EN ISO Standards reference sheet for NDT

LRQA

General Principles

EN 13018	Visual
ISO 3452-1	Penetrant
ISO 9934-1	Magnetic particle
ISO 15549	Eddy current
ISO 5579	Radiographic
ISO 16810	Ultrasonic
EN 13554	Acoustic emission
ISO 10880/EN 16714-1	Infrared thermographic

Terminology/ Vocabulary

EN 1330-1/EN 1330-2	GeneralNDT
EN 1330-10	Visual
ISO 12706	Penetrant
ISO 12707	Magnetic particle
ISO 24497-1	Metal magnetic
ISO 12718	Eddy current
ISO 5576/EN 1330-3	Radiographic
ISO 15708-1	Computed Tomography
EN 1330-11	X-ray diffraction
ISO 5577	Ultrasonic
ISO 23243	Ultrasonic arrays
ISO 20484	Leak testing
ISO 12716/EN 1330-9	Acoustic emission
ISO 10878/EN 16714-3	Infrared thermographic

Certification of NDT personnel

ISO 9712	by recognized third-party organization
ISO 20807	for limited application
ISO 11484	Employer based - steel products

Qualification of NDT personnel

ISO/TS 11774	Performance-based qualification
ISO/TS 25107	NDT training syllabuses
ISO/TS 25108	NDT personnel training organizations
ISO/TS 22809	for specimen for qualifications

Neutron radiographic testing

ISO 12721	Determination of beam L/D ratio

Leak testing methods

EN 13625	Guide to the selection of instrumentation for the measurement of gas leakage
EN 1779	Criteria for method and technique seletion
ISO 20486	Calibration of reference leaks for gases
EN 1518	Characterization of mass spectrometer leak detectors
EN 1593	Bubble emission techniques
EN 13184	Pressure change method
ISO 20485	Tracer gas method
ISO 18081	Leak detection by means of acoustic emission

General UT techniques

ISO 16823	Transmission technique
ISO 16826	Tandem technique for discontinuities perpendicular to the surface
ISO 16827	For characterization and sizing of discontinuities in general
ISO 16828	TOFD for detection and sizing of discontinuities

Automated ultrasonic testing

ISO/TS 16829	Selection and application of systems
ISO 24647	Robotic ultrasonic test systems

Penetrant

ISO 3452-2	Technical requirements and test procedures for penetrant materials
ISO 3452-3	Specification for reference test blocks
ISO 3452-4	Equipment for in situ inspection and fixed installations
ISO 3452-5	For penetrant testing at temperatures higher than 50° C
ISO 3452-6	For penetrant testing at temperatures lower than 10° C
CEN/TS 17100	For reference photographs and sizing of indications

Magnetic particle

ISO 9934-2	Technical requirements and test procedures for magnetic particle test mediums
ISO 9934-3	Equipment for in situ inspection and fixed installations

Pulsed eddy current

ISO 20669	Testing of ferromagnetic metallic components

Infrared thermography testing

EN 17119	Active thermography
EN 17501	Active thermography with laser excitation
ISO 18251-1	Characteristics of system and equipment
ISO 18251-2	Test method for integrated performance of system and equipment
EN 16714-2	Properties and requirements for equipment
ISO 22290	General principles for thermoelastic stress measuring method

Acoustic emission

EN 13477-1	For equipment description
EN 13477-2	For verification of operating characteristics
ISO 12713	For primary calibration of transducers
ISO 12714	For secondary calibration of acoustic emission sensors
ISO 24543	For verification of the receiving sensitivity spectra of piezoelectric acoustic emission sensors
ISO/TR 13115	Methods for absolute calibration of acoustic emission transducers by the reciprocity technique

Guided waves examination

ISO 18211	Long range inspection of above ground pipelines and plant piping
ISO 4773	Ultrasonic guided-wave testing using the phased-array technique

Computed Tomography

Classification of systems	ISO 16371-1/EN 14784-1
General principles	ISO 16371-2
Principles, equipment and samples	ISO 15708-2
Operation and interpretation	ISO 15708-3
Qualification	ISO 15708-4

Qualification of radiographic film digitisation systems

Definitions and qualitative control	ISO 14096-1
Minimum requirements	ISO 14096-2

Viewing conditions

ISO 5580	Requirements Industrial radiographic illuminators
ISO 3059	Viewing conditions for penetrant and magnetic particle testing
CEN/TR 16638	Penetrant and magnetic particle testing using blue light
CEN/TR 17108	Lighting in penetrant and magnetic particle testing, good practice

Visual

EN 13927	Properties and requirements for equipment
ISO 3058	Aids to visual inspection - Selection of low-power magnifiers

Product standards

Castings	General/Steel		Aluminium
Visual	EN 1370	ISO 11971	ISO 10049
Penetrant	EN 1371-1 & 2	ISO 4987	
Magnetic par.	EN 1369	ISO 4986	
Radiographic	EN 12681-1	ISO 4993	
Digital Rad.	EN 12681-2		

	General	High stress graphite	Spheroidal
Ultrasonic	EN 12680-1	EN 12680-2	EN 12680-3
Ultrasonic	ISO 4992-1	ISO 4992-2	

Forgings

Penetrant	EN 10228-1	for steel forgings
Magnetic par.	EN 10228-2	for steel forgings
Ultrasonic	EN 10228-3	for ferritic or martensitic steel forgings
Ultrasonic	EN 10228-4	for austenitic and austenitic-ferritic steel forgings

Flat products/plates

Ultrasonic	ISO 17577	For steel flat products of thickness equal to or greater than 6 mm
Ultrasonic	EN 10307	For austenitic/austenitic-ferritic stainless steels flat products of thickness equal to or greater than 6 mm (reflection method)

Claddings

Ultrasonic	ISO 17405	For testing claddings produced by welding, rolling and explosion
Ultrasonic	ISO 4386-1	For testing of bond for metallic multilayer plain bearings

Titanium Tubes

Eddy current	ISO25902-1	Automated test for imperfections
Ultrasonic	ISO25902-2	Automated test for longitudinal imperfections

Steel Tubes

Eddy current	ISO 10893-1	Automated test for hydraulic leak tightness
Eddy current	ISO 10893-2	Automated test for imperfections
Flux leakage	ISO 10893-3	Automated test for imperfections
Penetrant	ISO 10893-4	For the detection of surface imperfections
Magnetic particle	ISO 10893-5	For the detection of surface imperfections
Radiographic	ISO 10893-6	For the detection of imperfections in weld seam
Radiographic	ISO 10893-7	Digital radiographic testing for weld seam
Ultrasonic	ISO 10893-8	Automated test for laminar imperfections
Ultrasonic	ISO 10893-9	Automated test for lam. imp. in strip/plate for tubes
Ultrasonic	ISO 10893-10	Automated test for imperfections
Ultrasonic	ISO 10893-11	Automated test for imperfections in weld seam
Ultrasonic	ISO 10893-12	Automated test for thickness testing
Ultrasonic	ISO 10332	Automated test for hydraulic leak tightness

Additive manufacturing

ISO/ASTM TR 52905	NDT and evaluation; Defect detection in parts
ISO/ASTM DIS52948	AM for metals; Imperfections classification in PBF parts
ISO/ASTM/TR 52906	NDT; Intentionally seeding flaws in metallic parts
ISO/ASTM 52908	Post-processing; testing of parts produced by powder bed fusion
ISO/ASTM 52910	Design — Requirements, guidelines and recommendations
ISO/ASTM TR 52917	AM Round robin testing — General guidelines

NDT for welding

General	ISO 17635	ISO 5817
Visual	ISO 17637	ISO 5817
Penetrant	ISO 3452-1	ISO 23277
Magnetic particle	ISO 17638	ISO 23278
Metal magnetic	ISO 24497-2	--
Eddy current	ISO 17643	--
Radiographic	ISO 17636-1	ISO 10675-1 & 2
Digital Radiographic	ISO 17636-2	ISO 10675-1 & 2

Welding - UT techniques

			Acceptance criteria
Ultrasonic	ISO 17640	For manual UT on full penetration joints of ferritic steel thickness ≥ 8mm	ISO 11666
Ultrasonic	ISO 10863	For Time of Flight (TOFD) on full penetration joints of simple geometry of ferritic steel thickness ≥ 6mm	ISO 15626
Ultrasonic	ISO 13588	For Phased Array Ultrasonic (PAUT) on full penetration joints of ferritic steel thickness ≥ 6mm	ISO 19285
Ultrasonic	ISO 20601	For Phased Array Ultrasonic on full penetration joints of thin-walled ferritic steel components ≥ 3.2mm	ISO 4761
Ultrasonic	ISO 23864	For TFM/FMC Ultrasonic on full penetration joints of ferritic steel thickness ≥ 3.2mm	ISO 19285
Ultrasonic	ISO 22825	For development of ultrasonic testing technique for welds in austenitic steels and nickel-based alloys	
Ultrasonic	ISO 23279	Characterization of discontinuities in welds	

Welding; Quality levels for imperfections

For steel, nickel, titanium and their alloys

ISO 5817	Quality levels for fusion-welded joints
ISO 12932	Quality levels for laser-arc hybrid welding
ISO 13919-1	Quality levels for electron/ laser-beam welded joints

For aluminium and its alloys

ISO 10042	Quality levels for arc-welded joints
ISO 13919-2	Quality levels for electron/ laser-beam welded joints

Classification of geometric imperfections in metallic materials

ISO 6520-1	Classification imperfections for fusion welding
ISO 6520-2	Classification imperfections for welding with pressure
ISO/TS 17845	Designation system for welding and allied processes

Evaluation of a weld design for non-destructive testing

CEN/TR 15135	Design and non-destructive testing of welds
ISO/TR 15608	Guidelines for a metallic materials grouping system
ISO 17659	Multilingual terms for welded joints with illustrations
ISO 9692-1	Joint preparation; Arc and beam welding of steels
ISO 9692-2	Joint preparation; Submerged arc welding of steels
ISO 9692-3	Joint preparation; Arc welding of aluminium and alloys
ISO 9692-4	Joint preparation; Clad steels
ISO 18785-2	Friction stir spot welding; Design of weld joints
ISO 25239-2	Friction stir welding; Design of weld joints

Brazing

EN 12799	Non-destructive examination of brazed joints
ISO 18279	Imperfections in brazed joints

Characteristics and verification of test equipment

	Eddy current	ET Array	Ultrasonic/ TOFD	Phased Array
For instrument	ISO 15548-1		ISO 22232-1	ISO 18563-1
For probe	ISO 15548-2	ISO 20339	ISO 22232-2	ISO 18563-2
For system	ISO 15548-3		ISO 22232-3	ISO 18563-3
For ultrasonic thickness measuring equipment			EN 15317	

Ultrasonic calibration/ reference blocks

ISO 16811	Sensitivity and range setting
ISO 2400	Specification for calibration block No. 1
ISO 7963	Specification for calibration block No. 2
ISO 16946	Specification for step wedge calibration block
ISO 19675	Specification for calibration block PAUT

Characteristics of focal spots in industrial X-ray systems

Scanning method	EN 12543-1
Pinhole camera radiographic method	EN 12543-2/ISO/DIS 32543-1
Slit camera radiographic method	EN 12543-3
Edge method	EN 12543-4
Measurement for mini and micro focus	EN 12543-5

Image quality of radiographs

ISO 19232-1	Determination of the image quality value using wire-type image quality indicators
ISO 19232-2	Determination of the image quality value using step/hole-type image quality indicators
ISO 19232-3	Image quality classes
ISO 19232-4	Experimental evaluation of image quality values and image quality tables
ISO 19232-5	Determination unsharpness/ basic spatial resolution with duplex wire-type

Gamma radiography

ISO 3999	Apparatus for industrial gamma radiography
EN 12679	Determination of the size of industrial radiographic gamma sources

Industrial radiographic film

ISO 11699-1	Classification of film systems for industrial radiography
ISO 11699-2	Control of film processing by means of reference values

Specific material / Equipment

Concrete

Acoustic emission	ISO 16836	For acoustic emission signals in concrete
Acoustic emission	ISO 16837	For damage qualification of reinforced concrete beam

Pressure equipment examination

Acoustic emission	ISO 24367	Metallic pressure equipment
Acoustic emission	EN 14584	Examination of metallic pressure equipment during proof testing
Acoustic emission	EN 17391	In-service monitoring of metallic pressure equipment
Acoustic emission I	ISO 16148	For periodic inspection refillable seamless steel gas cylinders and tubes

Fibre-reinforced polymers

Acoustic emission	EN 15857/ISO 18249 Specific methodology and general evaluation criteria

Unfired Pressure Vessels

EN 13445-5	Inspection and Testing requirements, it includes **procedures** for non-destructive testing
CEN/ TS 13445-501	Unfired pressure vessels - acoustic emission for pressure vessels

Industrial Piping

EN 13480-5	Inspection and Testing requirements, it includes **procedures** for non-destructive testing

Water-tube Boilers

EN 12952-6	Inspection during construction, it includes **procedures** and **acceptance criteria** for NDT.

Shell Boiler

EN 12953-5	Inspection during construction, it includes **procedures** and **acceptance criteria** for NDT.

Cryogenic Vessels

EN 13530-2	Design and construction, it includes **procedures** and a **acceptance criteria** for NDT.

Welded Steel Tanks for Atmospheric Pressure Storage

EN 14015	Design and construction, it includes **procedures** and **acceptance criteria** for NDT.

Onshore steel pipelines and pipework used in gas infrastructure

EN 12732	Welding procedures and materials, it includes **procedures** and **acceptance criteria** for NDT

Pipeline transportation systems for petroleum and natural gas industries

EN 14161	Design and construction, it includes **procedures** for non-destructive testing

Wall thickness measurement/ Corrosion detection

Ultrasonic	ISO 16809
Radiographic	ISO 20769-1 / ISO 20769-2
TOFD	EN 17290

General principles for the detection of corrosion

Acoustic emission	EN 15856

Detection of corrosion at metallic storage tank floors

Acoustic emission	ISO 24489

General note: Standard prefix references (e.g., EN, ISO, TR) are provided only for the highest level known at the time of drafting this document. Always verify the current status, validity, and specific national version through publications by a national standardization institute or an official standards provider.