

# INTERNATIONAL STANDARD

# ISO 9712

Second edition  
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## Non-destructive testing — Qualification and certification of personnel

*Essais non destructifs — Qualification et certification du personnel*

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## 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 3.

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.

International Standard ISO 9712 was prepared by Technical Committee ISO/TC 135, *Non-destructive testing* Subcommittee SC 7, *Personnel qualification*.

This second edition cancels and replaces the first edition (ISO 9712:1992) which has been technically revised.

Annexes A to C of this International Standard are for information only.

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## Introduction

Since the effectiveness of any application of non-destructive testing depends upon the capabilities of the persons who perform or who are responsible for the test, a procedure was developed to provide a means for evaluating and documenting the competence of personnel whose duties require the appropriate theoretical and practical knowledge of the non-destructive tests that they perform, specify, supervise, monitor or evaluate. An added incentive stems from the world-wide comparability of a wide range of industrial applications requiring common non-destructive testing approaches.

Any certification body adopting this International Standard shall comply with level 3 requirements for qualification and certification, but is permitted a transition period of up to five years to implement levels 1 and 2.

The aim is to permit the starting of the system in a country that has no third party certification. It is also applicable when an independent certification body applies the certification scheme to a new NDT method or when a new industrial sector is created.

NOTE Wherever gender specific words such as "his", "her", "he" or "she" appear in this International Standard the other gender is also applicable.

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# Non-destructive testing — Qualification and certification of personnel

## 1 Scope

1.1 This International Standard establishes a system for the qualification and certification, by a certification body, of personnel to perform industrial non-destructive testing (NDT) using any of the following methods:

a) eddy current testing;

b) liquid penetrant testing;

c) magnetic particle testing;

d) radiographic testing;

e) ultrasonic testing.

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1.2 The system described in this International Standard may also apply to visual inspection (VT), leak testing (LT), neutron radiography (NT), acoustic emission (AT) and other NDT methods where independent certification programmes exist.

1.3 Where latitude is provided in the criteria within this International Standard, the certification body shall have the final decision in determining specific requirements.

## 2 Normative reference

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

EN 45013:1989, *General criteria for certification bodies operating certification of personnel*.

### 3 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

#### 3.1

##### **authorized qualifying body**

competent organization, independent of the employer or responsible agency, approved by the certification body to prepare and administer examinations to qualify NDT personnel

#### 3.2

##### **candidate**

individual seeking certification in accordance with this International Standard

#### 3.3

##### **certificate**

written testimony of qualification

#### 3.4

##### **certification body**

agency that administers procedures for certification of NDT personnel in accordance with the requirements of this International Standard

#### 3.5

##### **certification**

procedures leading to a written testimony of the qualification of an individual's level of competence in a given NDT method and industrial sector

#### 3.6

##### **employer or responsible agency**

organization for which the candidate works on a regular basis

#### 3.7

##### **examination, basic**

one of the level 3 qualification examinations which assesses the knowledge of:

- the materials science and processes technology,
- this qualification and certification system and
- the basic principles of NDT methods as required for level 2

#### 3.8

##### **examination centre**

centre approved by the certification body, either directly or through the authorized qualifying body, where qualification examinations will be carried out

#### 3.9

##### **examination, general**

written level 1 or level 2 examination concerned with the principles of an NDT method

#### 3.10

##### **examination, job-specific**

any additional examination concerned with the application of an NDT method to a specialized product not commonly involved in a particular industrial sector

NOTE This examination is outside the scope of this International Standard.

**3.11  
examination, main method**

one of the level 3 qualification examinations, which assesses the general and specific knowledge of the level 3 candidate in the method for which certification is sought, and the ability to write NDT procedures

**3.12  
examination, practical**

examination to assess the candidate's ability to perform the NDT method

**3.13  
examination, qualification**

examination administered by a certification body or by an authorized qualifying body, which assesses the knowledge and capabilities of the candidate

**3.14  
examination, specific**

written examination concerned with the application of an NDT method in a particular industrial sector or sectors, which includes knowledge of the product and related codes, standards, specifications and acceptance criteria

**3.15  
examiner**

person certified to level 3 in the method he is to examine, and authorized by the certification body to conduct and/or grade NDT qualification examinations

NOTE No level 3 person shall be the only examiner for any candidate he has personally trained for that examination.

**3.16  
experience**

period during which the candidate performed the specific NDT method under qualified supervision, including personal application of the NDT method to materials, parts or structures

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**3.17  
industrial sector**

particular area in industry or technology where specialized NDT practices are utilized requiring specific skill, knowledge, equipment or training to achieve satisfactory performance

NOTE An industrial sector may be interpreted to mean a product (welds, castings, etc.) or an industry (aerospace, steel, etc.), see also annex A

**3.18  
NDT instruction**

written description of the precise steps to be followed in testing to an established NDT procedure, standard, code or specification

**3.19  
NDT method**

application of a physical principle in non-destructive testing (e.g. ultrasonic testing)

**3.20  
NDT procedure**

orderly sequence of steps describing where, how and in which sequence an NDT method should be applied to a product

**3.21  
NDT technique**

specific way of utilizing an NDT method (e.g. immersion ultrasonic testing)

**3.22****NDT training**

process of instruction in theory and practice in the NDT method in which certification is sought, which takes the form of training courses to an approved syllabus, but shall not include the use of specimens used in practical examinations

**3.23****operating authorization**

permission to work, issued by the employer or responsible agency and based on the individual's suitability for a specific job

**3.24****qualification**

demonstration of physical attributes, knowledge, skill, training and experience required to properly perform NDT tasks

**3.25****significant interruption**

absence or a change of activity which prevents the certified individual from practising the duties corresponding to his level in the method and the industrial sector(s) for which he is certified, for a continuous period exceeding one year

**3.26****supervision**

act of directing the application of NDT performed by other NDT personnel, which includes the control of actions involved in the preparation of the test, performance of the test and reporting of the results

**3.27****test specimen**

sample used in practical examinations

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NOTE Samples should be representative of products typically tested in the applicable industrial sector and may include more than one area or volume to be tested.

**3.28****trainee**

individual who works under the supervision of certified personnel but who does not conduct any tests independently, does not interpret test results and does not write reports on test results

NOTE This individual may be registered as being in the process of gaining appropriate experience to establish eligibility for qualification to level 1 or for direct access to level 2

**4 Abbreviations**

The following abbreviations shall be used to identify the five Non-destructive testing (NDT) methods covered by this International Standard:

— eddy current testing	ET
— liquid penetrant testing	PT
— magnetic particle testing	MT
— radiographic testing	RT
— ultrasonic testing	UT



## 5 Levels of competence (NDT levels)

### 5.1 Classification

An individual certified in accordance with this International Standard shall be classified in one of the following three levels, whereas one who has not yet attained certification may be classified as a trainee.

### 5.2 NDT level 1

**5.2.1** An individual certified to NDT level 1 is qualified to carry out NDT operations in accordance with written instructions and under the supervision of level 2 or level 3 personnel.

He shall be able to:

- a) set up the equipment;
- b) perform the tests;
- c) record and classify the results in accordance with documented criteria;
- d) report on the results.

**5.2.2** An individual certified to level 1 shall not be responsible for the choice of the test method or technique to be used.

### 5.3 NDT level 2

An individual certified to NDT level 2 is qualified to perform and direct non-destructive testing in accordance with established or recognized procedures. This may include:

- a) defining the limitations of application of the test method for which the level 2 individual is qualified;
- b) translating NDT codes, standards, specifications and procedures into practical testing instructions adapted to the actual working conditions;
- c) setting up and verifying equipment settings;
- d) performing and supervising tests;
- e) interpreting and evaluating results according to applicable codes, standards and specifications;
- f) preparing NDT instructions;
- g) carrying out or supervising all level 1 duties;
- h) training or guiding personnel below level 2;
- i) organizing and reporting results of non-destructive tests.

### 5.4 NDT level 3

**5.4.1** An individual certified to NDT level 3 may be authorized to direct any operation in the NDT method(s) for which he is certified. This may include:

- a) assuming full responsibility for an NDT facility and staff;
- b) establishing and validating techniques and procedures;
- c) interpreting codes, standards, specifications and procedures;

- d) designating the particular test methods, techniques and procedures to be used for specific NDT work;
- e) interpreting and evaluating results in terms of existing codes, standards and specifications;
- f) managing qualification examinations, if authorized for this task by the certification body;
- g) carrying out or supervising all level 1 and level 2 duties.

**5.4.2** An individual certified to level 3 shall have:

- a) sufficient practical background in applicable materials, fabrication and product technology in order to be able to select methods and establish techniques and to assist in establishing acceptance criteria where none is otherwise available;
- b) a general familiarity with other NDT methods;
- c) the ability to train or guide personnel below level 3.

## 6 Responsibilities

### 6.1 General

The certification activity shall be administered by a certification body, with the assistance, where necessary, of authorized qualifying bodies. It includes all procedures adopted to demonstrate the qualification of an individual to carry out tasks in a specific NDT method and leads to certification of his competence.

### 6.2 Certification body

**6.2.1** A certification body shall conform with the requirements of EN 45013. It should be a non-profit organization which has no direct involvement in training of NDT personnel and it should be recognized by the NDT community or the ISO member body of the country concerned.

**6.2.2** A certification body shall be supported by a committee composed of representatives of NDT societies, committees, users, suppliers, government departments and other interested parties as appropriate. This committee shall be responsible for setting and maintaining the technical standards of examination. Its members shall be qualified for the tasks by an appropriate combination of NDT certification and/or experience. At least 50 % of its members shall hold a valid level 3 certification.

**6.2.3** A certification body:

- a) shall initiate, maintain and promote the certification scheme as specified in this International Standard;
- b) shall administer the procedures and operations for certification in accordance with a documented procedure, meeting the minimum requirements of this International Standard and a stringent code of ethics, including sanctions, which shall apply to committee members and certificate holders;
- c) may delegate, under its direct responsibility, the detailed administration of the certification procedure to other organizations acting as qualifying bodies;
- d) shall take the ultimate responsibility for the certification scheme, including technical and administrative requirements;
- e) shall approve, either directly or through an authorized qualifying body, properly staffed and equipped examination centres which it shall monitor on a periodic basis;
- f) shall keep all appropriate records and issue, or delegate the issuing of, certificates;

- g) shall maintain a collection of current examination questions. For each multiple-choice question this data bank shall indicate the correct answer. For other questions this data bank shall include a model answer. It is desirable that answers include a reference that validates the answer;
- h) shall, when creating a multi-sector, define precisely the chosen combination of the sectors which constitute the multi-sector. Guidance on the creation of industrial sectors is given in annex A.

### 6.3 Authorized qualifying bodies

An authorized qualifying body shall, where established, be approved by the certification body and shall, with the approval of the certification body:

- a) apply a documented quality procedure;
- b) establish and monitor examination centres;
- c) prepare and supervise the qualification examinations;
- d) maintain appropriate qualification and examination records according to the requirements of the certification body.

### 6.4 Examination centres

6.4.1 Examination centres shall be established or approved by the certification body or through authorized qualifying bodies and shall, as a minimum:

- a) have adequate qualified staff, premises and equipment to ensure satisfactory qualification examinations for the levels, methods and industrial sectors concerned;
- b) use only those documents and examination questionnaires established or approved by the certification body;
- c) use only specimens approved by the certification body for the practical examinations conducted at that centre;
- d) apply a documented quality procedure.

6.4.2 When more than one authorized examination centre exists, each shall have test specimens of comparable test difficulty containing similar discontinuities. Under no circumstances shall test specimens be used for training purposes.

### 6.5 Employer or responsible agency

6.5.1 The employer or responsible agency shall introduce the candidate to the certification body or the authorized qualifying body and document the validity of the personal information provided. The documentation shall include the declaration of education, training and experience needed to establish the eligibility of the candidate. The employer or responsible agency shall not be directly involved in the certification procedure itself.

6.5.2 The employer or responsible agency shall be fully responsible for all that concerns the authorization to operate, including the validity of the results of NDT operations.

6.5.3 The employer or the responsible agency shall ensure that employees annually meet the visual acuity requirements of 7.2.3 (see note in 9.2).

6.5.4 If the individual is self-employed, or presents himself alone, he shall assume all responsibilities specified for the employer or responsible agency.