
**Geotechnical investigation and testing —
Sampling methods and groundwater
measurements —**

**Part 1:
Technical principles for execution**

*Reconnaissance et essais géotechniques — Méthodes de prélèvement
et mesurages piézométriques —*

Partie 1: Principes techniques des travaux



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Contents

Page

Foreword.....	vii
Introduction	viii
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	2
3.1 Site investigation methods	2
3.2 Drilling rigs and equipment	3
3.3 Sampling.....	3
3.4 Groundwater measurements	8
4 Drilling rigs and ancillary equipment.....	10
4.1 General.....	10
4.2 Requirements for the drilling rigs and equipment	10
4.3 Equipment scope	10
5 General requirements prior to sampling and groundwater measurements	11
5.1 General.....	11
5.2 Selection of techniques and methods.....	11
5.3 Requirements for ground investigation sites and points.....	11
5.4 Preliminary information needed before starting sampling and groundwater measurements.....	12
5.5 Backfilling and site abandonment	13
5.6 Safety and special requirements.....	13
6 Soil sampling methods.....	13
6.1 General.....	13
6.2 Categories of soil sampling methods.....	13
6.3 Sampling by drilling (continuous sampling).....	14
6.4 Sampling using samplers	20
6.5 Block sampling	27
7 Rock sampling methods	29
7.1 General.....	29
7.2 Categories for rock sampling methods	29
7.3 Sampling by drilling.....	32
7.4 Block sampling	33
7.5 Integral sampling	33
8 Groundwater sampling methods for geotechnical purposes	33
8.1 General.....	33
8.2 Equipment	34
8.3 Techniques of groundwater sampling.....	34
9 Groundwater measuring stations and piezometers	35
9.1 General.....	35
9.2 Piezometers	36
9.3 Installation of piezometers	40
9.4 Maintenance	43
9.5 Decommissioning	44
10 Groundwater measurements	44
10.1 Calibration	44
10.2 Performance of the measurements.....	44

11	Handling, transport and storage of samples	45
11.1	General	45
11.2	Preservation materials and sample containers	46
11.3	Handling of samples	46
11.4	Labelling of samples	47
11.5	Transport of samples	47
11.6	Preparation of storage and shipping containers	49
11.7	Storage of samples	50
12	Report	50
12.1	Field report	50
12.2	Report of the results	56
Annex A (informative)	Example of a form for the preliminary information on the intended sampling and groundwater measurements	58
Annex B (informative)	Field reports	60
Annex C (informative)	Drilling and sampling equipment for soil and rock	69
Annex D (informative)	Vacuum bottles for groundwater sampling	115
Annex E (informative)	Protective measures of piezometers	117
Bibliography		119

Figures

Figure 1	Definitions of the diameters D_1, D_2, D_3 and D_4	5
Figure 2	Application of fracture state terms for rock cores	6
Figure 3	Lengths of core run and sample	7
Figure 4	Examples of open-tube samplers (OS) for recovering samples from boreholes	24
Figure 5	Schematic thin-walled stationary piston sampler (PS) for sampling from borehole bottom	26
Figure 6	Examples of open systems	36
Figure 7	Examples of closed systems	38
Figure 8	Closed system with filter pack and sealing in a borehole	42
Figure 9	Examples of sealing and securing samples	48
Figure 10	Example of the configuration of an open groundwater measuring system	55
Figure C.1	Drill rods and casing	69
Figure C.2	Drill rods taper threaded “Y” series	72
Figure C.3	Drill rods taper threaded “J” series	72
Figure C.4	Corebarrels “metric” series, according to ISO 3552-1	77
Figure C.5	Corebarrels “W” series, according to ISO 3551-1	79
Figure C.6	Corebarrels “W” series, according to ISO 3551-1	80
Figure C.7	Wireline corebarrel assembly	81
Figure C.8	Geotechnical wireline corebarrel (inner and outer tube assembly)	83
Figure C.9	Water-well casing with flush butt joints, according to BS 879	85
Figure C.10	Water-well casing with screwed and socketed joints, according to BS 879	85
Figure C.11	Three-cone milled tooth rock bit	88

Figure C.12 — Tungsten carbide button bit	88
Figure C.13 — Typical corebarrel lifters	90
Figure C.14 — Typical sampler retainers	91
Figure C.15 — Thin wall sampler (Shelby tube)	92
Figure C.16 — Hydraulic piston sampler.....	93
Figure C.17 — Stationary piston sampler with a 50-mm diameter liner — Sampling category A.....	94
Figure C.18 — Stationary piston sampler with a 50-mm liner — Parts	96
Figure C.19 — Stationary piston sampler with a 50-mm diameter liner — Sampling categories A and B	97
Figure C.20 — U100 Sampler	98
Figure C.21 — Standard penetration test (SPT) samplers.....	99
Figure C.22 — Typical automatic trip hammer	100
Figure C.23 — Window and windowless samplers	101
Figure C.24 — Clay cutter and shell (bailer)	102
Figure C.25 — Sectional shell	103
Figure C.26 — Chisels and stubber	104
Figure C.27 — Continuous flight auger.....	105
Figure C.28 — Augers with diameters between 36 mm and 100 mm — Sampling category C	106
Figure C.29 — Hollow stem auger.....	107
Figure C.30 — Examples of sampling from trial pits	108
Figure C.31 — Recovering samples from trial pits — Example	109
Figure C.32 — Example for a thin-walled open-tube sampler.....	110
Figure C.33 — Example for a thick-walled open-tube sampler.....	111
Figure C.34 — Example of sampling from borehole bottom using a large sampler (Sherbrooke block sampler).....	112
Figure C.35 — Method of sampling using a Laval sampler.....	114
Figure D.1 — Equipment for vacuum bottle sampling.....	116
Figure E.1 — Example of termination of an open piezometer above ground level.....	117
Figure E.2 — Example of termination of an open piezometer below ground level.....	118

Tables

Table 1 — Quality classes of soil samples for laboratory testing and sampling categories to be used	14
Table 2 — Sampling by drilling in soils	16
Table 3 — Soil sampling using samplers	21
Table 4 — Examples on sampling methods with respect to the sampling category in different soils	28
Table 5 — Soil sampling using samplers	31
Table C.1 — Drill rods and casing “W”-series according to ISO 3551-1	70
Table C.2 — Drill rods and casing “metric” series according to ISO 3552-1	71

Table C.3 — Drill rods taper threaded “Y” series	72
Table C.4 — Drill rods taper threaded “J” series.....	72
Table C.5 — Corebarrels “W” series, according to ISO 3551-1.....	73
Table C.6 — Corebarrels “metric” series, according to ISO 3552-1	74
Table C.7 — Air flush corebarrels	75
Table C.8 — Drill rods and casing	76
Table C.9 — Corebarrels “metric” series, according to ISO 3552-1	78
Table C.10 — Wireline drill rod dimensions	82
Table C.11 — Wireline corebarrel dimensions.....	82
Table C.12 — Geotechnical wireline corebarrel drill pipe dimensions.....	84
Table C.13 — Geotechnical wireline corebarrel dimensions.....	84
Table C.14 — Dimensions of water well casings with flush butt joints	85
Table C.15 — Dimensions of water well casings with screwed and socketed joints	85
Table C.16 — Bit selection chart	86
Table C.17 — Core bit profiles — Diamond set, impregnated, TC and PCD.....	87
Table C.18 — Three-cone milled tooth rock bit.....	88
Table C.19 — Tungsten carbide button bit.....	89

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 22475-1 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 341, *Geotechnical investigation and testing*, in collaboration with Technical Committee ISO/TC 182, *Geotechnics*, Subcommittee SC 1, *Geotechnical investigation and testing*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

ISO 22475-1 consists of the following parts, under the general title *Geotechnical investigation and testing — Sampling methods and groundwater measurements*:

- *Part 1: Technical principles for execution*
- *Part 2: Qualification criteria for enterprises and personnel*
- *Part 3: Conformity assessment of enterprises and personnel by third party*

Introduction

ISO 22475-1 specifies the technical principles for the execution of sampling and groundwater measurements for geotechnical purposes.

The quality of these services can be proven by:

- a) a declaration of conformity by a contractor (first party control);
- b) a declaration of conformity by a client (second party control);
- c) a declaration of conformity by a conformity assessment body (third party control).

Every enterprise or individual may decide, if and how they will prove the fulfilment of the technically related criteria: by first, second or third party control because no part of ISO 22475 requires such a declaration.

ISO/TS 22475-2 specifies the qualification criteria for enterprises and personnel that perform sampling and groundwater measurements according to ISO 22475-1.

The conformity assessment by third party control can be made according to the technical principles for execution of sampling and groundwater measurements specified in ISO 22475-1, as indicated in ISO/TS 22475-2, and in the conformity assessment procedure given in ISO/TS 22475-3.

Geotechnical investigation and testing — Sampling methods and groundwater measurements —

Part 1: Technical principles for execution

1 Scope

This part of ISO 22475 deals with the technical principles of sampling of soil, rock and groundwater, and with groundwater measurements, in the context of geotechnical investigation and testing, as described in EN 1997-1 and EN 1997-2.

The aims of such ground investigations are:

- a) to recover soil and rock samples of a quality sufficient to assess the general suitability of a site for geotechnical engineering purposes and to determine the required soil and rock characteristics in the laboratory;
- b) to obtain information on the sequence, thickness and orientation of strata and joint system and faults;
- c) to establish the type, composition and condition of strata;
- d) to obtain information on groundwater conditions and recover water samples for assessment of the interaction of groundwater, soil, rock and construction material.

The quality of a sample is influenced by the geological and hydrogeological conditions, the choice and execution of the drilling and/or the sampling method, handling, transport and storage of the samples.

This part of ISO 22475 does not cover soil sampling for the purposes of agricultural and environmental soil investigation.

NOTE 1 Soil sampling for these purposes is to be found in ISO 10381.

Water sampling for the purposes of quality control, quality characterisation, and identification of sources of pollution of water, including bottom deposits and sludges is not covered.

NOTE 2 Water sampling for these purposes is to be found in ISO 5667.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 791, *Drill rigs — Safety*

EN 996, *Piling equipment — Safety requirement*

EN 1997-1, *Eurocode 7: Geotechnical design — Part 1: General rules*

EN 1997-2, *Eurocode 7: Geotechnical design — Part 2: Design assisted by laboratory testing*

ISO 22476-3, *Geotechnical investigation and testing — Field testing — Part 3: Standard penetration test*

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

ISO 14689-1, *Geotechnical investigation and testing — Identification and classification of rock — Part 1: Identification and description*

ISO 3551-1, *Rotary core diamond drilling equipment — System A — Part 1: Metric units*

ISO 3552-1, *Rotary core diamond drilling equipment — System B — Part 1: Metric units*

GUM: *Guide to the expression of uncertainty in measurement*, BIPM/IEC/IFCC/ISO/OIML/IUPAC/IUPAP

ISO 10097-1, *Wireline diamond core drilling equipment — System A — Part 1: Metric units*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1997-1, EN 1997-2, ISO 14688-1 and ISO 14689-1 and the following apply.

NOTE Additional terms and definitions can be found in the books and literature listed in the Bibliography.

3.1 Site investigation methods

3.1.1

trial pit

open excavation constructed to examine the ground conditions *in situ*, recover samples or carry out field testing

3.1.2

shaft

open vertical or steeply inclined excavation, typically more than 5 m deep, constructed to examine the ground conditions *in situ*, recover samples or carry out field testing

3.1.3

heading

adit

small tunnel driven horizontally or with a slight inclination from a shaft or the sloping ground to examine the ground conditions *in situ*, recover samples and carry out field testing

3.1.4

borehole

hole of any predetermined diameter and length formed in any geological formation or man-made material by drilling

NOTE Investigations carried out in such a hole can be to recover rock, soil or water samples from a specified depth or to carry out *in situ* tests and measurements.

3.1.5

drilling

process by which a borehole is produced in any geological formation by rotary, rotary percussive, percussive or thrust methods and in any predetermined direction in relation to the drill rig

3.1.6

small diameter drilling

drilling in the soil with a diameter greater than 30 mm but less than 80 mm