

This is a preview of "ISO 20079:2005". [Click here to purchase the full version from the ANSI store.](#)

First edition
2005-11-01

Water quality — Determination of the toxic effect of water constituents and waste water on duckweed (*Lemna minor*) — Duckweed growth inhibition test

*Qualité de l'eau — Détermination de l'effet toxique des constituants de l'eau et des eaux résiduaires vis-à-vis des lentilles d'eau (*Lemna minor*) — Essai d'inhibition de la croissance des lentilles d'eau*



Reference number
ISO 20079:2005(E)

© ISO 2005

This is a preview of "ISO 20079:2005". [Click here to purchase the full version from the ANSI store.](#)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2005

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

This is a preview of "ISO 20079:2005". [Click here to purchase the full version from the ANSI store.](#)

Contents		Page
Foreword		iv
Introduction		v
1 Scope		1
2 Normative references		1
3 Terms and definitions		1
4 Principle		3
5 Interferences		4
6 Apparatus		4
7 Reagents		4
8 Test organisms		7
9 Stock cultures and pre-cultures		7
10 Procedure		8
11 Validity criteria		10
12 Expression of results		10
13 Estimation of $EC(r)_x$ values for frond number and the second observation parameter		12
14 Documentation of results		12
15 Precision		12
16 Test report		13
Annex A (informative) Preparation of the nutrient media		14
Annex B (informative) Measurement of the lowest ineffective dilution (LID) of a waste water — A simplified evaluation for testing of waste water		19
Annex C (informative) Suppliers of <i>Lemna</i> species		22
Bibliography		23

This is a preview of "ISO 20079:2005". [Click here to purchase the full version from the ANSI store.](#)

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 20079 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 5, *Biological methods*.

This is a preview of "ISO 20079:2005". [Click here to purchase the full version from the ANSI store.](#)

Introduction

The duckweed species *Lemna minor* is used as model organism for higher water plants. Duckweeds are monocotyledonous, free-floating angiosperms and belong to the *Arales* within the subclass of *Aridae*. Duckweeds are fast growing higher plants, spreading from the tropic to the arctic zone. As primary producers they are a food source for waterfowl, fish and small animals and serve as physical support for a variety of small invertebrates.

Duckweed can be damaged by water constituents and effluents (see Annex B). The subsequent inhibition of growth is calculated from the observation parameters (frond number, frond area, chlorophyll, dry weight) by a number of defined calculation methods.

EC values are determined to allow for an assessment of toxic effects of water constituents (e.g. chemicals, plant protection products). The evaluation for at least two observation parameters is based on the average specific growth-rates.

The test is designed for measurement of response of substances dissolved in water. This includes the definition of a fixed dilution step, or a concentration of the test sample at which a parameter of observation (endpoint) is inhibited relative to a control for a defined percentage.