	ISO 9712 : 2012 Non-destructive testing — Qualification and certification of NDT personnel SUPERSEEDED	ISO 9712 : 2021 Non-destructive testing - Qualification and certification of NDT personnel CURRENT	Deleted / No Change / Moderate Change / Addition OR major change
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 has been developed to provide a means of evaluating and documenting the competence of personnel whose duties require the appropriate theoretical and practical knowledge of the non-destructive tests they perform, specify, supervise, monitor or evaluate. An added incentive stems from the worldwide comparability of a wide range of industrial applications requiring common non-destructive testing approaches.	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 has been developed to provide a means of evaluating and documenting the competence of personnel whose duties require the appropriate theoretical and practical knowledge of the non-destructive tests they perform, specify, supervise, monitor or evaluate. An added incentive stems from the worldwide comparability of a wide range of industrial applications requiring common non-destructive testing approaches.	
	When certification of NDT personnel is required in product standards, regulations, codes or specifications, it is important to certify the personnel in accordance with this International Standard. When latitude is provided in the criteria within this International Standard, the certification body has the final decision in determining specific requirements.	When certification of NDT personnel is required in product standards, regulations, codes or specifications, it is important to certify the personnel in accordance with this document. When latitude is provided in the criteria within this document, the certification body has the final decision in determining specific requirements.	
	When there is no requirement in legislation, in standard or in the order for certification of NDT personnel, it is for employers of such personnel to decide how to assure themselves that they are competent to do the work assignments. Thus, they may employ people who are already certified or they may apply their own expertise so as to assure themselves that their employee has the necessary competence. In this last case, prudent employers would no doubt use this International Standard as a reference document.	When there is no requirement in legislation, in standard or in the order for certification of NDT personnel, it is for employers of such personnel to decide how to assure themselves that they are competent to do the work assignments. Thus, they may employ people who are already certified or they may apply their own expertise so as to assure themselves that their employee has the necessary competence. In this last case, prudent employers would no doubt use this document as a reference document.	
1 Scope	This International Standard specifies requirements for principles for the qualification and certification of personnel who perform industrial non-destructive testing (NDT).	This document specifies requirements for the qualification and certification of personnel who perform industrial non-destructive testing (NDT) in the following methods.	
	The certification covers proficiency in one or more of the following methods:		
	a) acoustic emission testing;	a) acoustic emission testing;	
	b) eddy current testing;	b) eddy current testing;	
	d) leak testing (hydraulic pressure tests excluded);	c) leak testing (hydraulic pressure tests excluded);	
	e) magnetic testing;	d) magnetic testing;	
	f) penetrant testing;	e) penetrant testing;	
	g) radiographic testing;	f) radiographic testing;	
	h) strain gauge testing;	g) strain gauge testing;	
	c) infrared thermographic testing;	h) thermographic testing;	
	i) ultrasonic testing;	i) ultrasonic testing;	
	j) visual testing (direct unaided visual tests and visual tests carried out during the application of another NDT method are excluded).	j) visual testing (direct unaided visual tests and visual tests carried out during the application of aNDTher NDT method are excluded).	
	The system specified in this International Standard can also apply to other NDT methods or to new techniques within an established NDT method, provided a comprehensive scheme of certification exists and the method or technique is covered by International, regional or national standards or the new NDT method or technique has been demonstrated to be effective to the satisfaction of the certification body.	The system specified in this document is also applicable to other NDT methods or to NDT techniques within an established NDT method, provided a comprehensive scheme of certification exists and the NDT method or NDT technique is covered by international, regional or national standards or the NDT method or the NDT technique has been demonstrated to be effective to the satisfaction of the certification body.	
	NOTE 1 The term “industrial” implies the exclusion of applications in the field of medicine.	NOTE 1 The term "industrial" implies the exclusion of applications in the field of medicine.	
	NOTE 2 CEN/TR 14748[5] can be used as guidance.	NOTE 2 CEN/TR 14748 provides guidance on the methodology for qualification of non-destructive tests.	
	NOTE 3 This International Standard specifies requirements for what are, in effect, third party conformity assessment schemes. These requirements do not directly apply to conformity assessment by second or first parties, but relevant parts of this International Standard can be referred to in such arrangements.	NOTE 3 This document specifies requirements for what are, in effect, third party conformity assessment schemes. These requirements do NDT directly apply to conformity assessment by second or first parties, but relevant parts of this document can be referred to in such arrangements.	
		NOTE 4 The term "direct unaided visual testing" implies where there is an uninterrupted optical path from the observer's eye to the test area and the observer uses no tools or devices (e.g. mirror, endoscope, fibre optic).	
		NOTE 5 Calculations of strain based on other NDT methods are excluded.	
	NOTE 4 Wherever gender specific words such as “his”, “her”, “he” or “she” appear in this International Standard, the other gender is also 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.	The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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*	ISO/IEC 17024:2012, *Conformity assessment - General requirements for bodies operating certification of persons*	
		ISO 18490:2015, *Non-destructive testing - Evaluation of vision acuity of NDT personnel*	

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3 Terms and Definitions		**applicant** - person who has submitted an application to be admitted into the certification process	
	authorized qualification body - body, independent of the employer, authorized by the certification body to prepare and administer qualification examinations	**authorized qualification body** - body, independent of the employer, authorized by the certification body to prepare and administer examinations	
	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 specific qualification and certification system, and the basic principles of NDT methods as required for Level 2	**basic examination element** - written examination, at Level 3, which demonstrates the candidate's knowledge of the materials science and process technology and types of discontinuities, the specific qualification and certification system, and the basic principles of NDT methods as required for Level 2	
	candidate - individual seeking qualification and certification who gains experience under the supervision of personnel having a qualification acceptable to the certification body	**candidate** - applicant who has fulfilled specified prerequisites and has been admitted to the certification process	
	certificate - document issued by the certification body under specified provisions, indicating that the named person has demonstrated the competence(s) defined on the certificate	**certificate** - document in the form of a letter, card or other medium (e.g. digital certificate), issued by a certification body under the provisions of this document, indicating that the named person has fulfilled the certification requirements	
	certification body - body that administers procedures for certification according to specified requirements	**certification body** - body that administers procedures for certification according to specified requirements	
		certification cycle - maximum period of time permitted from the date of certification to the date of recertification inclusive of the renewal period	
	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	**certification process** - activities by which a certification body determines that a person fulfils certification requirements including application, assessment, decision on certification, renewal, recertification and use of certificates and logos/marks	
		certification requirements - set of specified requirements, including requirements of the scheme to be fulfilled in order to establish or maintain certification	
		competence - ability to apply knowledge and skills to achieve intended results	
	employer - organization for which the candidate works on a regular basis (NOTE An employer can also be a candidate at the same time.)	**employer** - legal entity by whom the candidate is employed (Note 1 to entry: A candidate may be self-employed.)	
		examination - mechanism that is part of the assessment which measures a candidate's competence by one or more means	
	examination centre - centre approved by the certification body where qualification examinations are carried out	**examination centre** - centre approved by the certification body where examinations are carried out	
		examination element - component of an examination	
	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	**examiner** - person competent to conduct and score an examination, where the examination requires professional judgement	
	general examination - written examination, at Level 1 or Level 2, concerned with the principles of an NDT method	**general examination element** - written examination, at Level 1 or Level 2, concerned with the principles of an NDT method	
		higher education - formal learning that occurs after completion of secondary education in the field of engineering or science	
	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	**industrial experience** - work activities performed under supervision, in the NDT method in the sector concerned, needed to acquire the skill and knowledge to fulfil the provisions of qualification	
	invigilator - person authorized by the certification body to supervise examinations	**invigilator** - proctor / test administrator / person authorized by the certification body who supervises an examination, but does not evaluate the competence of the candidate	
	job-specific training - training, 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	**job-specific training** - training, provided by the employer (or their agent) to the certificate holder in 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	
	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	**main method examination element** - 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	
	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	**multiple choice examination question** - wording of a question giving rise to potential replies, only one of which is correct, the remaining being incorrect or incomplete	
	NDT instruction - written description of the precise steps to be followed in testing to an established standard, code, specification or NDT procedure	**NDT instruction** - written description of the precise steps to be followed in testing to an established standard, code, specification or NDT procedure	
		NDT media - testing products used to create visible indications caused by imperfections or flaws EXAMPLE Magnetic powder, contrast aid paints, colour contrast penetrant, developer.	
	NDT method - discipline applying a physical principle in non-destructive testing EXAMPLE Ultrasonic testing.	**NDT method** - discipline applying a physical principle in non-destructive testing EXAMPLE Ultrasonic testing.	
		NDT personnel - personnel who perform non-destructive testing	
	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)	**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)	
	NDT technique - specific way of utilizing an NDT method EXAMPLE Immersion ultrasonic testing.	**NDT technique** - specific way of utilizing an NDT method	
	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	**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	
	operating authorization - written statement issued by the employer, based upon the scope of certification, authorizing the individual to carry out defined tasks (NDTE Such authorization can be dependent on the provision of job-specific training.)	**operating authorization** - written statement issued by the employer, based upon the scope of certification, authorizing the individual to carry out specified tasks (Note 1 to entry: Such authorization can be dependent on the provision of job-specific training)	
	practical examination - assessment of practical skills, in which the candidate demonstrates familiarity with, and the ability to perform, the test	**practical examination element** - assessment of practical skills, in which the candidate demonstrates familiarity with, and the ability to perform, the test	
		psychometric process - statistical process to verify examinations are fair, reliable and discriminate between a competent and non-competent individual	

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3 Terms and Definitions	**qualification** - demonstration of physical attributes, knowledge, skill, training and experience required to properly perform NDT tasks	**qualification** - demonstrated education, training, and work experience	
	qualification examination - examination, administered by the certification body or the authorized qualification body, which assesses the general, specific and practical knowledge and the skill of the candidate		
	qualified supervision - supervision of candidates gaining experience by NDT personnel certified in the same method under supervision 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		
	recertification - procedure for revalidation of a certificate by examination or by otherwise satisfying the certification body that the published criteria for recertification are satisfied	**recertification** - process for revalidation of a certificate by examination or by otherwise satisfying the certification body that the published criteria for recertification have been met	
		referee - individual that attests the validity of the candidate's industrial experience	
	renewal - procedure for revalidation of a certificate without examination at any time up to five years after success in an initial, supplementary or recertification examination	**renewal** - process for revalidation of a certification at any time up to five years after success in an initial, supplementary or recertification examination	
	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)	**sector** - section of industry or technology where specialized NDT practices are used, requiring specific product related knowledge, skill, equipment or training (Note 1 to entry: A sector can be interpreted to mean a product (welded products, castings) or an industry (aerospace, in-service testing))	
	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 30 days are not taken into account when calculating the interruption.)	**significant interruption** - absence or change of work 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 1 to entry: Legal holidays or periods of sickness or training courses of less than 30 days are not taken into account when calculating the interruption.)	
	specific examination - written examination, at Level 1 or Level 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	**specific examination element** - written examination, at Level 1 or Level 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	
	specification - document stating requirements	**specification** - document stating requirements	
	specimen - sample used in practical examinations, possibly including radiographs and data sets, which is representative of products typically tested in the applicable sector (NOTE A specimen can include more than one area or volume to be tested.)	**specimen** - sample used in practical examinations, possibly including radiographs and data sets, which is representative of products typically tested in the applicable sector (Note 1 to entry: A specimen can include more than one area or volume to be tested.)	
	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 is graded	**specimen master report** - model answer, indicating the optimum result for a practical examination given a specified set of conditions (equipment type, settings, technique, specimen, etc.) against which the candidate's test report is graded	
		structured credit system - point system based on the NDT activities of the candidate used as an alternative to examination for renewal or recertification	
		structured experience program - SEP program approved by the certification body to reduce industrial experience	
	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	**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	
	validation - act of demonstrating that a verified procedure works in practice and fulfils its intended function, normally achieved by actual witnessing, demonstration, field or laboratory tests or selected trials		
		work activity - performance of NDT-related functions and tasks	
4 Abbreviated terms	For the purposes of this International Standard, the abbreviated terms listed in Table 1 are used to identify NDT methods.	For the purposes of this document, the abbreviated terms listed in Table 1 are used to identify NDT methods.	

Table 1 — Methods and abbreviated terms

NDT method	Abbreviated terms
Acoustic emission testing	AT
Eddy current testing	ET
Infrared thermographic testing	TT
Leak testing	LT
Magnetic testing	MT
Penetrant testing	PT
Radiographic testing	RT
Strain gauge testing	ST
Ultrasonic testing	UT
Visual testing	VT

Table 1 — Methods and abbreviated terms

NDT method	Abbreviated terms
Acoustic emission testing	AT
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Leak testing	LT
Magnetic testing	MT
Penetrant testing	PT
Radiographic testing	RT
Strain gauge testing	ST
Thermographic testing	TT
Ultrasonic testing	UT
Visual testing	VT

5 Responsibilities	ISO 9712 : 2012 Non-destructive testing — Qualification and certification of NDT personnel SUPERSEEDED	ISO 9712 : 2021 Non-destructive testing - Qualification and certification of NDT personnel CURRENT	Deleted / No Change / Moderate Change / Addition OR major change
	5.1 General	**5.1 General**	
	The certification system, which shall be controlled and administered by a certification body (with the assistance, where necessary, of authorized qualification 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.	The certification system, which shall be controlled and administered by a certification body, includes all procedures necessary to demonstrate the qualification and the competence of an individual to carry out tasks in a specific NDT method and product or industrial sector, leading to certification.	
	5.2 Certification body	**5.2 Certification body**	
	5.2.1 The certification body shall fulfil the requirements of ISO/IEC 17024.	5.2.1 The certification body shall fulfil the requirements of ISO/IEC 17024.	
	5.2.2 The certification body:	5.2.2 The certification body:	
	a) shall initiate, promote, maintain and administer the certification scheme according to ISO/IEC 17024 and this International Standard;	a) shall initiate, promote, maintain and administer the certification scheme according to ISO/IEC 17024 and this document;	
		b) shall be independent of any single interest;	
	i) shall be responsible for the definition of sectors (see Annex A);	c) shall be responsible for the definition of sectors (see Annex A);	
		d) shall publish information regarding the scope of the certification scheme and a general description of the certification process;	
	b) shall publish specifications for training courses that include the syllabi which embody the content of recognized documents, e.g. ISO/TR 25107[2] or equivalent;	e) shall provide information for training courses that include the syllabi which embody the content of recognized documents; ISO/TS 25107 or equivalent can be used as guidance;	
	d) shall conduct an initial audit and subsequent periodic surveillance audits of the authorized qualification body(ies) to ensure their conformity to the specifications;	f) shall conduct an initial audit and subsequent periodic surveillance audits of the authorized qualification body(ies) to ensure their conformity to the specifications;	
	e) shall monitor, in accordance with a documented procedure, all delegated functions;	g) shall monitor, in accordance with a documented procedure, all delegated functions;	
	f) shall approve properly staffed and equipped examination centres which it shall monitor on a periodic basis;	h) shall approve properly staffed and equipped examination centres, which it shall monitor on a periodic basis;	
		i) shall administer examinations through approved examination centres;	
		j) shall bear full responsibilities for examinations conducted on temporary basis at external premises;	
	j) shall be responsible for ensuring the security of all examination materials (specimens, master reports, question banks, examination papers, etc.) and shall ensure that specimens are NDT in use for training purposes;	k) shall be responsible for ensuring the security of all examination materials (examination specimens, specimen master reports, question banks, examination papers, etc.) and shall ensure that these materials are not in use for training purposes;	
		l) shall be responsible for granting, extension, suspension, withdrawal or revalidation of certification;	
	g) shall establish an appropriate system for the maintenance of records, which shall be retained for at least one certification cycle (10 years);	m) shall establish an appropriate system for the maintenance of records, which shall be retained for at least one certification cycle;	
	k) shall require all candidates and certificate holders to give a signed or stamped undertaking to abide by a code of ethics which it shall develop for the purpose and publish.	n) shall require all candidates and certificate holders to give a signed or stamped undertaking to abide by a code of ethics which it shall develop for the purpose and publish;	
		o) may approve training bodies; ISO/TS 25108 can be used as guidance;	
	c) may delegate, under its direct responsibility, the detailed administration of qualification to authorized qualification bodies, to which it shall issue specifications and/or procedures covering facilities, personnel, calibration and control of NDT equipment, examination materials, specimens, conduct of examinations, examination grading, records, etc.;	p) may delegate, under its direct responsibility, the detailed administration of qualification to authorized qualification bodies, to which it shall issue specifications and/or procedures covering facilities, personnel, verification and control of NDT equipment, examination materials, specimens, conduct of examinations, examination grading, records, etc.;	
		q) shall establish a process to authorize examiners;	
		r) shall establish the conditions for the supervision of work activities, which candidates may claim experience under 7.3;	
		s) shall establish a process for the recognition of higher education;	
		t) shall establish a process for the approval of non-certified individuals as a referee;	
		u) shall establish a process for the approval of a structured credit system, where used;	
		v) may specify a minimum age requirement for candidates under 21;	
		w) shall maintain and update the question bank and the examination specimens along with their specimen master report;	
		x) shall conduct the examination only in the presence of, and under the control of, an authorized invigilator of the certification body, to ensure that impartiality is maintained;	
	h) shall be responsible for the issue of all certificates;	y) shall establish a process for the approval of a structured experience program, where used.	

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5 Responsibilities	**5.3 Authorized qualification body**	**5.3 Authorized qualification body**	
	5.3.1 Where established, the authorized qualification body shall:	Where established, the authorized qualification body shall:	
	a) work under the control of and apply the specifications issued by the certification body;	a) work under the control of and apply the specifications issued by the certification body;	
	b) be independent of any single predominant interest;	b) be independent of any single predominant interest;	
	c) 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) 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;	
	d) apply a documented quality management system approved by the certification body;	d) apply a documented quality management system approved by the certification body;	
	e) have the resources and expertise necessary to establish, monitor and control examinations centres, including examinations and the calibration and control of the equipment;	e) have the resources and expertise necessary to establish, monitor and control examinations centres, including examinations and the verification and control of the equipment;	
		f) conduct qualification of candidates including review of application and decision on eligibility;	
	f) prepare, supervise and administer examinations under the responsibility of an examiner authorized by the certification body;	g) prepare, supervise and administer examinations;	
		h) provide the certification body with the results of qualification needed to make a decision on certification by the certification body;	
	g) maintain appropriate qualification and examination records according to the requirements of the certification body.	i) maintain appropriate qualification and examination records according to the requirements of the certification body.	
	5.3.2 If there are no authorized qualification bodies, the certification body shall fulfil the requirements of the qualification body.		
	5.4 Examination centre	**5.4 Examination centre**	
	5.4.1 The examination centre shall:	5.4.1 The examination centre shall:	
	a) work under the control of the certification body or authorized qualification body;	a) work under the control of the certification body or authorized qualification body;	
	b) apply a documented quality procedure approved by the certification body;	b) apply a documented quality procedure approved by the certification body;	
	c) have the resources needed to administer examinations, including the calibration and control of equipment;	c) have the resources needed to prepare and conduct examinations, including the verification and control of equipment;	
	d) have adequate qualified staff, premises and equipment to ensure satisfactory qualification examinations for the levels, methods, and sectors concerned;	d) have adequate qualified staff, premises and equipment to ensure satisfactory examinations for the levels, methods, and sectors concerned; the use of external premises is allowed;	
	e) prepare and conduct examinations under the responsibility of an examiner authorized by the certification body, using only those examination questionnaires and specimens established or approved by the certification body for that purpose;	e) prepare and conduct examinations under the responsibility of an examiner authorized by the certification body, using only examination questionnaires and specimens established or approved by the certification body for that purpose;	
	f) use only specimens prepared or approved by the certification body or qualification body for the practical examinations conducted at that centre (when more than one examination centre exists, each shall have examination specimens of comparable test difficulty containing similar discontinuities) — under no circumstances shall specimens be used for training purposes;		
	g) maintain appropriate qualification and examination records according to the requirements of the certification body.	f) maintain appropriate examination documents according to the requirements of the certification body.	
	5.4.2 An examination centre can be situated at an employer’s premises. In this case, the certification body shall require additional controls to preserve impartiality and the examinations shall be conducted only in the presence of, and under the control of, an authorized representative of the certification body.	5.4.2 An examination centre may operate within the certification body; or within an authorized qualification body; or be an independent legal entity or part of a legal entity. An examination centre can be situated at an employer's premises. In this case, the certification body shall require controls to preserve impartiality and protect confidentiality of the examinations. The examinations shall be conducted only in the presence of, and under the control of, an authorized representative of the certification body.	

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	5.5 Employer	**5.5 Employer**	
	5.5.1 The employer shall introduce the candidate to the certification body or the authorized qualification body and document the validity of the personal information provided. This information shall include the declaration of education, training and experience and visual acuity needed to determine the eligibility of the candidate. If the candidate is unemployed or self-employed, the declaration of education, training and experience shall be attested to by at least one independent party acceptable to the certification body.	5.5.1 The employer shall document the personal information which shall include the declaration of education, training and industrial experience and visual acuity needed to determine the eligibility of the candidate. If the candidate is self-employed, the industrial experience shall be attested to by a referee.	
	5.5.2 Neither the employer nor his staff shall be directly involved in the qualification examination.	All documentation obtained from the employer shall be verified by the certification body.	
	5.5.3 In respect of certified personnel under their control the employer shall be responsible for:	5.5.2 In respect of certified NDT personnel under their control the employer shall be responsible for:	
	a) all that concerns the authorization to operate, i.e. providing job-specific training (if necessary);	a) all that concerns the authorization to operate, i.e. providing job-specific training (if necessary);	
	b) issuing the written authorization to operate;	b) issuing the written authorization to operate;	
	c) the results of NDT operations;	c) the results of NDT activities;	
	d) ensuring that the annual visual acuity requirements of 7.4 a) are met;	d) ensuring that the annual vision requirements of 7.4, are met;	
	e) verifying continuity in the application of the NDT method without significant interruption;	e) maintaining documentary evidence confirming the continuous application of the NDT method in the relevant sector(s) without significant interruption; this action shall be done every 12 months;	
	f) ensuring that personnel hold valid certification relevant to their tasks within the organization;	f) ensuring that personnel hold valid certification relevant to their tasks within the organization;	
	g) maintaining appropriate records.	g) maintaining appropriate records.	
	It is recommended that these responsibilities be described in a documented procedure.	These responsibilities shall be described in a documented procedure.	
	5.5.4 A self-employed individual shall assume all responsibilities ascribed to the employer.	5.5.3 A self-employed individual shall assume all responsibilities ascribed to the employer.	
	5.5.5 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 specific for the employer.	5.5.4 Certification to this document provides an attestation of general competence of the certified NDT personnel. It does not represent an authorization to operate, since this remains the responsibility of the employer; and the certified NDT personnel may require additional specialized knowledge of parameters such as equipment, NDT procedures, materials and products specific for the employer.	
	Where required by regulatory requirements and codes, the authorization to operate shall 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.	Where required by regulatory requirements and codes, the authorization to operate shall be given in writing by the employer in accordance with a quality procedure that specifies 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.	
	5.6 Candidate	**5.6 Candidate**	
	Candidates, whether employed, self-employed or unemployed shall:	Candidates shall:	
	a) provide documentary evidence of satisfactory completion of a course of training;	a) provide documentary evidence of training in accordance with 7.2.;	
	b) provide verifiable documentary evidence that the required experience has been gained under qualified supervision;	b) provide documentary evidence that the required experience has been gained under supervision;	
	c) provide documentary evidence of vision satisfying the requirements of 7.4;	c) provide documentary evidence of vision satisfying the requirements of 7.4.;	
	d) abide by a code of ethics published by the certification body.	d) abide by a code of ethics published by the certification body;	
		e) provide other requisites requested by the certification body.	
	5.7 Certificate holders	**5.7 Certificate holders**	
	Certificate holders shall:	Certificate holders shall:	
	a) abide by a code of ethics published by the certification body;	a) abide by a code of ethics published by the certification body;	
	b) undergo an annual test of visual acuity in accordance with 7.4 a), and submit the results of tests to the employer;	b) maintain records demonstrating evidence that vision requirements have been fulfilled in accordance with 7.4.	
	c) Notify the certification body and the employer in the event that the conditions for validity of certification are not fulfilled.	c) Notify the certification body and the employer if the conditions of certification are not maintained (see 9.3).	
		5.8 Examiners	
		5.8.1 Examiners shall:	
		- be authorized by the certification body to conduct, supervise and grade examinations;	
		- be certified to Level 3 in the NDT method in the product and/or industrial sector for which they are authorized.	
		5.8.2 An examiner shall not be permitted to examine any candidate:	
		- that they have trained for the examination for a period of two years from the date of the conclusion of the training;	
		- who is working (permanently or temporarily) in the same facility as the examiner unless the certification body has established a documented confidentiality and impartiality management procedure for such a situation.	
		5.9 Referee	
		A referee shall be:	
		a) certified to Level 2 or 3 in any NDT method; or	
		b) non-certified personnel who, approved by the certification body, possess the knowledge, skill, training and experience required to attest to the candidate's industrial experience.	

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6 Levels of Certification	**6.1 Level 1**	**6.1 Level 1**	
	6.1.1 An individual certified to Level 1 has demonstrated competence to carry out NDT according to written instructions and under the supervision of Level 2 or Level 3 personnel. Within the scope of the competence defined on the certificate, Level 1 personnel may be authorized by the employer to perform the following in accordance with NDT instructions:	6.1.1 An individual certified to Level 1 has demonstrated competence to carry out NDT according to written instructions and under the supervision of Level 2 or Level 3 personnel. Within the scope of the competence specified on the certificate, Level 1 personnel may be authorized by the employer to perform the following in accordance with NDT instructions:	
	a) set up NDT equipment;	a) set up NDT equipment;	
	b) perform the tests;	b) perform the tests;	
	c) record and classify the results of the tests according to written criteria;	c) record and classify the results of the tests according to written criteria;	
	d) report the results.	d) report the results.	
	6.1.2 Level 1 certified personnel shall neither be responsible for the choice of test method or technique to be used, nor for the interpretation of test results.	6.1.2 Level 1 certified personnel shall neither be responsible for the choice of test method or technique to be used, nor for the interpretation of test results.	
	6.2 Level 2	**6.2 Level 2**	
	An individual certified to Level 2 has demonstrated competence to perform NDT according to NDT procedures. Within the scope of the competence defined on the certificate, Level 2 personnel may be authorized by the employer to:	An individual certified to Level 2 has demonstrated competence to perform NDT according to NDT procedures or NDT instructions. Within the scope of the competence specified on the certificate, Level 2 personnel may be authorized by the employer to:	
	a) select the NDT technique for the testing method to be used;	a) select the NDT technique for the testing method to be used;	
	b) define the limitations of application of the testing method;	b) specify the limitations of application of the testing method;	
	c) translate NDT codes, standards, specifications, and procedures into NDT instructions adapted to the actual working conditions;	c) translate NDT codes, standards, specifications, and procedures into NDT instructions adapted to the actual working conditions;	
	d) set up and verify equipment settings;	d) set up and verify equipment settings;	
	e) perform and supervise tests;	e) perform and supervise tests;	
	f) interpret and evaluate results according to applicable standards, codes, specifications or procedures;	f) interpret and evaluate results according to applicable standards, codes, specifications or procedures;	
	g) carry out and supervise all tasks at or below Level 2;	g) carry out and supervise all tasks at or below Level 2;	
	h) provide guidance for personnel at or below Level 2;	h) provide guidance and mentoring for personnel at or below Level 2;	
	i) report the results of NDT.	i) report the results of NDT.	
	6.3 Level 3	**6.3 Level 3**	
	6.3.1 An individual certified to Level 3 has demonstrated competence to perform and direct NDT operations for which he is certified. Level 3 personnel have demonstrated:	6.3.1 An individual certified to Level 3 has demonstrated competence to perform and direct NDT operations for which they are certified. Level 3 personnel have demonstrated:	
	a) the competence to evaluate and interpret results in terms of existing standards, codes, and specifications;	a) the competence to evaluate and interpret results in terms of existing standards, codes, and specifications;	
	b) sufficient practical knowledge of applicable materials, fabrication, process, and product technology to select NDT methods, establish NDT techniques, and assist in establishing acceptance criteria where none are otherwise available;	b) sufficient practical knowledge of applicable materials, fabrication, process, and product technology to select NDT methods, establish NDT techniques, and assist in establishing acceptance criteria where none are otherwise available;	
	c) a general familiarity with other NDT methods.	c) a general familiarity with other NDT methods listed in Clause 4.	
	6.3.2 Within the scope of the competence defined on the certificate, Level 3 personnel may be authorized to:	6.3.2 Within the scope of the competence specified on the certificate, Level 3 personnel may be authorized by the employer to:	
	a) assume full responsibility for a test facility or examination centre and staff;		
	b) establish, review for editorial and technical correctness, and validate NDT instructions and procedures;	a) establish, review for editorial and technical correctness, and validate NDT instructions and procedures;	
	c) interpret standards, codes, specifications, and procedures;	b) interpret standards, codes, specifications, and procedures;	
	d) designate the particular test methods, procedures, and NDT instructions to be used;	c) designate the particular test methods, procedures, and NDT instructions to be used;	
	e) carry out and supervise all tasks at all levels;	d) carry out and supervise all tasks at all levels;	
	f) provide guidance for NDT personnel at all levels.	e) provide guidance and mentoring for NDT personnel at all levels.	

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7 Eligibility	**7.1 General**	**7.1 General**	
	The candidate shall fulfil the minimum requirements of vision and training prior to the qualification examination and shall fulfil the minimum requirements for industrial experience prior to certification.	The candidate shall fulfil the minimum requirements of vision and NDT training prior to the examination and shall fulfil the minimum requirements for industrial experience and, where applicable, has reached a minimum age as specified by the certification body prior to certification.	
	7.2 Training	**7.2 Training**	
	7.2.1 The candidate shall provide documentary evidence, acceptable to the certification body, that he has satisfactorily completed training in the method and level for which the certification is sought.	7.2.1 The candidate shall provide documentary evidence, acceptable to the certification body, that he or she has satisfactorily completed NDT training as shown in Table 2 in the method and level for which the certification is sought.	
	7.2.2 For all levels, the candidate shall satisfactorily complete a course of theoretical and practical training recognized by the certification body.	7.2.2 For all levels, theoretical training may be delivered in a face-to-face instructor-led format, distance learning format, a self-paced format, or a combination of these formats. Practical training shall be delivered by a face-to-face instructor-led format only. The training for initial certification shall remain valid for a maximum period of ten years from the date of completion.	
	For Level 3, in addition to the minimum training given in Table 2, the preparation for qualification can be completed in different ways dependent on the scientific and technical background of the candidate, including attendance at other training courses, conferences or seminars, studying books, periodicals and other specialized printed or electronic materials.	For Level 3, in addition to the minimum training requirements given in Table 2, the preparation for qualification can be completed in different ways dependent on the scientific and technical background of the candidate, including attendance at other training courses, conferences or seminars, studying books, periodicals and other specialized printed or electronic materials.	
		When a distance learning option is utilized, systems shall be established to ensure the entire training syllabus is completed.	
	NOTE Guidelines for NDT personnel training organizations are given in ISO/TR 25108.[3]	NOTE Guidelines for NDT personnel training organizations are given in ISO/TS 25108	
	7.2.3 The minimum duration of training undertaken by the candidate for certification shall be as defined in 7.2.4 and Table 2 for the applicable NDT method, with the possible reductions defined in 7.2.5. This duration is based upon candidates possessing adequate mathematical skills and prior knowledge of materials and processes. If it is not the case, additional training may be required by the certification body. Training hours include both practical and theoretical courses. When creating industrial sectors as defined in Annex A, the certification body should consider whether the minimum training requirements in Table 2 are sufficient or should be increased.	7.2.3 The minimum duration of training undertaken by the candidate for certification shall impart the skills and knowledge and shall not be less than that specified in 7.2.4 and Table 2 for the applicable NDT method, with the possible reductions specified in 7.2.5. This duration is based upon candidates possessing mathematical skills and prior knowledge of materials and processes that can be confirmed by appropriately screening of completed prior education. If it is not the case, additional training on this matter may be required by the certification body. Training days include both practical and theoretical courses. When creating industrial sectors as specified in Annex A the certification body shall consider the minimum training requirements in Table 2	
	7.2.4 Direct access to Level 2 requires the total hours shown in Table 2 for Levels 1 and 2. Direct access to Level 3 requires the total hours shown in Table 2 for Levels 1, 2, and 3. When considering the responsibilities of a certified Level 3 (see 6.3) and the content of Part C of the basic examination for Level 3 (see Table 6), additional training about the other NDT methods may be necessary.	7.2.4 Direct access to Level 2 requires the total days shown in Table 2 for Levels 1 and 2. Direct access to Level 3 requires the total days shown in Table 2 for Levels 1, 2, and 3. When considering the responsibilities of a certified Level 3 and the content of item C of the basic examination element for Level 3 (see Table 5), additional training about the other NDT methods may be necessary.	

Table 2 — Minimum training requirements

NDT method		Level 1 h	Level 2 h	Level 3 h
AT		40	64	48
ET		40	48	48
LT	B — Pressure method	24	32	32
	C — Tracer gas method	24	40	40
MT		16	24	32
PT		16	24	24
ST		16	24	20
TT		40	80	40
RT		40	80	40
UT		40	80	40
VT		16	24	24

NOTE For RT, training hours do not include radiation safety training.

Table 2 — Minimum training requirements

NDT method	Level 1 days[a]	Level 2 days[a]	Level 3 days[a]
AT	5	8	5
ET	5	6	6
LT	5	9	6
MT	3	2	4
PT	3	2	3
RT[b]	5	10	5
ST	2	3	2
TT	5	6	5
UT	8	10	5
VT	3	2	3

[a] One day duration is at least seven hours, which can be achieved on a single day or by accumulating hours.

[b] For RT, training days does not include radiation safety training.

NOTE 1 In the case of specific techniques, see Annex F.

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7 Eligibility	7.2.5 The possible reductions in training duration are as described hereafter, provided that, when several reductions are applicable, the total reduction does NDT exceed 50 % of the training duration. Any reduction requires acceptance by the certification body.	7.2.5 The possible reductions in training duration are as described hereafter, provided that, when several reductions are applicable, the total reduction does not exceed 50 % of the training duration. Any reduction requires acceptance by the certification body and shall ensure that competence is maintained.	
	a) For all levels:	a) For all levels:	
	— for candidates seeking certification in more than one method (e.g. MT, PT), or for those already certified and seeking certification in another method, when the training syllabus concerned duplicates certain aspects (e.g. product technology), the total number of training hours for these methods (e.g. PT, MT, VT) may be reduced in line with the training syllabus;	- for candidates seeking certification in more than one method (i.e. MT, PT), or for those already certified and seeking certification in another method, when the training syllabus concerned duplicates certain aspects (i.e. product technology), the total number of training days for these methods (i.e. PT, MT, VT) may be reduced in line with the training syllabus;	
	— for candidates who have graduated in a relevant subject from technical college or university, or have completed at least two years of relevant engineering or science study at college or university, the total required number of training hours may be reduced by up to 50 %.	- for candidates who have graduated in a relevant subject from technical college or university, or have completed at least two years of relevant engineering or science study at college or university (or equivalent formal education), the total required training duration may be reduced by up to 50%; the certification body shall specify relevant subjects and their qualification.	
	NOTE It is appropriate for the subject to be relevant to the NDT method (chemistry, mathematics or physics) and/or to the product or industry sector (chemistry, metallurgy, engineering, etc.).		
	b) For Levels 1 and 2, when the certification sought is limited:	b) For Levels 1 and 2, when the scope of activity is limited in application and/or in technique (and NDT covered in Annex F), the training scope and duration may be reduced by up to 50%.	
	— in application (e.g. automated ET, UT of bar, tube, and rod or normal beam ultrasonic thickness and lamination testing of rolled steel plate);	NOTE Examples of such limitations include those related to application (e.g. automated ET, UT of bar, tube, and rod or normal beam ultrasonic thickness and lamination testing of rolled steel plate) and to technique (e.g. leak testing only using bubble test, yoke for magnetic particle).	
	— in technique (e.g. RT using only radioscopy);		
	the training duration may be reduced by up to 50 %.		
	c) For direct access to Level 2 RT when certification is restricted to the film interpretation and to only one product sector, a minimum training requirement of 56 h applies.		
	7.3 Industrial NDT experience	**7.3 Industrial NDT experience**	
	7.3.1 General	**7.3.1 General**	
	The minimum duration of experience to be gained in the sector where the candidate is seeking certification shall be as given in Table 3, with the possible reductions given in 7.3.3. When the candidate is seeking certification in more than one method, the total time of experience shall be the sum of the experience in each method.	The minimum duration of industrial experience to be gained in the method where the candidate is seeking certification shall be as given in Table 3, with the possible reductions given in 7.3.3. When the candidate is seeking certification in more than one method, the total time of experience shall be the sum of the experience in each method.	
	For Level 2 certification, the intent of this International Standard is that work experience consists of time as a Level 1. If the individual is being qualified directly to Level 2, with no time at Level 1, the experience shall consist of the sum of the times required for Level 1 and Level 2. No reduction in the period of experience shall be allowed.		
	For all levels, a minimum period of experience prior to examination shall be defined by certification body (a fraction or percentage of the total requirement in Table 3, as appropriate). In the event that a part of the experience is sought following successful examination, the results of the examination shall remain valid for two years or for the total experience time required for the methods concerned, whichever is the greater.	For all levels, a minimum period of experience prior to examination shall be specified by certification body (a fraction or percentage of the total requirement in Table 3. as appropriate). In the event that a part of the experience is sought following successful examination, the results of the examination shall remain valid for a maximum of five years.	
	Documentary evidence of experience shall be confirmed by the employer and submitted to the certification body.	Documentary evidence of experience shall be confirmed by the employer or the referee and submitted to the certification body.	
	Table 3 — Minimum industrial experience NDT method | Experience months[a] Level 1 | Level 2 | Level 3 AT, ET, LT, RT, UT, TT | 3 | 9 | 18 MT, PT, ST, VT | 1 | 3 | 12 [a] Work experience is based on a nominal 40 h/week or the legal week of work. When an individual works in excess of 40 h/week, he may be credited with experience based on the total hours, but he shall be required to produce evidence of this experience.	**Table 3 — Minimum industrial experience** NDT method | Experience in days[a] Level 1 | Level 2: with Level 1 | Level 2: direct access | Level 3: higher education, with Level 2 | Level 3: with Level 2 | Level 3: direct access with higher education AT, ET, LT, RT, TT, UT | 45 | 135 | 180 | 270 | 450 | 540 MT, PT, ST, VT | 15 | 45 | 60 | 180 | 240 | 360 [a] One day duration is at least seven hours, which can be achieved on a single day or by accumulating hours. The maximum allowable hours in any one day is 12 hours. Experience in days is achieved by dividing the total accumulated hours by 7.	
	7.3.2 Level 3	**7.3.2 Level 3**	
	Level 3 responsibilities require knowledge beyond the technical scope of any specific NDT method. This broad knowledge may be acquired through a variety of combinations of education, training and experience. Table 3 details minimum experience for candidates who have successfully completed a technical school or at least two years of engineering or science study at an accredited college or university. If this is NDT the case, the duration has to be multiplied by a factor of 2.	Level 3 responsibilities require knowledge beyond the technical scope of any specific NDT method. This broad knowledge may be acquired through a variety of combinations of education, training and experience. Table 3 details minimum experience for candidates who have successfully completed higher education, as well as candidates without higher education.	
	For Level 3 certification, the intent of this International Standard is that work experience consists of time as a Level 2. If the individual is being qualified directly from Level 1 to Level 3, with no time at Level 2, the experience shall consist of the sum of the times required for Level 2 and Level 3. No reduction in the period of experience shall be allowed.		

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7 Eligibility	**7.3.3 Possible reductions**	**7.3.3 Possible reductions**	
	7.3.3.1 The possible reductions in duration of experience are as described hereafter, provided that, when several reductions are applicable, the total reduction does NDT exceed 50 % of the experience duration. Any reduction does require acceptance by the certification body.	7.3.3.1 The possible reductions in duration of experience are as described hereafter. Any reduction shall require acceptance by the certification body.	
	When considering possible reduction in the duration of experience, the certification body should take into consideration the following elements.		
	— The quality of experience can be variable, and skills may be assimilated more quickly in an environment where the experience is concentrated and has a high degree of relevance to the certification sought.		
	— When gaining experience simultaneously in two or more surface NDT methods, i.e. MT, PT and VT, the experience gained in the application of one NDT method may be complementary to the experience gained in one or more other surface methods.		
	— Experience in one sector of an NDT method for which certification is already held may be complementary to the experience in a different sector of the same NDT method.		
	— The level and quality of education possessed by the candidate should also be considered. This is particularly the case for the Level 3 candidate but it can also be applicable for other levels.		
	7.3.3.2 Credit for work experience may be gained simultaneously in two or more of the NDT methods covered by this International Standard, with the reduction of total required experience as follows:	7.3.3.2 *A* certified Level 1, 2 or 3 adding an additional method may be permitted a reduction of required experience of 25 % for that additional method.	
	— two testing methods: reduction of total required time by 25 %;		
	— three testing methods: reduction of total required time by 33 %;		
	— four or more testing methods: reduction of total required time by 50 %.		
	In all cases, the candidate shall be required to show that for each of the testing methods for which he seeks certification, he has a minimum of 50% of the time required in Table 3.		
	7.3.3.3 In all cases, the candidate shall be required to show that for each of the NDT method and sector combinations for which he seeks certification, he has at least half of the experience required, and this shall never be less than one month in duration.	7.3.3.3 A certified Level 1, 2 or 3 individual changing sector, adding another sector or technique for the same NDT method shall be required to gain additional experience of at least 25 % of the experience required in Table 3; and this shall never be less than 15 days in duration.	
	7.3.3.4 When the certification sought is limited in application (e.g. thickness measurement or automated testing), experience duration may be reduced by up to 50 % but shall NDT be less than one month.	7.3.3.4 When the scope of certification sought is limited in application (i.e. thickness measurement or automated testing), experience duration may be reduced by up to 50% but shall not be less than 15 days.	
	7.3.3.5 Up to 50 % of the practical experience time may be achieved by an appropriate practical course, the duration of which may be weighted by a maximum factor of 5. This procedure shall NDT be used in conjunction with that specified in 7.3.3.4. The course shall concentrate on practical solutions of frequently occurring testing problems and should involve a significant element of testing known defective specimens. The programme shall be approved by the certification body.	7.3.3.5 Up to 50 % of the industrial experience time may be achieved by a structured experience program (SEP). One day of attendance at the SEP may be equivalent to a maximum of five days industrial experience. The SEP shall include all typical tasks (see Clause 6) of the level, method and sector concerned. The additional intent is to gain specific product and technique knowledge. The SEP shall be approved in advance by the certification body and shall be available for audit by the certification body.	
	7.4 Vision requirements — all levels	**7.4 Vision requirements - all levels**	
	The candidate shall provide documentary evidence of satisfactory vision in accordance with the following requirements:	**7 .4.1 General** Candidates and certificate holders shall maintain and provide documentary evidence of acceptable vision in accordance 7.4.2 to 7.4.4.	
	a) near vision acuity shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1,6 mm) at NDT less than 30 cm with one or both eyes, either corrected or uncorrected;	**7.4.2 Near vision acuity** Prior to certification, and annually thereafter, near vision acuity shall be verified to be in accordance with the requirements of ISO 18490 or shall permit reading a minimum of Jaeger number 1 or Times Roman N4.5 or equivalent letters at not less than 30 cm with one or both eyes, either corrected or uncorrected.	
	b) colour vision shall be sufficient that the candidate can distinguish and differentiate contrast between the colours or shades of grey used in the NDT method concerned, as specified by the employer.	**7.4.3 Colour vision** Prior to certification, recertification or renewal, the candidate/certificate holder shall demonstrate that a colour vision test has been administered within the previous 5 calendar years. It is required that colour vision and/or grey scale perception be sufficient for the individual to be able to distinguish and differentiate between the colours or shades of grey used in the NDT methods/techniques concerned as specified by the employer. The colour vision test shall either confirm that the individual has acceptable colour vision without restriction or shall state any limitation(s) on colour perception. Where any limitation in colour perception exists, the employer shall confirm whether or not this condition results in any limitation(s) to method or application specific techniques. NOTE The Ishihara 24 plate test is an example of a suitable colour vision test.	
	The certification body may consider replacing the requirements in a) by compliance with an appropriate alternative. Subsequent to certification, the tests of near visual acuity shall be carried out annually and verified by the employer.	**7.4.4 Personnel administering vision tests** Near vision acuity testing, colour vision and/or grey scale perception verification(s) shall be administered by a licensed physician, nurse, ophthalmologist or optometrist; or by another trained professional who is approved and documented by a Level 3 personnel acting on behalf of the employer.	

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8 Examinations	**8.1 General**	**8.1 Overview**	
	The qualification examination shall cover a given NDT method as applied in one industrial sector or one or more product sectors. The certification body shall define and publish the maximum amount of time allowed for the candidate to complete each examination, which shall be based upon the number and difficulty of the questions. The average time allowed for questions requiring narrative answers shall be determined by the certification body.	**8.1.1 General**	
		The examination shall cover an NDT method, technique, industrial sector and/or product sector as appropriate.	
		The process used for the development and selection of examination questions shall be specified in a procedure prepared by the certification body. It shall ensure the questions are appropriate for the relevant syllabus for the method/technique/sector, and for the level of certification. The process shall be designed to ensure the comparability of results of examinations using methods such as peer group review, input from subject matter experts, statistical comparisons, and, where the size of the examination cohort allows, psychometric principles may be used as specified in Annex G. The certification body shall establish a documented appropriate methodology and procedures to ensure fairness, validity, reliability, and general performance of examinations to maintain an acceptable pass grade of 70 % for all examinations.	
		The processes for preparation and conduct of examinations (see 8.4) shall further be designed to ensure the confidentiality and security of examination questions and examination papers.	
		The practical specimens shall be maintained and monitored to ensure consistency and fairness of examinations using processes adopted by the certification body.	
		The results of examinations shall remain valid for up to five years while the candidate completes any remaining certification requirements.	
		8.1.2 Examination elements	
		For Level 1 the examination shall consist of the following examination elements:	
		- general examination element;	
		- specific examination element;	
		- practical examination element.	
		For Level 2 the examination shall consist of the following examination elements:	
		- general examination element;	
		- specific examination element;	
		- practical examination element;	
		- NDT instruction writing element.	
		For Level 3 the examination shall consist of the following examination elements:	
		- basic examination element which consists of the following items:	
		- item A technical knowledge;	
		- item B certification body's document knowledge;	
		- item C Level 2 knowledge of methods;	
		- main method examination element which consists of the following items:	
		- item D general examination;	
		- item E specific examination;	
		- item F NDT procedures.	
		8.1.3 Examination time	
		The certification body shall specify and publish the maximum amount of time allowed for the candidate to complete each examination element, which shall be based upon the following.	
		For Level 1 and Level 2, the total time for the examination elements shall be based on two minutes per multiple choice examination question for general examination element and three minutes per multiple choice examination question for specific examination element.	
		For Level 3, the total time for the examination elements shall be based on three minutes per multiple choice examination question in items B and E and two minutes for items *A,* C and D.	
		For questions requiring narrative answers, Level 3 item F, NDT instruction writing element, and for the practical examination element, the time allowed shall be determined by the certification body.	
		8.1.4 Examination aids	
		The use of aids such as codes, standards, specifications, procedures and electronic devices is only permitted if supplied as part of the examination or authorized by the certification body.	

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8 Examinations	**8.2 Examination content and grading for Level 1 and Level 2**	**8.2 Examination content and grading for Level 1 and Level 2**	
	8.2.1 General examination	**8.2.1 General examination element**	
	The general examination shall include only questions selected in an unpredictable way from the certification body's or authorized qualification body's collection of general examination questions valid at the date of examination. The candidate shall be required, as a minimum, to give answers to the number of multiple choice questions shown in Table 4.	The general examination element shall be a minimum of 40 multiple choice examination questions and shall be selected randomly from the certification body's or authorized qualification body's collection of general examination element questions valid at the date of examination.	
	Where NDT otherwise addressed by national regulations, there shall be an additional examination on radiation safety for the radiographic test method.	Where not otherwise addressed by national regulations, there may be an additional examination on radiation safety for the radiographic testing method.	
	Examinations on the radiographic test method may include either X- or gamma-radiation or both, depending upon the procedure of the certification body.		
	Table 4 — Required minimum number of questions — General examinations NDT method: AT, ET, TT, RT, UT — Number of questions: 40 NDT method: LT, MT, PT, ST, VT — Number of questions: 30		
	8.2.2 Specific examination	**8.2.2 Specific examination element**	
	The specific examination shall include only questions selected from the certification body's or authorized qualification body's current collection of specific questions related to the sector(s) concerned. During the specific examination, the candidate shall be required to give answers to at least 20 multiple choice questions, including questions involving calculations, NDT procedures and questions on codes, standards and specifications.	The specific examination element shall be a minimum of 20 multiple choice examination questions selected from the certification body's or authorized qualification body's collection of specific examination element questions valid at the date of examination.	
	If the specific examination covers two or more sectors, the minimum number of questions shall be at least 30, evenly spread between the industrial or product sectors concerned (see Annex A).	If the specific examination element covers two or more sectors, the minimum number of questions shall be at least 30; taking into account the industrial or product sectors concerned (see Annex A).	
	8.2.3 Practical examination	**8.2.3 Practical examination element**	
	8.2.3.1 The practical examination shall involve applying the test to prescribed specimens, recording (and, for Level 2 candidates, interpreting) the resulting information to the degree required, and reporting the results in the required format. Specimens used for training purposes shall not be used for examination.	8.2.3.1 The practical examination element shall involve applying the test to prescribed specimens, recording (and, for Level 2 candidates, interpreting) the resulting information to the degree required, and reporting the results in the required format. Specimens used for training purposes shall not be used for examination.	
	8.2.3.2 Each specimen shall be uniquely identified and have a master report which includes all of the equipment settings used to detect specified discontinuities contained within the specimen, which shall be uniquely identified by an appropriate permanent marking to ensure that it is completely traceable. Such marking shall NDT interfere with the practical testing or inspection of the specimen and shall, wherever practicable, be concealed from the candidate while the specimen is being used for examination. The master report shall be compiled based upon at least two independent tests, and shall be validated by a Level 3 certificate holder for use in grading examinations. The independent test reports from which the master report is compiled shall be retained as records.	8.2.3.2 Each specimen shall be uniquely identified and have a specimen master report which includes all of the equipment settings (if applicable) used to detect specified discontinuities. Markings shall not interfere with the practical testing or inspection of the specimen and shall, wherever practicable, be concealed from the candidate while the specimen is being used for examination to prevent potential information correlation by candidates. The specimen master report shall be compiled based upon at least two independent tests, and shall be verified by a Level 3 certificate holder in that method for use in grading examinations. The independent test reports from which the specimen master report is compiled shall be retained as records.	
	8.2.3.3 Specimens shall be sector specific, simulating field geometries and shall contain discontinuities representative of those likely to occur during manufacturing or in service. They may be natural, artificial or implanted. For Level 2 evaluation tasks, data sets or films can be used instead of real specimens. Specimens used for calibration or for measurement tasks (e.g. thickness or coating measurement) do NDT need to contain discontinuities. For RT, the specimen need NDT contain discontinuities since these are exhibited in the radiographs for interpretation. Similarly, for AT, TT, and ST the specimen(s) need NDT contain discontinuities since these are exhibited in the data sets for Level 2 interpretation.	8.2.3.3 Specimens shall be sector (one or more) specific, representing field geometries and shall contain discontinuities representative of those likely to occur during manufacturing or in service. They may be natural or artificial. Data sets, digital radiographic images and/or films can be used instead of physical specimens, but at least one physical specimen shall be examined. Specimens used for adjustment or for determination of thickness, coating or material properties do not need to contain discontinuities. For RT, the specimens to be tested do not need to contain discontinuities if these are exhibited in the data sets or radiographic images for Level 2 interpretation.	
	NOTE Guidelines on discontinuity types in examination specimens can be found in CEN/TS 15053[6] or ISO/TS 22809.[1]	NOTE Guidelines on discontinuity types in examination specimens can be found in ISO/TS 22809.	
	8.2.3.4 The certification body shall ensure that the number of areas or volumes to be tested is adequate to the level, NDT method and sector concerned, and that those areas or volumes contain reportable discontinuities. The requirements for the number of specimens and number of areas or volumes to be tested in the Level 1 and Level 2 practical examinations are given in Annex B.	8.2.3.4 The certification body shall ensure that the number of specimens to be tested is adequate to the level, NDT method and sector concerned, and that the specimens contain reportable discontinuities. The number of specimens to be tested in the Level 1 and Level 2 practical examinations shall be in accordance with Annex 8.	
	8.2.3.5 The Level 1 candidate shall follow the NDT instruction(s) provided by the examiner.	8.2.3.5 The Level 1 candidate shall follow the NDT instruction(s) provided by the examiner.	
	8.2.3.6 The Level 2 candidate shall select the applicable NDT technique and determine the operating conditions related to a given code, standard or specification.	8.2.3.6 The Level 2 candidate shall select the applicable NDT technique and determine the operating conditions related to a given code, standard or specification.	
	8.2.3.7 For those examinations where discontinuities are normally replaced by artificial sources or data, the Level 1 candidate shall demonstrate the ability to set up and calibrate the equipment, verify its sensitivity and record the test data; the Level 2 candidate shall also demonstrate the ability to interpret and evaluate previously recorded test data.		

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	8.2.3.8 The time allowed for the examination depends on the number of specimens and on their complexity. The average time allowed shall be defined by the certification body. The recommended maximum time allowed for each area or volume tested is: a) for Level 1: 2 h; b) for Level 2: 3 h.	8.2.3.7 The time allowed for the examination shall be determined by the certification body.
	8.2.3.9 Level 2 candidates shall draft at least one NDT Instruction suitable for Level 1 personnel, for a specimen selected by the examiner. The recommended maximum time allowed for this part of the examination is 2 h.	**8.2.4 NDT instruction writing examination element** 8.2.4.1 The NDT instruction writing examination element shall involve the creation of a written NDT instruction by the Level 2 candidate. 8.2.4.2 See Table D.2 for the weighting of the written examination instruction element.
	8.2.4 Grading of the Level 1 and Level 2 qualification examination 8.2.4.1 The general, specific and practical examinations shall be graded separately. When conventional pre-prepared paper-based examinations are used, an examiner shall be responsible for the grading of the examinations by comparison with model answers. At the option of the certification body, e-assessment systems that automatically score candidate responses against stored data and grade the completed written examination according to prepared algorithms may be used.	**8.2.5 Grading of the Level 1 and Level 2 examination** 8.2.5.1 The general, specific, practical and NDT instruction writing examination elements shall be graded separately. When conventional pre-prepared paper-based examinations are used, an examiner shall be responsible for the grading of the examinations by comparison with model answers. E-assessment systems that automatically score candidate responses against stored data and grade the completed written examination according to prepared algorithms may be used. Each correct reply scores 1 point and the mark attributed to the tests is the sum of the points obtained. For the final calculation, the mark of each test is expressed as a percentage.
	8.2.4.2 The grading of the practical examination shall be based on items 1 to 4 in Table 5, with the recommended weighting factors in relation to the level and method as applicable.	8.2.5.2 The grading of the practical examination element shall be based on items 1 to 3 in Table 4, with the recommended weighting factors in relation to the level and method as applicable.
	Table 5 — Subjects and weighting factors for grading — Practical examination Item[a] | Subject | Weighting factor Level 1 % | Level 2 % 1 | Knowledge of the NDT apparatus, including the function and verification of the setting of the apparatus. | 20 | 10 2 | The application of NDT to the specimen. This consists of the following parts: for Level 2, selection of the techniques and determination of the operating conditions; the preparation (surface condition) and visual examination of the specimen; the setting up of the apparatus; the performance of the test; the operations after the test. | 35 | 20 3 | The detection and reporting of the discontinuities and, for Level 2, their characterization (position, orientation, dimensions and type) and evaluation. | 45 | 55 4 | For Level 2, drafting the written instruction for Level 1. | — | 15 [a] Table D.1 gives guidance on additional details on each item, which should be taken into account, as applicable by the examiner.	**Table 4 — Subjects and weighting factors for grading — Practical examination element** Item | Subject | Weighting factor Level 1 % | Level 2 % 1 | Knowledge of NDT equipment and NDT media. | 20 | 10 2 | Application of NDT method | 35 | 26 3 | The detection of indications or discontinuities and reporting | 45 | 64 Total | | 100 | 100 Table D.1 gives guidance on additional details on each item, to be taken into account, as applicable by the examiner.
	8.2.4.3 To be eligible for certification, the candidate shall obtain a minimum grade of 70 % in each part of the examination (general, specific, and practical). In addition, for the practical examination, a minimum grade of 70 % shall be obtained for each specimen tested, and for the NDT instruction, as applicable.	8.2.5.3 For the Level 1 candidates to be eligible for certification, they shall obtain a minimum grade of 70 % on each examination element (general, specific and practical). For the practical examination element, a minimum grade of 70 % shall be obtained for each specimen tested.
	8.2.4.4 The general and specific parts of the examination are graded by comparing the replies given by the candidate against answer keys approved by the certification body. Each correct reply scores 1 point and the mark attributed to the tests is the sum of the points obtained. For the final calculation, the mark of each test is expressed as a percentage.	8.2.5.4 The certification body or authorized qualification body may classify some discontinuities as mandatory to be detected.
	8.2.4.5 For the Level 2 candidates, the specimen for which the instruction is produced shall be graded with an overall grade of 100 in accordance with Table D.1. The other specimens (without instruction) shall be graded with an overall grade of 85 in accordance with Table D.1 (see 8.2.4.2), and the final grade shall be calculated by multiplying by 100/85. The instruction shall be graded with an overall grade of 15 in accordance with Table D.1 (see 8.2.4.2), and, for comparing with the 70 % required in 8.2.4.3, this value shall be multiplied by 100/15. For AT, the required test instruction may relate to a specimen which is NDT tested during the practical examination.	8.2.5.5 For the Level 2 candidates to be eligible for certification, they shall obtain a minimum grade of 70 % on each examination element (general, specific, practical and NDT instruction writing). For the practical examination element, a minimum grade of 70% shall be obtained for each specimen tested and NDT instruction writing element, as applicable. The certification body or authorized qualification body may classify some discontinuities as mandatory to be detected and evaluated as unacceptable. The NDT instruction writing element shall be graded in accordance with Annex 0. For AT, the required test instruction may relate to a specimen which is not tested during the practical examination element.
	8.3 Examination content and grading for Level 3 **8.3.1 General** All candidates for Level 3 certification in any NDT method shall have successfully completed (with a grade of ≥ 70 %) the practical examination for Level 2 in the relevant sector and method, except for the drafting of NDT instructions for Level 1 (see 8.2.3.9). A candidate who is Level 2 in the same NDT method and product sector or who has successfully passed a Level 2 practical examination for the NDT method in an industrial sector, as defined in Annex A is exempt from passing again the Level 2 practical examination. This exemption is only valid for the product sectors covered by the industrial sector concerned and, in any other circumstances, the relevant sector is the sector in which the candidate seeks Level 3 certification.	**8.3 Examination content and grading for Level 3** **8.3.1 General** All candidates for Level 3 certification in any NDT method shall have successfully completed (with a grade of ≥ 70 %) the practical examination element for Level 2 in the relevant sector and method, except for the drafting of NDT instructions for Level 1(see 8.2.4.1). A candidate who is Level 2 in the same NDT method and product sector or who has successfully passed a Level 2 practical examination element for the NDT method in an industrial sector, as specified in Annex *A* is exempt from passing again the Level 2 practical examination element. This exemption is only valid for the product sectors covered by the industrial sector concerned and, in any other circumstances, the relevant sector is the sector in which the candidate seeks Level 3 certification.

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8 Examinations	**8.3.2 Basic examination** 8.3.2.1 This written examination shall assess the candidate's knowledge of the basic subjects using at least the number of multiple choice questions shown in Table 6. Examination questions shall be selected in an unpredictable way from the current collection of questions approved by the certification body at the time of the examination. **Table 6 — Minimum required number of basic examination questions** Part / Subject / Number of questions A — Technical knowledge in materials science and process technology. — 25 B — Knowledge of the certification body's qualification and certification system based on this International Standard. This may be an open book examination. — 10 C — General knowledge of at least four methods as required for Level 2 and chosen by the candidate from the methods given in Clause 1. These four methods shall include at least one volumetric method (UT or RT). — 15 for each test method (total 60) 8.3.2.2 It is recommended that the basic examination be passed first and remain valid, provided that the first main method examination is passed within five years after passing the basic examination. A candidate holding a valid Level 3 certificate is exempt from the need to retake the basic examination.	**8.3.2 Basic examination element** 8.3.2.1 This written examination shall assess the candidate's knowledge of the basic subjects using at least the number of multiple choice examination questions shown in Table 5. Examination questions shall be selected in an unpredictable way from the certification body's or authorized qualification body's collection of basic examination element questions valid at the date of examination. **Table 5 — Minimum required number of basic examination element questions for Level 3** Item / Subject / Number of questions A — Technical knowledge in materials science and process technology. — 25 B — Knowledge of the certification body's qualification and certification system based on this document. This may be an open-book examination. — 10 C[a] — General knowledge of at least four methods as required for Level 2 and chosen by the candidate from the methods given in Table 1. These four methods shall include at least one volumetric method (UT or RT). — 15 for each test method (total 60) [a] For item C, the certification body may adjust the number of questions per method for methods impacted by evolving technology, increasing methods and techniques being added. 8.3.2.2 It is recommended that the basic examination element be passed first and remain valid, provided that the first main method examination element is passed within five years after passing the basic examination element. A candidate holding a valid Level 3 certificate is exempt from the need to retake the basic examination element. ·	
	8.3.3 Main method examination This written examination shall assess the candidate's knowledge of the main method subjects using the minimum required number of multiple choice questions shown in Table 7. Examination questions shall be selected in an unpredictable way from the current collection of questions approved by the certification body at the time of the examination. **Table 7 — Minimum required number of main method examination questions** Part / Subject / Number of questions D — Level 3 knowledge relating to the test method applied. — 30 E — Application of the NDT method in the sector concerned, including the applicable codes, standards, specifications and procedures. This may be an open book examination in relation to codes, standards, specifications and procedures. — 20 F — Drafting of one or more NDT procedures in the relevant sector. The applicable codes, standards, specifications and other procedures shall be available to the candidate. For a candidate who has already drafted a NDT procedure in a successfully passed Level 3 examination, the certification body may replace the drafting of a procedure with the critical analysis of an existing NDT procedure covering the relevant method and sector, and containing errors and/or omissions. — —	**8.3.3 Main method examination element** This written examination shall assess the candidate's knowledge of the main method subjects using the minimum required number of multiple-choice questions shown in Table 6. Examination questions shall be selected in an unpredictable way from the current collection of questions approved by the certification body at the time of the examination. **Table 6 — Minimum required number of main method examination element questions** Item / Subject / Number of questions D — Level 3 knowledge relating to the NDT test method applied. — 30 E — Application of the NDT method in the sector concerned, including the applicable codes, standards, specifications and procedures. This may be an open-book examination in relation to codes, standards, specifications and procedures. — 20 F — Drafting of one or more NDT procedures in the relevant sector. The applicable codes, standards, specifications and other procedures shall be available to the candidate. For a candidate who has already drafted an NDT procedure in a successfully passed Level 3 examination, the certification body may replace the drafting of a procedure with the critical analysis of an existing NDT procedure covering the relevant method and sector, and containing errors and/or omissions. — — Applicable aids (8.1.4) shall be specified and communicated to candidates. These aids may be provided by the certification body or authorized qualification body for use in open-book examinations.	

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8 Examinations	**8.3.4 Grading of Level 3 qualification examinations**	**8.3.4 Grading of Level 3 examinations**	
	8.3.4.1 General	8.3.4.1 General	
	The grading of the basic and main method examinations shall be done separately. To be eligible for certification, a candidate shall pass both the basic and main method examinations.	The grading of the basic and main method examination elements shall be done separately. To be eligible for certification, a candidate shall pass both the basic and main method examination elements.	
	For the three parts A, B, and C of the basic examination and parts D and E of the main method, the following requirements apply.	For the three items A, 8, and C of the basic examination element and items D and E of the main method examination element, the following requirements apply.	
	When conventional pre-prepared paper-based examinations are used, an examiner shall be responsible for the grading of the examinations by comparing the replies given by the candidate against answer keys approved by the certification body. Each correct reply scores 1 point and the mark attributed to the tests is the sum of the points obtained. For the final calculation, the mark of each test is expressed as a percentage.	When conventional pre-prepared paper-based examinations are used, an examiner shall be responsible for the grading of the examinations by comparing the replies given by the candidate against answer keys approved by the certification body. Each correct reply scores 1 point and the mark attributed to the tests is the sum of the points obtained. For the final calculation, the mark of each test is expressed as a percentage.	
	At the option of the certification body, e-assessment systems that automatically score candidate responses against stored data and grade the completed written examination according to prepared algorithms may be used.	At the option of the certification body, e-assessment systems that automatically score candidate responses against stored data and grade the completed written examination according to prepared algorithms may be used.	
	8.3.4.2 Basic examination	8.3.4.2 Basic examination element	
	In order to pass the basic examination, the candidate shall obtain a minimum grade of 70 % in each of parts A, B, and C.	In order to pass the basic examination, the candidate shall obtain a minimum grade of 70 % in each of parts A, B, and C.	
	8.3.4.3 Main method examination	8.3.4.3 Main method examination element	
	In order to pass the main method examination, the candidate shall obtain a minimum grade of 70 % in each of parts D, E, and F.	In order to pass the main method examination, the candidate shall obtain a minimum grade of 70 % in each of parts D, E, and F.	
	See Table D.2 for the recommended weighting of the written examination procedure.	See Table D.3 for the recommended weighting of the written NDT procedure.	
	8.4 Conduct of examinations	**8.4 Conduct of examinations**	
	8.4.1 All examinations shall be conducted in examination centres established, approved, and monitored by the certification body, either directly or through an authorized qualification body.	8.4.1 All examinations shall be conducted in examination centres established, approved, and monitored by the certification body, either directly or through an authorized qualification body.	
	8.4.2 At the examination, the candidate shall have in his possession valid proof of identification and an official notification of the examination, which shall be shown to the examiner or invigilator upon demand.	8.4.2 At the examination, the candidate shall have in their possession valid proof of identification and an official notification of the examination, which shall be shown to the examiner or invigilator upon demand.	
	8.4.3 Any candidate who, during the course of the examination, does not abide by the examination rules or who perpetrates, or is an accessory to, fraudulent conduct shall be excluded from all further qualification examinations for a period of at least one year.	8.4.3 Any candidate who, during the course of the examination, does not abide by the examination rules or who perpetrates, or is an accessory to, fraudulent conduct shall be excluded from all further examinations for a period of at least one year.	
	8.4.4 Examination questions shall be validated by the certification body. When conventional pre-prepared paper-based examinations are used, the examination papers shall be validated and approved by an examiner, and the grading shall be done in accordance with procedures approved by the certification body (see 8.2.4 and 8.3.4). When e-assessment systems that select questions present the “written” examination to a candidate on a computer and grade the examinations, are used, the certification body shall validate and approve the e-assessment system.	8.4.4 Examination questions shall be validated by the certification body. When conventional pre-prepared paper-based examinations are used, the examination papers shall be validated and approved by an examiner, and the grading shall be done in accordance with procedures approved by the certification body. When e-assessment systems that select questions, present the "written" examination to a candidate on a computer and grade the examinations are used, the certification body shall validate and approve the e-assessment system.	
	8.4.5 Written (whether e-assessment or conventional) and practical qualification examinations shall be invigilated by an examiner or by one or more trained invigilators placed under an examiner’s responsibility.	8.4.5 Written (whether e-assessment or conventional) and practical examinations shall be invigilated by an examiner or by one or more invigilators placed under a certification body's responsibility.	
	8.4.6 An examiner shall not be permitted to examine any candidate:		
	a) that he has trained for the examination for a period of two years from the date of the conclusion of the training activities;		
	b) who is working (permanently or temporarily) in the same facility as the examiner.		
	8.4.7 With the approval of the certification body, a candidate for a practical examination may use his own equipment.	8.4.6 With the approval of the certification body, a candidate for a practical examination may use their own equipment.	
	8.4.8 Candidates shall NDT be permitted to bring into the examination area personal items, unless specifically authorized to do so by the examiner.	8.4.7 Candidates shall not be permitted to bring into the examination area personal items, unless specifically authorized to do so by the examiner.	
	8.5 Re-examination	**8.5 Re-examination**	
	8.5.1 A candidate failing for reasons of unethical behaviour shall wait at least 12 months before reapplying (see 8.4.3).	8.5.1 *A* candidate failing for reasons of unethical behaviour shall wait at least 12 months before reapplying (see 8.4.3).	
	8.5.2 A candidate who fails to obtain the pass grade for any examination part, may be re-examined twice in the failed part(s), provided that the re-examination takes place not sooner than one month, unless further training acceptable to the certification body is satisfactorily completed, nor later than two years after the original examination.	8.5.2 A candidate who fails one or more elements of an examination (i.e. general, specific, practical etc.) may retake the failed examination no more than twice: a) after a minimum time of one month (which may be reduced if further training acceptable to the certification body has been satisfactorily completed); b) no later than two years after the initial examination.	
	NOTE “Examination parts” in this context refers to: for Levels 1 and 2, the general, specific, and practical examinations; for the Level 3 basic examination, Parts A, B, and C; for the Level 3 main-method examination, Parts D, E, and F.		
	8.5.3 A candidate failing all permitted re-examination shall apply for and take the examination in accordance with the procedure established for new candidates.	8.5.3 A candidate failing two re-examinations on one or more elements shaH complete further training, acceptable to the certification body, and be required to retake all examination elements.	

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8 Examinations	**8.6 Examination exemptions**	**8.6 Supplementary examinations**	
	8.6.1 A certified Level 1 or Level 2 individual changing sectors or adding another sector for the same NDT method shall be required to take only the new sector specific and practical examinations for that method.	8.6.1 A certified Level 1 or Level 2 individual changing sectors or adding another sector for the same NDT method shall be required to take sector specific and practical examination elements for the new sector. Level 2 shall also be required to write the NDT instruction for the new sector.	
	8.6.2 A certified Level 3 individual changing sectors or adding another sector for the same NDT method is exempt from the need to retake the basic examination and the Level 3 part D of the main method examination (see Table 7).	8.6.2 A certified Level 3 individual changing sectors or adding another sector for the same NDT method shall be required to take the sector specific items E and F of the main method examination element only (see Table 6).	
9 Certification	**9 Certification**	**9 Certification**	
	9.1 Administration	**9.1 Administration**	
	A candidate fulfilling all conditions shall be certified and evidence of this certification shall be made available by the certification body. This can be achieved with the issue of hard copy certificate(s) and/or wallet card(s) (see 9.2), and/or by electronically uploading and displaying the relevant information on the certification body's website.	A candidate fulfilling all certification requirements shall be certified, and evidence of this certification shall be made available by the certification body. This can be achieved with the issue of hard copy certificate(s), digital certificates and/or by electronically uploading and displaying the relevant information on a database on the certification body's website. The certification body may also issue a wallet card that shall include a measure(s) to prevent falsification.	
	9.2 Certificates and/or wallet cards	**9.2 Certificates**	
	Certificates and/or corresponding wallet cards shall include at least:	Certificates shall include the following information as a minimum:	
	a) the family name and forename of the certified individual;	a) the name of the certified individual, and (optional) date of birth of the certified individual;	
	j) a unique personal identification number;	b) a unique identification (e.g. a photo, or reference to a photo identification by number);	
	l) a photograph of the certified individual in the case of the wallet card;		
	f) the name of the certification body;	c) the name of the certification body;	
	g) the NDT method(s);	d) the scope of the certification, including reference to this document, the NDT method(s) and level of certification, and/or applicable techniques and sector(s), including issue date;	
	e) the level of certification;		
	h) the applicable sector(s);		
	d) a reference to this International Standard (ISO 9712:2012);		
	b) the date of issue of the certification;		
	i) if applicable, the scope of limitations to the certifications and/or the special applications;	e) any limitations to the certification, if applicable;	
	c) the date upon which certification expires;	f) the effective date of certification and date of expiry;	
	n) the signature of a designated representative of the certification body.	g) the signature and/ or authorization of a designated representative of the certification body;	
		h) contact information or website address to issuing certification body database for verification purposes.	
	k) the signature of the certified individual;		
	m) a device to prevent falsification of the wallet card, e.g. use of a cold seal, welding into plastic;		
	There may be a special space on either or both the certificate and the wallet card for the signature and stamp of the employer authorizing the holder of the certificate to operate (see 3.21). With this the employer demonstrates taking responsibility for the test results.		
	9.3 Digital certificates		
	9.3.1 Digital certification may be provided in lieu of or as well as physical (hard copy) certificate(s). In this case, subject to compliance with national regulations, the following data are available without request (online, at the website of the certification body) to interested parties:		
	— the legal name, contact information and, where applicable, accreditation status of the certification body;		
	— the family name and forename of the certified individual;		
	— a unique personal identification number for the certified individual;		
	— a photographic image of the certified individual (taken within the past 10 years);		
	— the dates of issue and expiry of the certification;		
	— the scope of certification, including the level, NDT method(s), and applicable sector(s);		
	— any limitations to the certification, if applicable.		
	9.3.2 Where the data listed in 9.3.1 can be printed directly from the certification body's website, the printed output shall include a date of print and a statement that the current certification status can be verified at the relevant website.	Where the data listed above can be printed directly from the certification body's website, the printed output shall include a date of print and a statement that the current certification status can be verified at the relevant website.	

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9 Certification	**9.4 Validity**	**9.3 Conditions of certification**	
	9.4.1 General	**9.3.1 General**	
	The maximum period of validity of the certificate is five years. The period of validity shall commence (date of issue of the certification) when all of the requirements for certification (training, experience, satisfactory vision test, success in examination) are fulfilled.	Certification is granted, extended, suspended, withdrawn or revalidated by the certification body. The maximum period of validity of the certificate is 5 years. To be valid, certificates shall be supported by a current annual verification of acceptable vision as per 7.4.	
		9.3.2 Granting	
		Certification shall be granted by the certification body when all certification requirements are fulfilled. The period of validity shall commence upon the decision of certification by the certification body.	
		9.3.3 Scope extension	
		The certification body shall specify requirements for scope extension for situations where an individual seeks extension of their scope of certification for an existing certification (i.e. additional product sector).	
		At the discretion of the certification body:	
		a) the additional scope may be added to the existing certification and the original period of validity maintained; or	
		b) a new certificate with a new period of validity may be issued for the extension to scope only.	
	Certification becomes invalid:	**9.3.4 Suspension of certification**	
		Certification may be suspended by the certification body:	
		a) if the individual becomes temporarily physically incapable of performing their duties;	
	b) if the individual becomes physically incapable of performing his duties based upon failure of the visual acuity examination taken annually under the responsibility of his employer;	b) if the individual fails to provide evidence of meeting the visual acuity requirements of this document annually;	
	c) if a significant interruption (see 3.27) takes place in the method for which the individual is certified;	c) if a significant interruption takes place in the method for which the individual is certified;	
		d) at the discretion of the certification body for any other situations.	
		The certification body shall specify the conditions for revalidation where an individual's certification has been suspended.	
		9.3.5 Withdrawal of certification	
		Certification shall be withdrawn by the certification body:	
	a) at the discretion of the certification body, e.g. after reviewing evidence of behaviour incompatible with the certification procedures or failure to abide by a code of ethics;	a) at the discretion of the certification body, i.e. after reviewing evidence of behaviour incompatible with the certification scheme or failure to abide by a code of ethics;	
		b) if the individual fails to meet the requirements of renewal, until such time as the individual meets the requirements for renewal;	
	d) if the individual fails recertification, until such time as the individual meets the requirements for recertification or initial certification.	c) if the individual fails recertification, until such time as the individual meets the requirements for recertification or certification;	
		d) at the discretion of the certification body, when verifiable evidence is received from the employer stating that the individual has become physically incapable of performing their duties.	
	9.4.2 Revalidation	**9.3.6 Certification after withdrawal**	
	The certification body shall define the conditions for revalidation in the case of 9.4.1, a) and b).	The certification body shall specify the conditions for certification where an individual's certification has been withdrawn in the case of 9.3.5.a) and d).	
	For revalidation of the certification after a significant interruption, the individual shall pass a recertification examination. The certification is revalidated for a new period of validity of five years from the date of the revalidation.		
		9.3.7 Waiting period prior to certification after withdrawal	
		In case of 9.3.5. a), the certification can only be granted after a minimum 12 month waiting period. The certification body shall specify the length and conditions of the waiting period.	
		9.4 Certificates issued by other certification bodies	
		9.4.1 *A* certification body may consider certification issued by another certification body. If so, the certification body shall do so in accordance with a documented process. Where the certification body takes into account work performed by another body, it shall have appropriate reports, data and records to demonstrate that the results are equivalent and conform to the requirements established by the certification scheme.	
		9.4.2 This process shall consider the granting of credit for valid certification including a review of education, training, experience, vision and examination requirements of the originating certification body. The review may allow the certification body to recognize the general theory part of a method examination. The review may also allow the certification body to recognize the specific and/or practical examination elements but only when the method/technique, industry/product sector are appropriate.	
		9.4.3 Where the prior certification is accepted without any additional examination, the expiry of the new certification shall not extend beyond that of the prior certification nor shall extend the scope of certification.	

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10 Renewal	10.1 Prior to the completion of the first period of validity and every 10 years thereafter, certification may be renewed by the certification body for a new period of five years on production of:	10.1 Prior to the completion of the period of validity following certification and recertification, certification shall be renewed by the certification body for a new period of validity on production of:	
	a) documentary evidence of a satisfactory visual acuity examination taken within the preceding 12 months;	a) documentary evidence of a satisfactory near vision acuity examination taken within the preceding 12 months; and	
		b) documentary evidence of a satisfactory colour vision and/or grey scale perception examination taken within the preceding 60 months; and	
	b) verifiable documentary evidence of continued satisfactory work activity without significant interruption (see 3.27) in the method and sector for which certificate renewal is sought.	c) verifiable documentary evidence of continued satisfactory work activity without significant interruption in the method and sector for which certificate renewal is sought;	
		and either:	
		d) successful completion of a practical examination element in accordance with 11.2.2 except that it shall consist of a minimum of 50 % of the examination specimens required by 11.2.2. or	
		e) successfully meeting the requirements of the structured credit system as given in 10.2 and Annex C.	
	If the criterion b) for renewal is not met, the individual shall follow the same rules as for recertification (see Clause 11).	If the criterion c) for renewal is not met, the individual shall complete the practical examination elements required by 11.2.2.	
		10.2 Where a candidate elects to use the structured credit system, they shall provide evidence to the certification body to demonstrate achievement of a minimum of 100 points in the 5 year renewal period based on the requirements of Table C.1.	
		10.2.1 For candidates seeking renewal of Level 1 certificates, a minimum of 75 of the 100 points is required for any combination of activities listed in part *A* of Table C.1.	
		10.2.2 For candidates seeking renewal of Level 2 or 3 certificates, a minimum of 50 of the 100 points is required for any combination of activities listed in part *A* of Table C.1.	
		10.2.3 Where a certification body has opted to implement a renewal period of less than 5 years, the minimum points required may be prorated accordingly [i.e. a 4 year renewal period would require a minimum of 80 points (100 x 4/5)].	
		10.2.4 Where a candidate is seeking renewal for more than one certificate, points granted for a specific activity can be applied to the total points required for each certificate for those activities not specific to a particular method (e.g. "Current individual membership in NDT or NDT related society"). However, candidates shall meet the total number of points required (i.e. 100 points) for each certificate for which renewal is being sought.	
	10.2 It is the responsibility of the certificate holder to initiate the procedure required for renewal. The renewal files shall be presented within six months before the date of expiration of the certification. As an exception, and based upon decision of the certification body, files presented within 12 months after the date of expiration may be considered. Over this period, no exception is admitted and the candidate shall be permitted to attempt a recertification examination.	10.3 It is the responsibility of the certificate holder to initiate the procedure required for renewal.	
		10.3.1 The renewal application should be made to the certification body before the date of the expiration of the certification and shall be no later than 12 months after the date of expiration of the certificate.	
		10.3.2 If the renewal application is received prior to or on the date of expiration of the certificate, the renewal date of the new certificate shall be the same as the date of expiration of the certificate (i.e. no interruption in certification). The date of expiration of the new certificate shall be no more than 5 years from the date of expiration of the original certificate.	
		10.3.3 If the renewal application is received after the date of expiration of the certificate, the renewal date of the new certificate shall be the date on which all requirements for renewal are met. In this case, there shall have been an interruption in the certification period. The date of expiration of the new certificate shall be no more than 5 years from the date of expiration of the original certificate.	
		10.4 The maximum period of validity of the certificate at renewal is 5 years.	
		10.5 Certificate holders at Level 1 and Level 2 not meeting the requirements for renewal shall fulfil the requirements for recertification as specified in 11.2.2. Certificate holders at Level 3 not meeting the requirements for renewal shall fulfil the requirements for recertification, as specified in 11.3.1.	

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11 Recertification	**11.1 General**	**11.1 General**	
	Prior to the completion of each second period of validity (every 10 years), the certified individual may be recertified by the certification body for a new period of five years or less, provided the individual meets the criterion for renewal specified in 10.1 a) and meets the applicable conditions described in the following.	Prior to the completion of each second period of validity, the certified individual shall be recertified by the certification body for a new period of five years or less, provided the individual meets the criterion for renewal specified in 10.1 a) and 10.1 b) and meets the applicable conditions described in the following.	
	It is the responsibility of certificate holders to initiate the procedures required to obtain recertification. If the recertification is applied for more than 12 months after expiry of the period of validity, a complete examination (general, specific, and practical) for Level 1 and Level 2 and a main method examination for Level 3 shall again be passed successfully.	It is the responsibility of certificate holders to initiate the procedures required to obtain recertification. If the recertification is applied for more than 12 months after expiry of the period of validity, a complete examination (general, specific, and practical) for Level 1 and Level 2 and a main method examination element (Table 6. items D, E and F) for Level 3 shall again be passed successfully.	
	11.2 Level 1 and 2	**11.2 Levels 1 and 2**	
	11.2.1 Levels 1 and 2 certificate holders seeking recertification shall meet the criterion for renewal specified in 10.1 b) and satisfy 11.2.2.	11.2.1 Levels 1 and 2 certificate holders seeking recertification shall provide a confirmation issued by the employer of continued satisfactory work activity without significant interruption in the method and sector for which recertification is sought and satisfy 11.2.2.	
	11.2.2 The individual shall successfully complete a practical examination which demonstrates continued competence to carry out work within the scope defined on the certificate. This shall include testing specimens (see Table B.1) appropriate to the scope of certification to be revalidated and in addition, for Level 2, the production of a written instruction suitable for the use of Level 1 personnel (see 8.2.3.9). If the individual fails to achieve a grade of at least 70 % for each specimen tested (weighted according to the guidance in Table 5), and, for Level 2, for the instruction, two retests of the whole recertification examination shall be allowed after at least 7 days and within six months of the first attempt at the recertification examination.	11.2.2 The individual shall successfully complete the practical examination element which demonstrates continued competence to carry out work within the scope specified on the certificate. This shall include testing specimens (see Annex B) appropriate to the scope of recertification and in addition, for Level 2, the production of a written instruction suitable for the use of Level 1 personnel (see 8.2.4.1). If the individual fails to achieve a grade of at least 70% for each specimen tested (weighted according to the guidance in Table 4), and, for Level 2, for the instruction, two re-examinations of the recertification examination shall be allowed after at least 7 days and within 12 months of the first attempt at the recertification examination.	
	In the event of failure in the two allowable retests, the certificate shall not be revalidated and, to regain certification for that level, sector and method, the candidate shall apply for new certification. In this case, no examination exemptions shall be awarded by virtue of any other valid certification held.	11.2.3 In the event of failure in the two allowable re-examinations, the certificate shall be withdrawn. In order to reinstate certification, a candidate shall:	
		- complete further training, acceptable to the certification body; and	
		- retake all examination elements required for initial certification.	
		The date of expiration of the reinstated certificate shall be no more than 5 years from the date of expiration of the original certificate.	
		11.2.4 If the criterion in 11.2.1 for recertification is not met, the individual shall complete the general, specific and practical examinations required by 11.1	
	11.3 Level 3	**11.3 Level 3**	
	11.3.1 Level 3 certificate holders seeking recertification shall provide evidence of continued qualification confirmed by:	11.3.1 Level 3 certificate holders seeking recertification shall provide a confirmation issued by the employer of continued satisfactory work activity without significant interruption in the method and sector for which recertification is sought and:	
	a) satisfying the Level 3 requirements of 11.3.2 for a written examination;	a) satisfy the Level 3 requirements of 11.3.3 for a written examination; or	
	b) meeting the requirements for a structured credit system, as given in Annex C.	b) meet the requirements for a structured credit system, as given in 11.3.2 and Table C1.	
	The individual may decide between the examination or credit system for recertification. If the credit system is chosen and requires submission of employer's documents or access to an employer's premises, the individual shall provide to the certification body a written statement of approval from the employer.	The individual shall decide between the examination or credit system for recertification. If the credit system is chosen and requires submission of employer's documents or access to an employer's premises, the individual shall provide to the certification body a written statement of approval from the employer.	
	In both cases (written examination or credit system), the individual shall either provide appropriate documented evidence, acceptable to the certification body, of his continued practical competence in the method or pass a Level 2 practical examination, as specified in 11.2.2, except for the drafting of NDT instructions.	In both cases (written examination or credit system), the individual shall either provide appropriate documented evidence, acceptable to the certification body, of their continued practical competence in the method or pass a Level 2 practical examination, as specified in 11.2.2 except for the drafting of NDT instructions.	
		11.3.2 Where a certificate holder elects to use the structured credit system, they shall provide evidence to the certification body to demonstrate achievement of a minimum of 100 points in the 5 year recertification period based on the requirements of Table C.1.	
		For certificate holders seeking recertification of Level 3 certification:	
		- a minimum of 50 and a maximum of 70 of the 100 points is required for any combination of activities listed in item A of Table C.1; and	
		- a minimum of 30 and a maximum of 50 of the 100 points is required for any combination of activities listed in item B of Table C.1.	
		Where a certification body has opted to implement a recertification period of less than 5 years, the minimum points required may be prorated accordingly [(i.e. a 4 year renewal period would require a minimum of 80 points (100 x 4/5)].	

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11 Recertification	11.3.2 The individual shall successfully complete an examination that includes a minimum of 20 questions on the application of the test method in the sector(s) concerned which demonstrates an understanding of current NDT techniques, standards, codes or specifications, and applied technology and, at the option of the certification body, five additional questions on the requirements of the certification scheme.	11.3.3 Where a certificate holder elects to take the written examination or does not meet the structured credit system requirements, they shall successfully complete an examination that includes: a) a minimum of 20 multiple-choice questions on the application of the test method in the sector(s) concerned which demonstrates an understanding of current NDT techniques, standards, codes or specifications, and applied technology; and b) a minimum of 10 multiple-choice questions on the requirements of the certification body's certification scheme.
	11.3.3 If the individual fails to achieve a grade of at least 70 % in the recertification examination, a maximum of two retests of the recertification examination shall be allowed. The time period within which all tests are to be taken shall be 12 months, unless otherwise extended by the certification body. In the event of failure in the two allowable retests, the certificate shall not be revalidated and, to regain certification for that sector and method the candidate shall be required to achieve success in the appropriate main method examination.	11.3.4 If the individual fails to achieve a grade of at least 70% in the recertification examination, a maximum of two retests of the recertification examination shall be allowed. The time period within which all tests are to be taken shall be 12 months, unless otherwise extended by the certification body.
		11.3.5 In the event of failure in the two allowable re-examinations, the certificate shall be withdrawn. In order to reinstate certification, a candidate shall: - complete further training, acceptable to the certification body; and - retake all main method examination items as required for initial certification. The date of expiration of the reinstated certificate shall be no more than 5 years from the date of expiration of the original certificate.
	11.3.4 A candidate who applies for and does not meet the requirements of the credit system shall be recertified in accordance with 11.3.2. In the event of failure at the first attempt at recertification by examination, only one retest of the recertification examination shall be allowed within 12 months of the date of application for recertification via the structured credit system.	11.3.6 A candidate who applies for and does not meet the requirements of the credit system shall be recertified in accordance with 11.3.2.. In the event of failure at the first attempt at recertification by examination, only one retest of the recertification examination shall be allowed within 12 months of the date of application for recertification via the structured credit system.
12 Files	The certification body or its authorized qualification bodies shall maintain:	The certification body shall be responsible for the maintenance of:
	a) an actual list or database of all certified individuals classified according to level, NDT method and sector;	a) an actual list or database of all certified individuals classified according to level, NDT method and sector;
	b) an individual file for each candidate who has not been certified, for at least five years from the date of application;	b) an individual file for each candidate who has not been certified, for at least five years from the date of application;
	c) an individual file(s) for each certified individual and for each individual whose certification has lapsed containing:	c) an individual file(s) for each certified individual and for each individual whose certification has lapsed containing:
	1) photograph or digital image taken within the past 10 years,	1) a unique personal identifier (e.g. a photo or reference to a photo identification by number);
	2) application forms,	2) application forms;
	3) examination documents, such as questionnaires, answers, description of specimens, records, results of test, NDT procedures, and grade sheets,	3) examination records, such as questionnaires, answers, description of specimens, records, results of test, NDT procedures, and grade sheets;
	4) renewal and recertification documents, including evidence of visual acuity and continuous activity,	4) renewal and recertification documents, including evidence of visual acuity and continuous work activity;
	5) reason(s) for any withdrawal of certification.	5) reason(s) for any withdrawal of certification.
	Individual files shall be kept under suitable conditions of safety and confidentiality for as long as the certificate remains valid and for at least one full certification cycle after the certification has lapsed.	Individual files shall be kept under suitable conditions of safety and confidentiality for as long as the certificate remains valid and for at least one full certification cycle after the certification has lapsed.
		NOTE The archiving of specimen, data sets or radiographs is not required.
13 Transition	13.1 The aim of this clause is to permit the initiation of the system when a certification body applies the certification scheme to an NDT method, which is not yet covered within its scheme or when a new sector is created. The certification body may temporarily appoint, for a period not exceeding five years from the date of implementation of the new method or sector, duly qualified personnel as examiners (see 3.9) for the purpose of conducting, supervising and grading the qualification examinations. The five year implementation period is not to be used by the certification body as a means to certify candidates who do not meet all the qualification and certification requirements of this International Standard.	13.1 The aim of this clause is to permit the initiation of the system when a certification body applies the certification scheme to an NDT method, which is not yet covered within its scheme or when a new sector is created. The certification body may temporarily appoint, for a period not exceeding five years from the date of implementation of the new method or sector, duly qualified personnel as examiners for the purpose of conducting, supervising and grading the examinations. The five year implementation period is not to be used by the certification body as a means to certify candidates who do not meet all the qualification and certification requirements of this document. When new/additional training requirements of the new method or sector are adopted, currently certified personnel shall provide documented evidence of full compliance at the next recertification cycle.
	13.2 Duly qualified personnel means that such personnel:	13.2 Duly qualified personnel means that such personnel:
	a) have the knowledge of the principles of NDT and the specific knowledge in relation to the sector;	a) have the knowledge of the principles of NOT and the specific knowledge in relation to the sector;
	b) have industrial experience of the application of the NDT method;	b) have industrial experience of the application of the NDT method;
	c) have the ability to conduct qualification examinations;	c) have the ability to conduct examinations;
	d) be able to interpret the questionnaire and results of qualification examinations.	d) be able to interpret the questionnaire and results of examinations.
	13.3 Within two years of the date of appointment, these examiners shall have gained certification by satisfying the requirements for recertification as described in 11.3.1.	13.3 Within two years of the date of appointment, these examiners shall have gained certification by satisfying the requirements for recertification as described in 11.3.1.
	14 Transition between EN 473:2008,[4] ISO 9712:2005 and this International Standard	
	Certification according to EN 473:2008[4] and/or ISO 9712:2005, awarded before publication of this International Standard, remains valid until the next mandatory step in the certification process, i.e. renewal or recertification, which shall be carried out according to this International Standard.	
	Certification according to this International Standard is considered as fulfilling the requirements of both EN 473:2008 and ISO 9712:2005; consequently, any requirement for certification to either of these standards is fulfilled by a certification according to this International Standard.	

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Annex A Sectors (Normative)	**A.1 General**	**A.1 General**
	When creating a sector, the certification body may standardize according to the reference lists of sectors in A.2 and A.3. This does not preclude the development of additional sectors to satisfy national needs.	When creating a sector, the certification body may standardize according to the reference lists of sectors in A.2 and A.3. This does not preclude the development of additional sectors to satisfy national needs.
		Sector certification may be available at all three levels of competence in all NOT methods or may be limited to particular methods or levels. However arranged, the scope of certification shall be specified on the certificate.
	A.2 Product sectors	**A.2 Product sectors**
	These include	These include:
		- metallic materials:
	a) castings (c) (ferrous and nonferrous materials);	a) castings (c) (ferrous and nonferrous materials);
	b) forgings (f) (all types of forgings: ferrous and non-ferrous materials);	b) forgings (f) (all types of forgings: ferrous and non-ferrous materials);
	c) welds (w) (all types of welds, including soldering, for ferrous and non-ferrous materials);	c) welds (w) (all types of welds, including soldering, for ferrous and non-ferrous materials);
	d) tubes and pipes (t) (seamless, welded, ferrous and non-ferrous materials, including flat products for the manufacturing of welded pipes);	d) tubes and pipes (t) (seamless, welded, ferrous and non-ferrous materials, including flat products for the manufacturing of welded pipes);
	e) wrought products (wp) except forgings (e.g. plates, bar, rods);	e) wrought products (wp) except forgings (i.e. plates, bar, rods);
		- composite materials:
		f) cement matrix composites (cc);
		g) reinforced plastics, such as fibre-reinforced polymers (frp);
		h) metal matrix composites (mmc);
		i) ceramic matrix composites (cmc).
	f) composite materials (p).	For composite materials, the certification body shall specify the requirements for examination.
	A.3 Industrial sectors	**A.3 Industrial sectors**
	Sectors combining a number of product sectors including all or some products or defined materials (e.g. ferrous and non-ferrous metals or non-metals like ceramics, plastics, and composites):	Sectors combining a number of product sectors including all or some products or specified materials (i.e. ferrous and non-ferrous metals or non-metals like ceramics, plastics, and composites):
	a) manufacturing;	a) manufacturing (m);
	b) pre- and in-service testing which includes manufacturing;	b) pre- and in-service testing which includes manufacturing (s);
	c) railway maintenance;	c) railway maintenance (r);
	d) aerospace.	d) aerospace (a).
	When creating an industrial sector, the certification body shall precisely define in its published documentation the scope of the new sector concerned in terms of product, object or item.	When creating an industrial sector, the certification body shall precisely specify in its published documentation the scope of the new sector concerned in terms of product, object or item.
	An individual certified in an industrial sector shall be regarded also as holding certification in the individual sectors from which the industrial sector is composed.	An individual certified in an industrial sector shall be regarded also as holding certification in each sector from which the industrial sector is composed.
	Sector certification may be available at all three levels of competence in all NDT methods or may be limited to particular methods or levels. However arranged, the scope of certification shall be defined on the certificate.	
	For composite materials, the certification body shall define the requirements for qualification examination.	

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Annex B (Normative)	Minimum number and type of specimens for the Level 1 and Level 2 practical examination	Minimum number and type of specimens for the Level 1 and Level 2 practical examination element

Table B.1 — Minimum number and type of specimens for the practical examination of Levels 1 and 2

Product sectors	Method and level															
	UT1	UT2	RT1	RT2	ET1	ET2	MT1	MT2	PT1	PT2	LT1	LT2	VT1	VT2	AT1	AT2
Castings	2	2	2	2 + 12 rs	2	2	2	2	2	2	2	2	2	2	1	1 + 2 ds
Forgings	2	2	2	2 + 12 rs	2	2	2	2	2	2	2	2	2	2	1	1 + 2 ds
Welds	2	2	2	2 + 12 rs	2	2	2	2	2	2	2	2	2	2	1	1 + 2 ds
Tubes and pipes	2	2	2	2 + 12 rs	2	2	2	2	2	2	2	2	2	2	1	1 + 2 ds
Wrought products	2	2	2	2 + 12 rs	2	2	2	2	2	2	2	2	2	2	1	1 + 2 ds
Industrial sectors (combining two or more product sectors)	UT1	UT2	RT1	RT2	ET1	ET2	MT1	MT2	PT1	PT2	LT1	LT2	VT1	VT2	AT1	AT2
Metal manufacturing	2	2	2	2 + 12 rs	2	2	2	2	2	2	2	2	2	2	1	1 + 2 ds
Pre- and in-service testing	3 c/f w	3 c/f w	2 c w	2 cw + 24 rs	3 t w	3 t w	3 c/f w	3 c/f w	3 c/f w	3 c/f w	3	3	3 c/f w	3 c/f w	1 c/f t w	1 + 2 ds c/f t w
Railway maintenance	2	2	—	—	2	2	2	2	2	2	—	—	2	2	—	—
Aerospace	3	3	2	2 + 12 rs	3	3	2	2	2	2	—	—	2	2	1	1 + 2 ds

For ST, the minimum number of specimens is 1 for Level 1 and 2 for Level 2.

For TT, the minimum number of specimens is 1 + 2 ds per industrial application.

Where the practical examination requires the testing of more than one specimen, the second or any subsequent specimens shall be different in character, e.g. in product form, material specification, shape, size, and discontinuity type, from those tested previously.

Where, after the number of specimens required, product sectors are indicated by appropriate letters, this means that specimens from these sectors shall be included in the practical examination.

For radiographic examination, Level 1 and Level 2 candidates shall radiograph at least two volumes — except for Level 2 candidates having passed a Level 1 qualification examination, where at least one volume is to be radiographed.

For leak-testing examination involving both pressure change and tracer gas, at least one specimen shall be tested for each.

Where a sector examination involves the testing of more than one product type, then the specimens tested shall be representative of all products or shall be selected at random by the examiner from the product range or materials which make up the sector.

A set of radiographs (12 or 24) shall be considered as one specimen.

Key: c = casting; f = forging; w = weld; t = tube; c/f = casting or forging; rs = radiographs; ds = datasets

a) For all practical examination elements, candidates shall be required to test one or more sector specific specimens.

b) If the candidate is required to test more than one specimen, each specimen shall be different in character, i.e. in product form, material specification, shape, size, or discontinuity type.

c) The evaluation and interpretation of a data set shall be considered as equivalent to testing one specimen.

d) For a product sector related practical examination elements: Candidates shall be required to test a minimum of two specimens and for multiple product sectors, a minimum of one from each product sector.

e) For an industrial sector related practical examination elements: Candidates shall be required to test at least two specimens, representative of products typically tested in the industrial sector.

f) For RT candidates: Level 1 and Level 2 candidates shall radiograph at least two specimens. Level 2 candidates, already certified as Level 1, shall radiograph at least one specimen. In addition to taking radiographs, Level 2 candidates shall interpret a set of at least 10 film images or 10 digital radiographic images. This set shall be considered as one specimen.

g) For LT candidates: An examination involving both pressure change and tracer gas technique shall include at least one specimen for each technique.

h) When the certification sought is limited in application, for example, thickness measurement, radiographic interpretation or automated testing, the minimum number of specimens may be reduced by up to 50 % to one per sector.

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Annex C (Normative)

Structured credit system for Level 3 recertification

Table C.1 — Structured credit system for Level 3 recertification

Item	Activity	Points accorded for each item (or function)	Maximum points per year per item	Maximum points per 5 year period per item
1	Membership of an NDT society, attendance at seminars, symposia, conferences and/or courses covering NDT and related sciences and technologies	1	3	8[a]
2.1	Attendance at international and national standardization committees	1	3	8[a]
2.2	Convenorship of standardization committees	1	3	8[ab]
3.1	Attendance at sessions of other NDT committees	1	3	8[a]
3.2	Convenorship of sessions of other NDT committees	1	3	8[ab]
4.1	Attendance at sessions of NDT related working groups	1	5	15[a]
4.2	Convenorship of NDT related working groups	1	5	15[ab]
5.1	NDT related technical/scientific contributions or publications	3	6	20[cd]
5.2	NDT related research work published	3	6	15[cd]
5.3	NDT research activity	3	6	15[cd]
6	NDT technical instructor (per 2 h) and/or NDT examiner (per examination)	1	10	30[d]
7	Professional activity	—	—	—
7.1	within a NDT facility, NDT training centre or NDT examination facility or for Engineering of NDT (see Annex E) (for each full year)	10	10	40[d]
7.2	Dealing with disputes referring to clients	1	5	15[d]
7.3	Development of NDT applications	1	5	15[d]

[a] Maximum points for items 1 to 4: 20.

[b] Points to be given for both convenorship and attendance.

[c] If there is more than one author, the lead author shall define points for the other authors.

[d] Maximum points for each of items 5 and 6: 30, and 7: 50.

In this system, the Level 3 candidate gains credit for participation, during the five years prior to recertification, in the various NDT activities shown in Table C.1. Limits are placed on the maximum number of points which can be gained in each year, and in any activity over the five years, to ensure an even spread of activities.

To be eligible for recertification:

a) a minimum of 70 points shall be accrued during the five year validity of the certificate;

b) a maximum of 25 points per year are accepted.

In addition to the recertification application, the candidate shall submit evidence of satisfying the criteria of Table C.1 as follows:

— agenda and list of attendees for the meetings under items 1 to 4;

— a brief description of research and development under item 5;

— references of technical or scientific publications authored under item 5;

— a summary of training delivered under item 6;

— for each certificate, evidence of work activity per year under item 7.

Structured credit system for renewal Level 1, 2 and 3 and for Level 3 recertification

C.1 General

Table C.1 — Structured credit system for renewal Level 1, 2 and 3 and for Level 3 recertification [a]

		Level 1			Level 2			Level 3		
Item	Activity	Points granted per activity	Maximum number of points per year of activity	Maximum number of points over 5 years of activity	Points granted per activity	Maximum number of points per year of activity	Maximum number of points over 5 years of activity	Points granted per activity	Maximum number of points per year of activity	Maximum number of points over 5 years of activity
	Part A									
1	**Performance of NDT Activities** [a]	2 / day	25	95	2 / day	25	95	2 / day	25	95
2	**Completion of theoretical training in the method**	1 / day	5	15	1 / day	5	15	1 / day	5	15
3	**Completion of practical training in the method**	2 / day	10	25	2 / day	10	25	2 / day	10	25
4	**Delivery of practical or theoretical training in NDT in the method considered**	N/A	N/A	N/A	1 / day	15	75	1 / day	15	75
5	**Participation in research activities in NDT field or for engineering of NDT (see Annex F)**	1 / week	15	60	1 / week	15	60	1 / week	15	60
	Part B									
6	**Participation to a technical seminar/paper in the field of the method or technique**	1 / day	2	10	1 / day	2	10	1 / day	2	10
7	**Presenting a technical seminar/paper in the field of the method or technique**	1 / presentation	3	15	1 / presentation	3	15	1 / presentation	3	15
8	**Current individual membership in NDT or NDT related society**	1 / membership	2	5	1 / membership	2	5	1 / membership	2	5
9	**Technical oversight and mentoring of NDT personnel/ trainee in the relevant method**	N/A	N/A	N/A	2 / mentee	10	30	2 / mentee	10	40
10	**Participation or convenorship in standardization and technical committees**	N/A	N/A	N/A	1 / committee	3	15	1 / committee	4	20

NOTE Where the term "year(s)" is noted in this table, this is specified as a certification year and not as a calendar year.

[a] See C.2 for specific details of this activity.

Table C.1 *(continued)*

		Level 1			Level 2			Level 3		
Item	Activity	Points granted per activity	Maximum number of points per year of activity	Maximum number of points over 5 years of activity	Points granted per activity	Maximum number of points per year of activity	Maximum number of points over 5 years of activity	Points granted per activity	Maximum number of points per year of activity	Maximum number of points over 5 years of activity
11	**Performing a technical NDT role within a certification body**	N/A	N/A	N/A	2 / activity	10	30	2 / activity	10	40

NOTE Where the term "year(s)" is noted in this table, this is specified as a certification year and not as a calendar year.

[a] See C.2 for specific details of this activity.

C.2 Performance of NDT activities

C.2.1 In assessing this activity type, the certification body should consider the responsibilities of employers as specified in 5.5 and the duties specified in Clause 6. The following work activities may be considered as acceptable:

a) knowledge and understanding of the customer's specifications and the inspection standards;

b) verification of operating conditions or setting up of the test equipment, successful performance of NDT, satisfactory reporting;

c) performance as a Level 3 examiner.

C.2.2 In order to assess the activities specified in C.2.1, the certification body may request from the individual seeking renewal or Level 3 recertification documentation and/or evidence to demonstrate compliance including, but not limited to, the following:

a) confirmation of the candidates work activities by a certified individual or referee;

b) confirmation of the level of activity of the individual in the given method;

c) confirmation of formal documented competency or proficiency test(s) in the given method;

d) dates and protocol numbers of reports;

e) details of any job specific training received;

f) confirmation of employer's authorization to operate;

g) summary of activities and outputs;

h) job/position description;

i) annual/regular employer assessments of performance/competence;

j) sample NDT reports;

k) sample procedure(s) developed (Level 3 only);

l) customer feedback;

m) confirmation of adherence to code of ethics from employer;

n) confirmation of compliance with additional national requirements (i.e. radiation safety).

Other evidence may be deemed acceptable or be requested by the certification body. The certification body may require that some or all of the submitted evidence be confirmed by the employer.

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Annex D (Normative)	**Grading practical examination elements**
Grading practical examination	**D.1 Grading of Level 1 and Level 2 practical examination element-percentile weighting**
D.1 Grading of Level 1 and Level 2 practical examination — guidance on the percentile weighting	

Table D.1 — Guidance on the percentile weighting for practical examination of Levels 1 and 2

Subject	Level 1	Level 2
Part 1 — Knowledge of the NDT apparatus:		
a) system control and functional checks;	10	5
b) verification of settings.	10	5
Total	**20**	**10**
Part 2 — Application of the NDT method:		
a) preparation of the specimen (e.g. surface condition), including visual examination;	5	2
b) for Level 2, the selection of the NDT technique and determination of operating conditions;	n/a	7
c) setting up of the NDT apparatus;	15	5
d) performance of the test;	10	5
e) post test procedures (e.g. demagnetization, cleaning, preservation).	5	1
Total	**35**	**20**
Part 3 — Detection of discontinuities and reporting:[a]		
a) detection of mandatory reportable discontinuities;	20	15
b) characterization (type, position, orientation, apparent dimensions, etc.);	15	15
c) Level 2 evaluation against code, standard, specification or procedure criteria;	n/a	15
d) production of the test report.	10	10
Total	**45**	**55**
Part 4 — NDT instruction writing (Level 2 candidates):[b]		
a) foreword (scope, reference documents);	—	1
b) personnel;	—	1
c) apparatus to be used, including settings;	—	3
d) product (description or drawing, including area of interest and purpose of the test);	—	2
e) test conditions, including preparation for testing;	—	2
f) detailed instructions for application of the test;	—	3
g) recording and classifying the results of test;	—	2
h) reporting the results.	—	1
Total	—	**15**
Overall grade for practical examination	**100 %**	**100 %**
To be successful, the candidate should achieve not less than 70 % in the NDT instruction writing part, i.e. 10,5 marks out of the 15,0 marks allowed.		

[a] The candidate failing to report a discontinuity specified on the specimen master report as "mandatory for candidates to report" when performing the test under the conditions specified in the master report shall be awarded zero marks for part 3 of the practical examination relating to the specimen tested. For RT, this condition applies to radiographic interpretation, i.e. failing one "mandatory to report" discontinuity on one radiograph leads to zero marks for the set of radiographs in part 3.

[b] The Level 2 candidate is required to produce an NDT instruction, suitable for Level 1 personnel, for a specimen selected by the examiner. When the Level 2 candidate is testing a specimen for which no NDT instruction is required, the grade is calculated as a percentage of the 85 remaining marks.

Table D.1 — Percentile weighting for practical examination element for Levels 1 and 2

Subject	% maximum (Level 1)	% maximum (Level 2)
Item 1 — Knowledge of the NDT equipment and/or NDT media:		
a) system and/or media knowledge and control;	10	5
b) validity of verifications and/or media.	10	5
Total	**20**	**10**
Item 2 — Application of the NDT method:		
a) preparation of the specimen (i.e. surface condition), including visual examination;	5	2
b) for Level 2, the selection of the NDT technique and determination of operating conditions;	n/a	10
c) setting up of the NDT apparatus and performance of the test;	25	12
d) post test procedures (i.e. demagnetization, cleaning, preservation).	5	2
Total	**35**	**26**
Item 3 — Detection of discontinuities and reporting:		
a) detection of mandatory reportable indications;	20	18
b) characterization of indications (if applicable with respect to the test method: type, position, orientation, apparent dimensions, etc.);	15	18
c) Level 2 evaluation against code, standard, specification or procedure criteria;	n/a	18
d) production of the test report.	10	10
Total	**45**	**64**
Total items 1, 2 and 3	**100**	**100**

D.2 Grading of Level 2 writing examination elements

Table D.2 — Percentile weighting for NDT instruction writing examination element for Level 2

NDT instruction writing (Level 2 candidates)	% maximum
a) foreword (scope, reference documents)	5
b) personnel	5
c) equipment/media to be used	5
d) product (description or drawing, including area of interest and purpose of the test)	10
e) test conditions, including preparation for testing	10

Table D.2 *(continued)*

NDT instruction writing (Level 2 candidates)	% maximum
f) detailed instructions for application of the test, including settings	40
g) recording and classifying of the test results	20
h) reporting the results	5
TOTAL	**100**

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Annex D (Normative)

D.2 Weighting of Level 3 NDT procedure examination

Table D.2 — Guidance on the percentile weighting for the Level 3 NDT procedure examination

Subject	% maximum
Part 1 — General:	
a) scope (field of application, product);	2
b) document control;	2
c) normative references and complementary information.	4
Sub-total	**8**
Part 2 — NDT personnel	**2**
Part 3 — Materials and equipment:	
a) main NDT equipment (including defining calibration status and pre-test serviceability checks);	10
b) ancillary equipment (reference and calibration blocks, consumables, measuring equipment, viewing aids, etc.).	10
Sub-total	**20**
Part 4 — Test piece:	
a) physical condition and surface preparation (temperature, access, removal of protective coatings, roughness, etc.);	1
b) description of area or volume to be tested, including reference datum;	1
c) discontinuities sought.	3
Sub-total	**5**
Part 5 — Performance of the test:	
a) NDT method(s) and technique(s) to be used;	10
b) setting up the apparatus;	10
c) conducting the test (including reference to NDT instructions);	10
d) characterization of discontinuities.	10
Sub-total	**40**
Part 6 — Acceptance criteria	**7**
Part 7 — Post test procedure:	
a) disposition of non-conforming product (labelling, segregation);	2
b) restoration of protective coatings (where required).	1
Sub-total	**3**
Part 8 — Production of the test report	**5**
Part 9 — Overall presentation	**10**
Grand total	**100**

D.3 Weighting of Level 3 main method examination element item F

Table D.3 — Percentile weighting for the Level 3 NDT procedure examination

Subject	% maximum
Item 1 — General:	
a) scope (field of application, product);	2
b) document control;	2
c) normative references and complementary information.	4
Sub-total	**8**
Item 2 — NDT personnel	**2**
Item 3 — Materials and equipment:	
a) main NDT equipment (including defining verification status and pre-test serviceability checks);	10
b) ancillary equipment (reference and calibration blocks, consumables, measuring equipment, viewing aids, etc.).	10
Sub-total	**20**
Item 4 — Test piece:	
a) physical condition and surface preparation (temperature, access, removal of protective coatings, roughness, etc.);	1
b) description of area or volume to be tested, including reference datum;	1
c) discontinuities sought.	3
Sub-total	**5**
Item 5 — Performance of the test:	
a) NDT method(s) and technique(s) to be used;	10
b) setting up the apparatus;	10
c) conducting the test (including reference to NDT instructions);	10
d) characterization of discontinuities.	10
Sub-total	**40**
Item 6 — Acceptance criteria	**7**
Item 7 — Post-test procedure:	
a) disposition of non-conforming product (labelling, segregation);	2
b) restoration of protective coatings (where required).	1
Sub-total	**3**
Item 8 — Production of the test report	**5**
Item 9 — Overall presentation	**10**
Total	**100**

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Annex E (Informative)	**Engineering of NDT**	**E.1 Definition**	
	E.1 Definition	**Engineering of NDT**	
	Engineering of NDT covers all the activities linked to NDT, from the design of the equipment to the responsibility of preparation, implementation and verification of NDT (in manufacturing and in service) of the same equipment belonging to industrial or technical installations.	Engineering of NDT covers all the activities linked to NDT, from the design of the equipment to the responsibility of preparation, implementation and verification of NDT (in manufacturing and in service) of the same equipment belonging to industrial or technical installations.	
	E.2 Non-exhaustive list of activities covered	**E.2 Non-exhaustive list of activities covered**	
	The activities covered include:	The activities covered include:	
	a) at design stage, definition of requirements to be taken into account and/or verification of inspectability during manufacturing and, where applicable, in service, of equipment;	a) at design stage, definition of requirements to be taken into account and/or verification of inspectability during manufacturing and, where applicable, in service, of equipment;	
	b) selection of NDT techniques to be implemented in manufacturing and/or in service;	b) selection of NDT techniques to be implemented in manufacturing and/or in service;	
	c) comparison of specific prescriptions of different codes and standards;	c) comparison of specific prescriptions of different codes and standards;	
	d) establish or validates the NDT procedures;	d) establishment or validation of the NDT procedures;	
	e) technical evaluation of NDT suppliers;	e) technical evaluation of NOT suppliers;	
	f) evaluation of NDT techniques, notably in the frame of expertise;	f) evaluation of NOT techniques, notably in the frame of expertise;	
	g) treatment (technical evaluation) of non-conformity;	g) treatment (technical evaluation) of non-conformity;	
	h) justification to the customers and where applicable, to the associated safety authorities, of practices implemented;	h) justification to the customers and where applicable, to the associated safety authorities, of practices implemented;	
	i) responsibility for a NDT facility;	i) responsibility for an NDT facility;	
	j) co-ordination and supervision of NDT personnel activities;	j) co-ordination and supervision of NDT personnel activities;	
	k) qualification — validation of NDT techniques:	k) qualification - validation of NDT techniques:	
	1) establishment of input information’s including the inspection objectives,	1) establishment of input information's including the inspection objectives;	
	2) definition of the necessary mocks-up for open and, where necessary, blind tests,	2) definition of the necessary mocks-up for open and, where necessary, blind tests;	
	3) implementation of practical tests,	3) implementation of practical tests;	
	4) preparation of technical justification including when necessary, modelling,	4) preparation of technical justification including when necessary, modelling;	
	5) preparation or validation of NDT procedures,	5) preparation or validation of NDT procedures;	
	6) preparation or validation of qualification dossiers;	6) preparation or validation of qualification dossiers;	
	l) establishment of in-service inspection programmes for industrial installations or definition of rules for the establishment of such programmes.	l) establishment of in-service inspection programmes for industrial installations or definition of rules for the establishment of such programmes.	

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Annex F (Informative)		**Training requirements for techniques**
		F.1 General
		This annex considers the increasing use of NDT techniques developed in the framework of an NDT method. This annex is also intended to provide guidance for an increasing request for competency in those techniques.
		The selection of NDT techniques included in this annex is not meant to be comprehensive nor exclusive and, therefore, leaves room for future techniques when their use becomes significant for inclusion in the annex.
		Direct access to Level 2 requires the total training days shown in each table for Levels 1 and 2. Direct access to Level 3 requires the total training days shown in the tables where applicable for Levels 1, 2, and 3.
		N/A means not applicable.
		F.2 Recommended additional training days for techniques
		F.2.1 General
		The training requirements for the techniques shown in Tables F.1 to F 4 1are in addition to those for the method shown in Table 2.
		Note The training requirements for the base methods from Table 2 are reproduced in the first line of Tables F1 to F3 for convenience.
		F.2.2 Validity
		Certification in a technique is valid as long as the certificate in the main method is valid.

Table F.1 — Leak testing (LT) techniques additional training requirements

Technique	Abbreviated term	Training requirements (days)		
		Level 1	Level 2	Level 3
LT (as per Table 2)		5	9	6
LT pressure method	LT-P	3	4	N/A
LT tracer gas method	LT-TG	2	5	N/A

Table F.2 — Magnetic testing (MT) techniques additional training requirements

Technique	Abbreviated term	Training requirements (days)		
		Level 1	Level 2	Level 3
MT (as per Table 2)		3	2	4
Flux leak-age	MT-FL	1	2	N/A

Table F.3 — Ultrasonic testing (UT) techniques additional training requirements

Technique	Abbreviated term	Training requirements (days)		
		Level 1	Level 2	Level 3
UT (as per Table 2)		8	10	5
Time of flight	UT-TOFD	5	5	N/A
Phased array	UT- PA	5	5	N/A

Table F.4 — Ultrasonic testing (UT) techniques additional prerequisites

Technique	Level 1	Level 2	Level 3
UT – TOFD	UT 1	UT 2	N/A
UT – PA	UT 1	UT 2	N/A
NOTE The level stated in the table is the minimum acceptable level of certification. A Level 3 certificate holder satisfies this requirement.			

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Annex F (Informative)		**F.3 Recommended total training days for radiographic testing (RT) techniques** F.3.1 General The training requirements for the techniques shown in Tables F.5 and F.6 are the total training days required for certification in the RT technique noted.
		F.3.2 Validity Certification in a technique is valid as long as the certificate in the main method is valid, except for techniques with limited scope. **Table F.5 — Radiographic testing (RT) techniques training requirements** NOTE At the present time, training shown in Table Z for RT is mainly film radiography (RT-F). When the training syllabi are in agreement with the recommendations in ISO/TS 25107, several situations are to be considered, RT including then film and digital radiography (RT-FD).
		F.3.3 Additional training requirements for film to digital transition Candidates holding an RT-F certificate and seeking certification in RT-D need to have additional training, as shown in Table F.6. **Table F.6 — Additional training requirements for RT-F to RT-D**
Annex G (Informative)		**Psychometric principles** If the certification body choses to use psychometric principles for the written examinations, then the following shall be required. Any reference to questions in this document relates to scorable questions, however, all questions (scorable and non-scorable) shall be considered when calculating examination times. Scorable questions are approved and validated test items submitted to certification body (or authorized qualification body) for entry into the item bank. Non-scorable questions (not used to determine pass/fail) are items developed and approved for use on future examinations but are not statistically validated. Validation requires a minimum number of exposures and item analysis as specified by the certification body before use as a scorable question. The minimum passing grade shall be 70 %. The grading of examinations shall be done in accordance with the psychometric process specified by the certification body.
Bibliography	[1] ISO/TS 22809, *Non-destructive testing — Discontinuities in specimens for use in qualification examinations* [2] ISO/TR 25107, *Non-destructive testing — Guidelines for NDT training syllabuses* [3] ISO/TR 25108, *Non-destructive testing — Guidelines for NDT personnel training organizations* [4] EN 473:2008, *Non-destructive testing — Qualification and certification of NDT personnel — General principles* [5] CEN/TR 14748, *Non-destructive testing — Methodology for qualification of non-destructive tests* [6] CEN/TS 15053, *Non-destructive testing — Recommendations for discontinuities-types in test specimens for examination*	[1] ISO/TS 22809, *Non-destructive testing - Discontinuities in specimens for use in qualification examinations* [2] ISO/TS 25107, *Non-destructive testing - NDT training syllabuses* [3] ISO/TS 25108, *Non-destructive testing - NDT personnel training organizations* [4] CEN/TR 14748, *Non-destructive testing - Methodology for qualification of non-destructive tests*

Table F.5 — Radiographic testing (RT) techniques training requirements

Technique	Technique with limited scope	Abbreviated term	Training requirements (days)		
			Level 1	Level 2	Level 3
Film & Digital		RT - FD	8	10	8
Film		RT – F	5	10	5
Digital		RT- D	5	10	5
Computed tomography		RT – CT	4	5	5
Radioscopy		RT – S	4	4	5
	RT Film interpretation	RT – FI	N/A	8	N/A
	RT digital image interpretation	RT – DI	NA	8	
	RT film and digital image interpretation	RT – FDI	NA	9	

Table F.6 — Additional training requirements for RT-F to RT-D

Method	Technique	Abbreviated term	Level 1	Level 2	Level 3
RT	Digital radiography	RT-D	3 days	5 days	3 days