



# SLOVENSKI STANDARD

## SIST EN 4179:2008

01-junij-2008

Nadomešča:  
SIST EN 4179:2001

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### Aeronavtika - Usposobljenost in odobritev osebja za neporušitveno preskušanje

Aerospace series - Qualification and approval of personnel for non-destructive testing

Luft- und Raumfahrt - Qualifikation und Zulassung des Personals für zerstörungsfreie Prüfungen

iTeh STANDARD PREVIEW

Série aérospatiale - Qualification et agrément du personnel pour les contrôles non destructifs

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Ta slovenski standard je istoveten z: EN 4179:2005

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#### ICS:

03.100.30	Vodenje ljudi	Management of human resources
19.100	Neporušitveno preskušanje	Non-destructive testing
49.020	Letala in vesoljska vozila na splošno	Aircraft and space vehicles in general

SIST EN 4179:2008

en,de

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English Version

Aerospace series - Qualification and approval of personnel for  
non-destructive testingSérie aérospatiale - Qualification et agrément du personnel  
pour les contrôles non destructifsLuft- und Raumfahrt - Qualifikation und Zulassung des  
Personals für zerstörungsfreie Prüfungen

This European Standard was approved by CEN on 30 September 2005.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This European Standard (EN 4179:2005) has been prepared by the European Association of Aerospace Manufacturers - Standardization (AECMA-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

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 June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This European Standard supersedes EN 4179:2000.

In December 1998, the Aerospace Industry has established the International Aerospace Quality Group (IAQG) with the purpose of achieving significant improvements in quality and reductions in cost throughout the value stream.

This organization, with representation from Aerospace companies in Americas, Asia and Europe and sponsored by AIA, SAE, SJAC and AECMA has agreed to take responsibility for the technical contents of this standard which merges the NDT personnel certification requirements of NAS 410 and EN 4179.

This document (EN 4179:2005) is technically equivalent with NAS410 Revision 2

This standard was reviewed by the Domain Technical Coordinator of AECMA-STAN's Quality Domain.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

**EN 4179:2005 (E)****1 Scope****1.1 Purpose**

This standard establishes the minimum requirements for the qualification and certification of personnel involved in non-destructive testing (NDT). These requirements include training, experience and examinations for personnel performing NDT in the aerospace manufacturing, service, maintenance and overhaul industries.

NOTE In Europe the word "certification" may only be used when the certification process complies with the requirements of EN ISO/CEI 17024 and the term "approval" would be used to denote a written statement by an employer that an individual has met specific requirements. For simplification the term "certification" as defined in paragraph 3.2 is used throughout this standard as a substitute for the term "approval".

**1.2 Applicability**

This standard applies to personnel using NDT methods to test and/or accept materials, products, components, assemblies or sub-assemblies. It also applies to those individuals directly responsible for the technical adequacy of the NDT methods used, as well as personnel performing external NDT technical audits or providing technical NDT training. This standard is not intended to apply to individuals who only have administrative authority over the personnel identified above, nor does it apply to research personnel developing technology for subsequent approval by a certified Level 3.

**1.3 Implementation**

This standard merges the NDT personnel certification requirements of NAS 410 and EN 4179. It introduces the concept of a National Aerospace NDT Board (NANDTB) from EN 4179, but it is not mandatory to have such a board for compliance with this document. Individuals currently certified in accordance with either NAS 410 or EN 4179 may have their current certification period extended to the maximum limits defined in Clause 8 of this standard. Personnel do not need to recertify to the requirements of this standard until their current or extended certification expires.

**1.4 Common methods**

This standard contains detailed requirements for the applicable training, experience, and examination for the following common NDT methods:

Liquid penetrant	(PT)
Magnetic particle	(MT)
Eddy current	(ET)
Ultrasonic	(UT)
Radiography	(RT)

**1.5 Other methods**

This standard may apply to other NDT methods that can be used to determine the acceptability or suitability for intended service of a material, part, component, sub-assembly or assembly without impairment of the intended part function. Such methods include, but are not limited to, acoustic emission, neutron radiography, penetrant leak testing, thermography, holography, and computed tomography. The requirements for personnel training, experience, and examination for these other methods shall be as established by the cognizant NDT organization or NANDTB and shall be in accordance with the guidelines established for the methods listed in 1.4.

## 1.6 Levels of qualification

The levels of qualification established by this standard are:

Trainee	Level 3
Level 1 "Limited"	Instructor
Level 1	Auditor
Level 2	

## 1.7 Levels of certification

The levels requiring certification in accordance with this standard are:

Level 1 "Limited"	Level 2
Level 1	Level 3

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

NAS 410, *Certification and Qualification of Nondestructive Test Personnel.*

NOTE In the event of a conflict between the text of this document and the references cited herein, the requirements of this document take precedence except as noted in Subclause 1.3. Nothing in this document supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 3 Terms and definitions

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

### 3.1

#### **auditor**

an individual who reviews NDT facilities and general procedures for compliance to NDT technical requirements

### 3.2

#### **certification**

a written statement by an employer that an individual has met the applicable requirements of this standard

### 3.3

#### **closed book examinations**

an examination administered without access to reference material except that provided with or in the examination

### 3.4

#### **cognizant NDT organization**

the prime contractor or employer's organization recognized as being responsible for administering qualification and certification of NDT personnel

**EN 4179:2005 (E)****3.5****direct readout instrument**

direct readout instruments physically display values either as digital readout or an analog display, such as a scale/pointer configuration

Direct readout instruments do not involve adjusting signal displays such as gates, delays, gain, or phase to obtain measurements.

**3.6****documented**

the condition of being in written or electronic form

**3.7****employer**

a government, prime contractor, sub-contractor, supplier, processor, or outside agency employing individuals performing NDT

**3.8****evaluation**

a review, following interpretation of the indications noted during an NDT inspection, to determine whether they meet specified acceptance criteria or to determine its significance

**3.9****examination**

formal, controlled, documented testing conducted in accordance with a documented written practice to verify the candidate's knowledge of applicable NDT methods

**3.10****experience**

actual performance or observation conducted in the work environment resulting in the acquisition of knowledge and skill

This does not include classroom or laboratory training but does include on-the-job training.

**3.11****formal training**

an organized and documented program of activities designed to impart the knowledge and skills necessary to be qualified to this standard

Formal training may be a mix of classroom, practical and programmed self-instruction as approved by the responsible Level 3 or NANDTB.

**3.12****general examination**

a written examination addressing the basic principles and theory of the applicable NDT method

**3.13****indication**

the response or evidence of a condition resulting from an NDT inspection that requires interpretation to determine its significance

**3.14****instructor**

an individual qualified and designated in accordance with this standard to provide training for NDT personnel

**3.15****interpretation**

the determination of whether indications are relevant or non-relevant



**3.16****method**

one of the disciplines of non-destructive inspection or testing (e.g. radiography) within which different techniques exist

**3.17****national aerospace NDT board (NANDTB)**

an independent national aerospace organization representing a nation's aerospace industry that is chartered by the participating prime contractors and recognized by the nation's regulatory agencies to provide or support NDT qualification and examination services in accordance with this standard

Such services may include participation in certification.

**3.18****on-the-job training**

training in the work environment in learning instrument set-up, equipment operation, recognition of indications, and interpretation under appropriate technical guidance

**3.19****outside agency**

an independent or national body providing training and examination of NDT personnel, or any other NDT services to the requirements of this standard

Consultants and self-employed individuals are included in this definition.

**3.20****practical examination**

the examination used to demonstrate an individual's ability to conduct the NDT method that will be performed for the employer

Questions and answers need not be written, but a checklist must be used and observations and results must be documented.

**3.21****prime contractor**

an organization having overall responsibility for design, control and delivery of a system, component or product

**3.22****procedure**

a general or detailed written instruction for conducting a given process

**3.23****qualification**

the skill, training, knowledge, experience and, when applicable, the visual acuity required for personnel to properly perform to a particular level

**3.24****responsible level 3**

a Level 3 designated by the employer with the responsibility and authority to ensure that the requirements of this standard are met and to certify qualified individuals

**3.25****specific examination**

the written examination to determine an individual's understanding of operating procedures, codes, standards, product technology, test techniques, equipment and specifications for a given method as used by the employer

**EN 4179:2005 (E)****3.26****sub-contractor**

an organization responsible to the prime contractor for the manufacture or maintenance of aerospace products

For the purposes of this standard, this includes suppliers and processors.

**3.27****technique**

a category within a method; for example, ultrasonic immersion testing or ultrasonic contact testing

Specific techniques within a method are defined by the cognizant NDT organization or NANDTB.

**3.28****test samples**

parts or images containing known discontinuities or defects used in the practical examination to demonstrate the candidate's proficiency in using a particular method

Test samples can refer to images of actual hardware, such as radiographs.

**3.29****written**

retrievable electronic or hard copy

**3.30****written instruction**

a procedure detailing the NDT technique and testing parameters used for the inspection of a specific component, group of parts (e.g. "aluminium extrusions" or "aluminium brackets"), or assembly

These are sometimes referred to as "technique sheets" or "data cards".

**3.31****written practice**

a procedure that describes the control and administration of NDT personnel qualification and certification

**4 General requirements****4.1 Written practice****4.1.1 General**

The cognizant NDT organization shall develop and maintain a written practice for the qualification and certification of their NDT personnel. The written practice shall be in accordance with the requirements of this standard. A sub-contractor or supplier may work to the same written practice as the prime contractor or may prepare a written practice of their own. This standard may be referenced in whole or in part to meet this requirement provided the sub-paragraphs of 4.1 are satisfied. The written practice and applicable NANDTB procedures shall be available for review by the facility's customer(s) and regulatory agencies.

**4.1.2 Levels of qualification**

The written practice shall include identification of the levels of qualification and certification used by the employer. The cognizant NDT organization may subdivide or add any additional levels that are appropriate; however, in no manner can the organization eliminate or reduce minimum requirements of this standard in its written practice.

#### 4.1.3 Personnel duties and responsibilities

The written practice shall include the identification of the duties and responsibilities for the different levels of qualification.

#### 4.1.4 Training program

The written practice shall include outlines or references of the instruction provided by the cognizant NDT organization, NANDTB, or outside training source(s).

#### 4.1.5 Experience requirements

The written practice shall include the minimum amount of experience required for each method and, when applicable, the techniques within the method.

#### 4.1.6 Examination practices

The written practice shall include the designation of the individual(s) or organization(s) that will administer the examinations as well as the number of questions, grading, vision requirements and the specific visual acuity tests to be used.

#### 4.1.7 Records and administration

The written practice shall include a description of the details to be recorded for each certified individual and identification of the individual(s) or organization(s) responsible for developing, administering, and maintaining the employer's certification program.

#### 4.1.8 Recertification requirements

The written practice shall include the employer's requirements for recertification of personnel. It shall also include the conditions and requirements for the suspension, revocation and reinstatement of certification.

### 4.2 Personnel

Personnel using NDT methods to test and/or accept materials, products, components, sub-assemblies or assemblies shall be certified to the requirements of this standard. Personnel responsible for the technical adequacy of NDT methods shall also be certified. Trainees, NDT auditors and instructors shall be qualified to this standard. Specialized inspections using direct readout instruments do not require qualification or certification to this standard.

### 4.3 Methods

For the common methods listed in 1.4, the requirements for training, experience and examination are detailed in Clauses 6, and 7 of this standard. These requirements shall serve as a guideline for methods not listed in 1.4. Specific techniques within each method shall be as defined by the cognizant NDT organization or NANDTB and documented in the employer's written practice.

### 4.4 Compliance

Prime contractors shall be responsible for compliance to this standard by their suppliers and sub-contractors. Those organizations using outside agencies shall be responsible for assuring that the appropriate requirements of this standard are met. The employer is solely responsible for the certification of its employees and cannot certify for another employer. Individuals cannot qualify themselves.