

**SLOVENSKI STANDARD
SIST EN ISO 7346-2:1998****01-maj-1998****Nadomešča:
SIST ISO 7346-2:1997**

Kakovost vode - Ugotavljanje akutne smrtne strupenosti snovi s sladkovodnimi ribami (Brachydanio rerio Hamilton-Buchanan (Teleostei, Cyprinidae)) - 2. del: Semistatična metoda (ISO 7346-2:1996)

Water quality - Determination of the acute lethal toxicity of substances to a freshwater fish (Brachydanio rerio Hamilton-Buchanan (Teleostei, Cyprinidae)) - Part 2: Semi-static method (ISO 7346-2:1996)

Wasserbeschaffenheit - Bestimmung der akuten letalen Toxizität von Substanzen gegenüber einem Süßwasserfisch (Brachydanio rerio Hamilton-Buchanan (Teleostei, Cyprinidae)) - Teil 2: Semistatisches Verfahren (ISO 7346-2:1996)

Qualité de l'eau - Détermination de la toxicité aiguë létale de substances vis-a-vis d'un poisson d'eau douce (Brachydanio rerio Hamilton-Buchanan (Téléostei, Cyprinidae)) - Partie 2: Méthode semi-statique (ISO 7346-2:1996)

Ta slovenski standard je istoveten z: EN ISO 7346-2:1997**ICS:**

13.060.70	Preiskava bioloških lastnosti vode	Examination of biological properties of water
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 7346-2

November 1997

ICS 13.060.01

Descriptors: see ISO document

English version

Water quality - Determination of the acute lethal toxicity of substances to a freshwater fish [*Brachydanio rerio* Hamilton (Teleostei, Cyprinidae)] - Part 2: Semi-static method (ISO 7346-2:1996)

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This European Standard was approved by CEN on 30 October 1997.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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

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Foreword

The text of the International Standard from Technical Committee ISO/TC 147 "Water quality" of the International Organization for Standardization (ISO) has been taken over as an European Standard 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 month of May 1998, and conflicting national standards shall be withdrawn at the latest by May 1998.

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

Endorsement notice

The text of the International Standard ISO 7346-2:1996 has been approved by CEN as a European Standard without any modification.

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INTERNATIONAL
STANDARD

ISO
7346-2

Second edition
1996-06-15

Water quality — Determination of the acute lethal toxicity of substances to a freshwater fish [*Brachydanio rerio* Hamilton-Buchanan (Teleostei, Cyprinidae)] —

**Part 2:
Semi-static method**

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*Qualité de l'eau — Détermination de la toxicité aiguë létale de substances vis-à-vis d'un poisson d'eau douce [*Brachydanio rerio* Hamilton-Buchanan (Téléostei, Cyprinidae)] —*

Partie 2: Méthode semi-statique



Reference number
ISO 7346-2:1996(E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7346-2 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 5, *Biological methods*.

This second edition cancels and replaces the first edition (ISO 7346-2:1984), which has been technically revised.

ISO 7346 consists of the following parts, under the general title *Water quality — Determination of the acute lethal toxicity of substances to a freshwater fish* [Brachydanio rerio *Hamilton-Buchanan* (Teleostei, Cyprinidae)]:

- Part 1: *Static method*
- Part 2: *Semi-static method*
- Part 3: *Flow-through method*

Annexes A, B and C of this part of ISO 7346 are for information only.

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International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Introduction

The three parts of ISO 7346 describe methods of determining the acute lethal toxicity of substances to the zebra fish (*Brachydanio rerio* Hamilton-Buchanan) but it must be emphasized that the recommended use of the zebra fish does not preclude the use of other species. The methodologies presented here may also be used for other species of freshwater, marine or brackish water fish, with appropriate modifications of, for example, dilution water quality and the temperature conditions of the test.

Within the three parts of ISO 7346, a choice can be made between static, semi-static and flow-through methods. The static test, described in ISO 7346-1, in which the solution is not renewed, has the advantage of requiring simple apparatus, although the substances in the test vessel may become depleted during the course of the test and the general quality of the water may deteriorate. The flow-through method, described in ISO 7346-3, in which the test solution is replenished continuously, overcomes such problems but requires the use of more complex apparatus. In the semi-static procedure, described in this part of ISO 7346, the test solutions are renewed every 24 h or 48 h, this method being a compromise between the other two.

The flow-through method can be used for most types of substances, including those unstable in water, but the concentrations of the test substance are determined wherever possible. The static method is limited to the study of substances whose tested concentrations remain relatively constant during the test period. The semi-static method can be used for testing those substances whose concentrations can be maintained satisfactorily throughout the test by renewal of the solutions every 24 h or 48 h. Special arrangements may be necessary for substances which are highly volatile.

To assist in the preparation and maintenance of concentrations of substances which may be lethal at concentrations close to that of their aqueous solubility, a small volume of solvent may be used, as specified in the methods.

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Water quality — Determination of the acute lethal toxicity of substances to a freshwater fish [*Brachydanio rerio* Hamilton-Buchanan (Teleostei, Cyprinidae)] —

Part 2: Semi-static method

1 Scope

This part of ISO 7346 specifies a semi-static method for the determination of the acute lethal toxicity of stable, non-volatile, single substances, soluble in water under specified conditions, to a freshwater fish [*Brachydanio rerio* Hamilton-Buchanan (Teleostei, Cyprinidae) — common name, zebra fish] in water of a specified quality.

The method is applicable for assigning, for each test substance, broad categories of acute lethal toxicity to *Brachydanio rerio* under the test conditions.

The results are insufficient by themselves to define water quality standards for environmental protection.

The method is also applicable when using certain other species of freshwater fish as the test organism¹⁾.

The method may be adapted for use with other freshwater fish and marine and brackish water fish

with appropriate modification of the test conditions, particularly with respect to the quantity and quality of the dilution water and the temperature.

2 Principle

Determination, under specified conditions, of the concentrations at which a substance is lethal to 50 % of a test population of *Brachydanio rerio* after exposure periods of 24 h, 48 h, 72 h and 96 h to that substance in the ambient water. These median lethal concentrations are designated the 24 h - LC50, 48 h - LC50, 72 h - LC50 and 96 h - LC50.

The test is carried out in two stages:

- a) a preliminary test which gives an approximate indication of the acute median lethal concentrations and serves to determine the range of concentrations for the final test;
- b) a final test, the results of which alone are reported.

1) The following species of freshwater fish can be used, in addition to *Brachydanio rerio*, without modification to this part of ISO 7346.

- *Lepomis macrochirus* (Teleostei, Centrarchidae)
- *Oryzias latipes* (Teleostei, Poeciliidae)
- *Pimephales promelas* (Teleostei, Cyprinidae)
- *Poecilia reticulata* (Teleostei, Poeciliidae)