

Australian Standard™

Non-destructive testing—Qualification and certification of personnel



This Australian Standard was prepared by Committee MT-007, Non-destructive Testing of Metals and Minerals. It was approved on behalf of the Council of Standards Australia on 2 February 2006.
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Australian Railways Association
Australasian Aerospace Non-destructive Testing Committee
Australian Industry Group
Australian Institute for Non-Destructive Testing
ANSTO
Australian Pipeline Association
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Non-destructive testing—Qualification and certification of personnel

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PREFACE

This Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee MT-007, Non-destructive Testing of Metals and Materials to supersede AS 3998—2002. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

This Standard is identical with and has been reproduced from ISO 9712:2005, *Non-destructive testing—Qualification and certification of personnel*.

The objective of this Standard is to specify a system for the qualification and certification of personnel in general industry who are involved in non-destructive testing.

The objective of this revision is to adopt the current edition of ISO 9712.

As this Standard is reproduced from an International Standard, the following applies:

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text ‘this International Standard’ should read ‘this Australian Standard’.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

Although this Standard is applicable to aerospace in-service inspection, Standards Australia has issued a separate Australian Standard, AS 3669, *Non-destructive testing—Qualification and registration of personnel—Aerospace*, to cover the aerospace industry. AS 3669 is technically equivalent to EN 4179 and NAS 410.

References to International Standards should be replaced by references to equivalent Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		Australian Standard	
ISO/IEC		AS ISO/IEC	
17024	Conformity assessment—General requirements for bodies operating certification of persons	17024	Conformity assessment—General requirements for bodies operating certification of persons

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, where an ‘informative’ annex is only for information and guidance.

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INTRODUCTION

Since the effectiveness of any application of non-destructive testing (NDT) depends upon the capabilities of the persons who perform or 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.

When certification of NDT personnel is defined in product standards, regulations, codes or specifications, it is important to certify the personnel in accordance with this International Standard. Where latitude is provided in the criteria within this International Standard, the certification body has the final decision in determining specific requirements.

AUSTRALIAN STANDARD

Non-destructive testing — Qualification and certification of personnel

1 Scope

This International Standard specifies the qualification and certification of personnel involved in non-destructive testing (NDT). It is applicable to proficiency in one or more of the following methods:

- acoustic emission testing;
- eddy current testing;
- infrared thermographic testing;
- leak testing (hydraulic pressure tests excluded);
- magnetic particle testing;
- penetrant testing;
- radiographic testing;
- strain testing;
- ultrasonic testing;
- visual testing (direct unaided visual tests and visual tests carried out during the application of another NDT method are excluded).

Certification to this International Standard provides an attestation of general competence of the NDT operator. It does not represent an authorization to operate, since this remains the responsibility of the employer, and the certified employee may require additional specialized knowledge of parameters such as equipment, NDT procedures, materials and products of the employer. Where required by regulatory requirements and codes, the authorization to operate will be given in writing by the employer in accordance with a quality procedure that defines any employer-required job-specific training and examinations designed to verify the certificate holder's knowledge of relevant industry code(s), standard(s), NDT procedures, equipment, and acceptance criteria for the tested products.

The system specified by this International Standard could also be applicable to other NDT methods, where independent certification programs exist.

NOTE Wherever the gender-specific word “his” or “he” appears in this International Standard, the feminine form “her” or “she” is equally applicable.

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.

ISO/IEC 17024, *Conformity assessment — General requirements for bodies operating certification of persons*

3 Terms and definitions

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

**3.1
authorized qualifying body**
body, independent of the employer, authorized by the certification body to prepare and administer qualification examinations

**3.2
basic examination**
written examination, at Level 3, which demonstrates the candidate's knowledge of the materials science and process technology and types of discontinuities, the qualification and certification system according to this International Standard, and the basic principles of NDT methods as required for Level 2

NOTE For an explanation of the three levels of qualification, see Clause 6.

**3.3
candidate**
individual seeking qualification and certification who gains experience under the supervision of suitably qualified personnel

**3.4
certificate**
document issued by the certification body under the provisions of this International Standard, indicating that the named person has demonstrated the competence(s) defined on the certificate

**3.5
certification**
procedure, used by the certification body to confirm that the qualification requirements for a method, level and sector have been fulfilled, leading to the issuing of a certificate

NOTE The issuing of a certificate does not authorize the holder to operate; this authority can only be given by the employer.

**3.6
certification body**
body that administers procedures for certification according to the requirements of this International Standard

**3.7
employer**
organization for which the candidate works on a regular basis

**3.8
examination centre**
centre approved by the certification body where qualification examinations will be carried out

**3.9
examiner**
person certified to Level 3 in the method and product or industrial sector for which he is authorized by the certification body to conduct, supervise and grade the qualification examination

NOTE For an explanation of the three levels of qualification, see Clause 6.

**3.10
general examination**
written examination, at Level 1 or 2, concerned with the principles of an NDT method

NOTE For an explanation of the three levels of qualification, see Clause 6.

3.11**industrial experience**

experience, acceptable to the certification body, gained under qualified supervision, in the application of the NDT method in the sector concerned, needed to acquire the skill and knowledge to fulfil the provisions of qualification

3.12**invigilator**

person authorized by the certification body to supervise examinations

3.13**job-specific training**

instruction, provided by the employer (or his agent) to the certificate holder in those aspects of non-destructive testing specific to the employer's products, NDT equipment, NDT procedures, and applicable codes, standards, specifications and procedures, leading to the award of operating authorizations

3.14**main-method examination**

written examination, at Level 3, which demonstrates the candidate's general and specific knowledge, and the ability to write NDT procedures for the NDT method as applied in the industrial or product sector(s) for which certification is sought

NOTE For an explanation of the three levels of qualification, see Clause 6.

3.15**multiple-choice examination question**

wording of a question giving rise to four potential replies, only one of which is correct, the remaining three being incorrect or incomplete

3.16**NDT instruction**

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

3.17**NDT method**

discipline applying a physical principle in non-destructive testing

EXAMPLE Ultrasonic testing.

3.18**NDT procedure**

written description of all essential parameters and precautions to be applied when non-destructively testing products in accordance with standard(s), code(s) or specification(s)

3.19**NDT technique**

specific way of utilizing an NDT method

EXAMPLE Immersion ultrasonic testing.

3.20**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 a syllabus approved by the certification body, but which does not include the use of the specimens used in qualification examinations

3.21**operating authorization**

written statement issued by the employer, based upon the scope of certification, authorizing the individual to carry out defined tasks

NOTE Such authorization can be dependent on the provision of job-specific training.

3.22**practical examination**

assessment of practical skills, in which the candidate demonstrates familiarity with, and the ability to perform, the test

3.23**qualification**

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

3.24**qualification examination**

examination, administered by the certification body or the authorized qualifying body, which assesses the general, specific and practical knowledge and the skill of the candidate

3.25**qualified supervision**

supervision of candidates gaining experience by NDT personnel certified to this International Standard or by non-certified personnel who, in the opinion of the certification body, possess the knowledge, skill, training and experience required to properly perform such supervision

3.26**sector**

particular section of industry or technology where specialized NDT practices are used, requiring specific product-related knowledge, skill, equipment or training

NOTE A sector can be interpreted to mean a product (welded products, castings) or an industry (aerospace, in-service testing). See Annex A.

3.27**significant interruption**

absence or change of activity which prevents the certified individual from practising the duties corresponding to the level in the method and the sector(s) within the certified scope, for either a continuous period in excess of one year or two or more periods for a total time exceeding two years

NOTE Legal holidays or periods of sickness or courses of less than thirty days are not taken into account when calculating the interruption.

3.28**specific examination**

written examination, at Level 1 or 2, concerned with testing techniques applied in a particular sector(s), including knowledge of the product(s) tested, and of codes, standards, specifications, procedures and acceptance criteria

NOTE For an explanation of the three levels of qualification, see Clause 6.

3.29**specification**

document stating requirements

3.30**specimen**

sample used in practical examinations, possibly including radiographs and data sets, which is representative of products typically tested in the applicable sector

NOTE It can include more than one area or volume to be tested.

3.31**specimen master report**

model answer, indicating the optimum result for a practical examination given a defined set of conditions (equipment type, settings, technique, specimen, etc.) against which the candidate's test report will be graded

3.32**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

3.33**validate**

act of demonstrating that a verified procedure will work in practice and fulfil its intended function, normally achieved by actual witnessing, demonstration, field or laboratory tests or selected trials

4 Symbols and abbreviated terms

AT	acoustic emission testing
ET	eddy current testing
TT	infrared thermographic testing
LT	leak testing
MT	magnetic particle testing
NDT	non-destructive testing
PT	penetrant testing
RT	radiographic testing
ST	strain testing
UT	ultrasonic testing
VT	visual testing

5 Responsibilities**5.1 General**

The certification system, which shall be controlled and administered by a certification body (with the assistance, where necessary, of authorized qualifying bodies), includes all procedures necessary to demonstrate the qualification of an individual to carry out tasks in a specific NDT method and product or industrial sector, leading to certification of competence.

5.2 Certification body

5.2.1 The certification body shall conform to the requirements of ISO/IEC 17024. It should have no direct involvement in training of NDT personnel and be recognized by the NDT community or the ISO member body of the country concerned.

5.2.2 The certification body shall be supported by a technical committee composed of representatives of interested parties, for example: NDT societies, committees, users, suppliers and government departments 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.

5.2.3 The certification body

- a) shall initiate, promote, maintain and administer the certification scheme according to this International Standard,
- b) shall approve properly staffed and equipped examination centres which it shall monitor,
- c) may delegate, under its direct responsibility, the detailed administration of qualification to authorized qualifying bodies to which the certification body will issue specifications for facilities, personnel, equipment, examination materials, records, etc.,
- d) shall conduct an initial audit, and subsequent periodic surveillance audits of the qualification bodies to ensure their conformance to the specifications,
- e) shall issue all certificates,
- f) shall be responsible for ensuring the security of all examination materials (specimens, master reports, question banks, examination papers, etc.),
- g) shall ensure that specimens are not in use for training purposes, and
- h) shall be responsible for the definition of sectors (see Annex A).

5.3 Authorized qualifying body

5.3.1 Where established, the authorized qualifying body shall

- a) work under the control of the certification body,
- b) ensure that it is impartial with respect to each candidate seeking qualification, bringing to the attention of the certification body any actual or potential threat to its impartiality,
- c) conform to the specification issued by the certification body [see 5.2.3 c)],
- d) apply a documented quality management system approved by the certification body,
- e) have the resources and expertise necessary to establish, monitor and control examination centres, including examinations and the calibration and control of equipment,
- f) prepare and supervise examinations under the responsibility of an examiner authorized by the certification body, and
- g) maintain appropriate records according to the requirements of the certification body.

5.3.2 If there are no authorized qualifying bodies, the certification body shall fulfil the requirements of the qualifying body.