



NSAI
Standards

Irish Standard
I.S. EN ISO 22282-4:2021

Geotechnical investigation and testing - Geohydraulic testing - Part 4: Pumping tests (ISO 22282-4:2021)

I.S. EN ISO 22282-4:2021

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN ISO 22282-4:2021

Published:

2021-04-07

This document was published under the authority of the NSAI and comes into effect on:

2021-04-25

ICS number:

93.020

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

I.S. EN ISO 22282-4:2021 is the adopted Irish version of the European Document EN ISO 22282-4:2021, Geotechnical investigation and testing - Geohydraulic testing - Part 4: Pumping tests (ISO 22282-4:2021)

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This page is intentionally left blank

EUROPEAN STANDARD

EN ISO 22282-4

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2021

ICS 93.020

Supersedes EN ISO 22282-4:2012

English Version

Geotechnical investigation and testing - Geohydraulic testing - Part 4: Pumping tests (ISO 22282-4:2021)

Reconnaissance et essais géotechniques - Essais géohydrauliques - Partie 4: Essais de pompage (ISO 22282-4:2021)

Geotechnische Erkundung und Untersuchung - Geohydraulische Versuche - Teil 4: Pumpversuche (ISO 22282-4:2021)

This European Standard was approved by CEN on 10 December 2020.

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, Turkey 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 22282-4:2021 (E)

Contents	Page
European foreword.....	3

European foreword

This document (EN ISO 22282-4:2021) has been prepared by Technical Committee ISO/TC 182 "Geotechnics" in collaboration with Technical Committee CEN/TC 341 "Geotechnical Investigation and Testing" the secretariat of which is held by BSI.

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 October 2021, and conflicting national standards shall be withdrawn at the latest by October 2021.

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.

This document supersedes EN ISO 22282-4:2012.

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, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 22282-4:2021 has been approved by CEN as EN ISO 22282-4:2021 without any modification.

This page is intentionally left blank

INTERNATIONAL STANDARD

ISO
22282-4

Second edition
2021-03

Geotechnical investigation and testing — Geohydraulic testing —

Part 4: Pumping tests

*Reconnaissance et essais géotechniques — Essais géohydrauliques —
Partie 4: Essais de pompage*



Reference number
ISO 22282-4:2021(E)

© ISO 2021

ISO 22282-4:2021(E)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

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
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms, definitions and symbols	2
3.1 Terms and definitions.....	2
3.2 Symbols.....	2
4 Equipment	2
5 Test procedure	3
5.1 Test preparation.....	3
5.1.1 General.....	3
5.1.2 Determining the discharge rate for the pumping test.....	3
5.2 Arranging the disposal of discharge water.....	3
5.3 Executing and equipping the well.....	4
5.3.1 Design of the test well.....	4
5.3.2 Installation procedure.....	6
5.3.3 Preparation of the well.....	6
5.4 Executing and equipping the piezometers.....	6
5.4.1 Installation procedure.....	6
5.4.2 Preparation of piezometers.....	6
5.5 Execution of the test.....	7
5.5.1 General.....	7
5.5.2 Pre-pumping monitoring.....	7
5.5.3 Preliminary pumping phase.....	7
5.5.4 Pumping test.....	7
5.5.5 Post-pumping monitoring.....	8
5.6 Uncertainty of measurement.....	8
5.7 Interruptions in pumping.....	9
5.8 Decommissioning.....	9
6 Test results	9
7 Reports	9
7.1 Field report.....	9
7.1.1 General.....	9
7.1.2 Installation record.....	10
7.1.3 Record of measured values and test results.....	10
7.2 Test report.....	11
Annex A (informative) Record of measured values and test results of the pumping test — Example	12
Annex B (informative) Determining the pumping test discharge	15
Annex C (informative) Interpretation of the pumping test results	19
Bibliography	27

ISO 22282-4:2021(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 182, *Geotechnics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 341, *Geotechnical investigation and testing*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 22282-4:2012), which has been technically revised.

The main changes compared to the previous edition are as follows:

- editorial changes;
- correction of formulae.

A list of all parts in the ISO 22282 series can be found on the ISO website.

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.

Introduction

General rules on the planning and execution of geohydraulic field tests are covered by ISO 22282-1.

A pumping test consists in principle of:

- drawing down the piezometric surface of the groundwater by pumping from a well (the test well);
- measuring the pumped discharge and the water level in the test well and piezometers, before, during and after pumping, as a function of time.

Geotechnical investigation and testing — Geohydraulic testing —

Part 4: Pumping tests

1 Scope

This document establishes requirements for pumping tests as part of geotechnical investigation service in accordance with EN 1997-1 and EN 1997-2.

This document applies to pumping tests performed on aquifers whose permeability is such that pumping from a well can create a lowering of the piezometric head within hours or days depending on the ground conditions and the purpose. It covers pumping tests carried out in soils and rock.

The tests concerned by this document are those intended for evaluating the hydrodynamic parameters of an aquifer and well parameters, such as:

- permeability of the aquifer,
- radius of influence of pumping,
- pumping rate of a well,
- response of drawdown in an aquifer during pumping,
- skin effect,
- well storage,
- response of recovery in an aquifer after pumping.

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 any amendments) applies.

ISO 14688-1, *Geotechnical investigation and testing — Identification and classification of soil — Part 1: Identification and description*

ISO 14689, *Geotechnical investigation and testing — Identification, description and classification of rock*

ISO 18674-4, *Geotechnical investigation and testing — Geotechnical monitoring by field instrumentation — Part 4: Measurement of pore water pressure: Piezometers*

ISO 22282-1, *Geotechnical investigation and testing — Geohydraulic testing — Part 1: General rules*

ISO 22475-1, *Geotechnical investigation and testing — Sampling methods and groundwater measurements — Part 1: Technical principles for the sampling of soil, rock and groundwater*

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-