

STN	Kvalita vody Výpočet koncentrácií biologickej ekvivalencie (BEQ) (ISO 23196: 2022)	STN EN ISO 23196 75 7706
------------	---	--

Water quality - Calculation of biological equivalence (BEQ) concentrations (ISO 23196:2022)

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

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 11/23

Obsahuje: EN ISO 23196:2023, ISO 23196:2022

137605

EUROPEAN STANDARD

EN ISO 23196

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2023

ICS 13.060.70

English Version

**Water quality - Calculation of biological equivalence (BEQ)
concentrations (ISO 23196:2022)**Qualité de l'eau - Calcul des concentrations en
équivalent biologique (BEQ) (ISO 23196:2022)Wasserbeschaffenheit - Berechnung biologischer
Äquivalenzkonzentrationen (BEQ) (ISO 23196:2022)

This European Standard was approved by CEN on 21 August 2023.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

EN ISO 23196:2023 (E)

Contents	Page
European foreword.....	3

European foreword

The text of ISO 23196:2022 has been prepared by Technical Committee ISO/TC 147 "Water quality" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 23196:2023 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 February 2024, and conflicting national standards shall be withdrawn at the latest by February 2024.

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.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 23196:2022 has been approved by CEN as EN ISO 23196:2023 without any modification.

INTERNATIONAL STANDARD

ISO 23196

First edition
2022-02

Water quality — Calculation of biological equivalence (BEQ) concentrations



Reference number
ISO 23196:2022(E)

© ISO 2022

ISO 23196:2022(E)**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents		Page
Foreword		iv
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Principle	2
5	Procedure	5
5.1	General.....	5
5.2	Procedure for the calculation of biological equivalence (BEQ) concentrations.....	5
5.2.1	Assessment of the suitability of the experimental data for the calculation of a biological equivalence (BEQ) concentration.....	5
5.2.2	Fitting of concentration-effect data for the reference compound.....	8
5.2.3	Calculation of quality measures for the fit.....	9
5.2.4	Normalization of data from the reference compound and samples.....	10
5.2.5	Calculation of the x %-effect level of the reference concentration-effect relationship and the respective RC_x -value.....	11
5.2.6	Assessment of the validity of the experimental data for the calculation of a biological equivalence (BEQ) concentration.....	12
5.2.7	Calculation of the concentration factor of the sample at x %-effect level by linear interpolation.....	12
5.2.8	Calculation of the biological equivalence (BEQ) concentration.....	13
6	Validity criteria	14
7	Test report	14
Annex A (informative) Illustration of χ^2 statistics using data from Table 1		15
Bibliography		18

ISO 23196:2022(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.

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 of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Water quality — Calculation of biological equivalence (BEQ) concentrations

1 Scope

This document specifies the derivation of biological equivalence (BEQ) concentrations for results of in vitro bioassays which are based on measuring effects on a biological process such as enzyme induction or cellular growth. The concept described here can be used for any biological assay after the proof of its applicability.

To derive BEQ concentrations, the effect on a biological process caused by a sample – i.e. the activity of the sample – is expressed in terms of a concentration of a reference compound which results in an equivalent effect on the process. The term "sample" used in this document addresses environmental samples as well as defined mixtures and pure compounds used as test item in a bioassay. BEQ concentrations can be derived for environmental water samples, extracts of environmental water samples including tap water or solutions of pure chemicals or mixtures of chemicals.

2 Normative references

There are no normative references in this document.

koniec náhľadu – text ďalej pokračuje v platenej verzii STN