

BS 22475-2:2011



BSI Standards Publication

Geotechnical investigation and testing – Sampling methods and groundwater measurements –
Part 2: Qualification criteria for enterprises and personnel

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Summary of pages

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Foreword

Publishing information

This British Standard is published by BSI and came into effect on 31 January 2011. It was prepared by Subcommittee B/526/3, *Site investigation and ground testing*, under the authority of Technical Committee B/526, *Geotechnics*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This part of BS 22475 supersedes DD CEN ISO/TS 22475-2:2006, which is withdrawn.

Relationship with other publications

BS 22475, *Geotechnical investigation and testing – Sampling methods and groundwater measurements*, is published in two parts:

- BS 22475-2: *Qualification criteria for enterprises and personnel*; and
- BS 22475-3: *Conformity assessment of enterprises and personnel by third party*.

BS 22475 is intended to be read in conjunction with BS EN ISO 22475-1, which specifies the technical principles for the execution of sampling and groundwater measurements in the context of geotechnical investigation and testing.

Use of this document

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

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

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This part of BS 22475 specifies requirements for the qualification criteria of enterprises and personnel performing sampling and groundwater measurement services in accordance with BS EN ISO 22475-1.

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.

BS 8550, *Guide for the auditing of water quality sampling*

BS 22475-3, *Geotechnical investigation and testing – Sampling methods and groundwater measurements – Part 3: Conformity assessment of enterprises and personnel by third party*

BS EN ISO 5667-3/BS 6068-6.3, *Water quality – Sampling – Part 3: Guidance on the preservation and handling of water samples*

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

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

BS EN ISO 22475-1, *Geotechnical investigation and testing – Sampling methods and groundwater measurements – Part 1: Technical principles for execution*

BS ISO 5667-11/BS 6068-6.11, *Water quality – Sampling – Part 11: Guidance on sampling of groundwaters*

BS ISO 5667-22, *Water quality – Sampling – Part 22: Guidance on the design and installation of groundwater monitoring points*

3 Terms and definitions

For the purposes of this British Standard, the terms and definitions given in BS 22475-3 and BS EN ISO 22475-1 and the following apply.

3.1 enterprise

organization that carries out specified parts of sampling and/or groundwater measurements in accordance with BS EN ISO 22475-1

3.2 qualified operator

person who has documented competence to perform specified parts of sampling and/or groundwater measurements in accordance with BS EN ISO 22475-1

NOTE 1 Qualified operators can include Lead Drillers on boring and rotary drills.

NOTE 2 Documented competence for Lead Drillers may be membership of a relevant competence-based scheme such as BDA Audit.

3.3 responsible expert

person who has documented competence and is responsible for the execution of specified parts of sampling and/or groundwater measurements and checking the quality of the performance in accordance with BS EN ISO 22475-1

4 Requirements**4.1 Requirements for the enterprise**

4.1.1 The enterprise carrying out sampling and/or groundwater measurements in accordance with BS EN ISO 22475-1 shall be able to demonstrate adequate competence and have:

- a) experienced personnel and facilities to manage and to perform specified types of services;
- b) items of equipment conforming to BS EN ISO 22475-1;
- c) a health and safety system; and
- d) a quality assurance system.

4.1.2 The enterprise shall ensure that all specified equipment conforms to the appropriate technical specifications and is correctly maintained, calibrated and used in accordance with the appropriate technical specifications and operating manuals.

4.1.3 A qualified operator shall be continuously present and be responsible for the performance of sampling by drilling, installations, measurements and recording at each drill rig.

4.1.4 The enterprise shall appoint a responsible expert for each project who shall also sign the report.

4.1.5 The enterprise shall have knowledge of relevant bylaws, health and safety regulations and technical rules for the corresponding field of activity.

4.1.6 The enterprise shall be covered for public liability.

4.2 Requirements for personnel**4.2.1 General**

4.2.1.1 The enterprise shall have a minimum of one responsible expert, and qualified operators in adequate numbers appointed for each project of specified parts of sampling and/or groundwater measurement.

4.2.1.2 The enterprise shall provide vocational training of its personnel on a regular basis and maintain records of this training.

4.2.1.3 The qualification of external personnel and sub-contractors shall meet the requirements specified in **4.2.2** and **4.2.3**, as relevant, and shall be verified by the enterprise.

4.2.2 Qualified operator

4.2.2.1 The competence of a qualified operator shall be documented in accordance with BS 22475-3. A qualified operator shall have proof of a suitable period of work experience which depends on the sampling methods, in an enterprise that performs specified parts of sampling and/or groundwater measurement services in accordance with BS EN ISO 22475-1.

4.2.2.2 All boring and drilling operatives, to include Lead Drillers and Drillers (Drilling Support Operatives), employed on the contract shall hold an NVQ in Land Drilling and hold a valid and current audit card of competence. This shall be applicable to the work and specific drilling operation on which they are engaged as issued by the British Drilling Association Ltd or an equivalent body in a State of the European Union.

4.2.2.3 The qualified operator shall have demonstrable knowledge of:

- a) the purpose of geotechnical ground investigation;
- b) basic knowledge of the fundamental principles of geology, soil mechanics, rock mechanics and hydrogeology;
- c) relevant health, safety and environmental regulations.

4.2.2.4 The qualified operator shall be suitably trained and have documented competence regarding:

- a) specified parts of sampling and/or groundwater measurements including borehole backfilling, handling, transport and storage of samples in accordance with BS EN ISO 22475-1.

NOTE Those qualified operators responsible for groundwater sampling from installations should also have documented competence of the relevant sections of BS EN ISO 5667-3, BS ISO 5667-11 and BS ISO 5667-22;

- b) completion of records in accordance with BS EN ISO 22475-1;
- c) preliminary identification of soil and/or rock in each sample in accordance with BS EN ISO 14688-1 and BS EN ISO 14689-1 during the sampling process;
- d) knowledge of the relevant health, safety and environmental regulations;
- e) the functioning, safe operation and maintenance/field checks of the equipment; and
- f) application of the quality assurance system.

4.2.3 Responsible expert

4.2.3.1 The responsible expert shall have:

- a) a college or university degree in a relevant subject and proof of suitable work experience of at least three years in an enterprise that performs specified parts of sampling and/or groundwater measurement in accordance with BS EN ISO 22475-1; or
- b) completed vocational training in a relevant subject and proof of suitable work experience of at least five years in an enterprise that performs specified parts of sampling and/or groundwater measurement in accordance with BS EN ISO 22475-1;
- c) a relevant professional qualification together with membership of a relevant competence-based registration scheme, for example the UK Register of Ground Engineering Professionals.

4.2.3.2 The responsible expert shall have sufficient proven knowledge concerning:

- a) the relevant laws, health and safety regulations, technical rules and standards, for example BS 8550 for audit practice for water quality sampling;
- b) the purpose of geotechnical ground investigations and relevant geological, geomechanical and hydrogeological principles;
- c) appropriate parts of BS EN ISO 22475-1 for sampling and groundwater measurements and, for groundwater sampling, the relevant sections of BS EN ISO 5667-3, BS ISO 5667-11, BS ISO 5667-22;
- d) reporting sampling and groundwater measurements in accordance with BS EN ISO 22475-1 and, for groundwater sampling, the relevant sections of BS EN ISO 5667-3, BS ISO 5667-11, BS ISO 5667-22;
- e) the identification of soil and rock in each sample in accordance with BS EN ISO 14688-1 and BS EN ISO 14689-1 during the sampling process, if relevant; and
- f) the quality assurance system.

4.2.3.3 The responsible expert shall be able to:

- a) understand the aim of the investigation programme;
- b) supervise the work of the qualified operator;
- c) ensure the completeness and quality of the report in accordance with BS EN ISO 22475-1, especially divergences influencing the results of the investigation, e.g. sample quality;
- d) call for additional expertise if required.

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