTERNATIONAL STANDARD

ISO/DIS 7027-2

ISO/TC **147**/SC **2** Secretariat: **DIN**

Voting begins on: **2017-12-20**

Voting terminates on: **2018-03-14**

Water quality — Determination of turbidity —

Part 2: Semi-quantitative methods for the assessment of transparency of waters

Qualité de l'eau — Détermination de la turbidité —

Partie 2: Méthodes semi-quantitatives pour l'évaluation de la transparence des eaux

ICS: 13.060.60

This document is circulated as received from the committee secretariat.

ISO/CEN PARALLEL PROCESSING

Reference number
ISO/DIS 7027-2:2017(E)

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Laboratory ... **2**
4.1 Measurement using the transparency testing tube ... 2
4.1.1 Apparatus ... 2
4.1.2 Sampling and samples ... 2
4.1.3 Procedure ... 2
4.1.4 Expression of results ... 2
5 In-situ-methods (field methods) ... **3**
5.1 Measurement using the transparency testing disc ... 3
5.1.1 Apparatus ... 3
5.1.2 Procedure ... 4
5.1.3 Expression of results ... 4
5.2 Determination of visibility by divers ... 5
5.2.1 Apparatus ... 5
5.2.2 Procedure ... 5
5.2.3 Expression of results ... 5
6 Test report ... **6**
Annex A (informative) **Devices** ... **7**
Annex B (informative) **Results of a field study for validation of ISO 7027-2** ... **9**
Bibliography ... **11**

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

This first edition of ISO 7027-2, together with ISO 7027-1, cancels and replaces ISO 7027:1999, which has been technically revised.

A list of all parts in the ISO 7027 series can be found on the ISO website.

Introduction

The turbidity in waters is caused by finely distributed undissolved and/or colloidal dissolved inorganic and organic substances as well as by particles (e.g. sediment) and small organisms (bacteria, phyto- and zooplankton) present in the water. Turbidity changes the lighting conditions in surface waters and thus influences the trophic status of these waters. For the indicative assessment of the lighting conditions of waters or the transparency of the water, semi-quantitative methods can be used (Reference[2]).

Measurements of transparency can be affected by the presence of dissolved light-absorbing substances (substances imparting colour) as well as by particles (such as sediments).

In semi-quantitative methods such as the determination of transparency depth by Secchi disc, reflections on the water surface can cause interferences. These are often dependent on the light and wind conditions.

Water quality — Determination of turbidity —

Part 2: Semi-quantitative methods for the assessment of transparency of waters

WARNING — Working in or around water is inherently dangerous. Persons using this document should be familiar with normal laboratory practice. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices.

IMPORTANT — It is absolutely essential that tests conducted in accordance with this document be carried out by suitably qualified staff.

1 Scope

This document specifies the following semi-quantitative methods for the assessment of transparency of waters:

a) measurement of visual range using the transparency testing tube (applicable to transparent and slightly cloudy water); see Clause 4.

b) measurement of visual range in the upper water layers using the transparency testing disc (especially applicable to surface, bathing water, waste water and often used in marine monitoring); see 5.1.

c) measurement of visibility by divers in a destined depth, see 5.2.

NOTE The quantitative methods using optical turbidimeters or nephelometers are described in part 1 of ISO 7027.

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 amendments) applies.

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

CIE Publication No. 17: 1987, International Lighting Vocabulary

3 Terms and definitions

For the purposes of this document, the terms and definitions given in CIE Publication No. 17 and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org./obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
transparency
permeability with respect to electromagnetic waves, here especially of light

3.2
turbidity
reduction of transparency of a liquid caused by the presence of undissolved and/or colloidal matter

4 Laboratory

In cases where measurements cannot be carried out on site, it may be an option to do it in the laboratory with the approach described in 4.1.

4.1 Measurement using the transparency testing tube

4.1.1 Apparatus

4.1.1.1 Transparency testing tube, consisting of a colourless glass tube 600 mm ± 10 mm long and of internal diameter 25 mm ± 1 mm, graduated in divisions of 10 mm.

4.1.1.2 Shield, close fitting, to protect the transparency testing tube from lateral light.

4.1.1.3 Print sample, to place under the tube (4.1.1.1), consisting of black print on a white background (height of characters 3,5 mm; line width 0,35 mm) or a test mark (for example, a black cross on white paper), provided with the apparatus.

4.1.1.4 Constant light source, low voltage tungsten lamp (3 W), to illuminate the print sample or test mark (4.1.1.3).

4.1.2 Sampling and samples

All sample bottles have to be clean. If necessary, wash bottles before use with hydrochloric acid (e.g. 1 mol/l) or a surfactant cleaning solution.

Collect samples in glass or plastic bottles, and carry out the determinations as soon as possible after collection. If storage is unavoidable, store the samples in a cool, dark room but for no longer than 24 h. If the samples have been stored cool, allow them to come to room temperature before measurement. Prevent contact between the sample and air, and avoid unnecessary changes in the temperature of the sample.

The transparency testing tubes should be clean and not clouded. The individual tubes should be identical in their optical properties.

4.1.3 Procedure

The sample should be mixed by hand, without creating bubbles and turbulence, and then be transferred to the transparency testing tube (4.1.1.1). Steadily lower the sample level until the print sample or test mark (4.1.1.3) is clearly recognizable as viewed from above. Read the liquid height from the graduations on the tube.

Repeat this procedure twice as a minimum. Calculate the mean from all readings and report the mean as the transparency depth.

4.1.4 Expression of results

Report the measured liquid height, to the nearest 10 mm, together with the apparatus used (name of the manufacturer).

