
Non-destructive testing of steel tubes —

Part 12:

**Automated full peripheral ultrasonic
thickness testing of seamless and welded
(except submerged arc-welded) steel
tubes**

Essais non destructifs des tubes en acier —

*Partie 12: Contrôle automatisé de l'épaisseur par ultrasons sur toute la
circonférence des tubes en acier sans soudure et soudés (sauf à l'arc
immergé sous flux en poudre)*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 10893-12 was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 19, *Technical delivery conditions for steel tubes for pressure purposes*.

This first edition cancels and replaces ISO 10543:1993, which has been technically revised.

ISO 10893 consists of the following parts, under the general title *Non-destructive testing of steel tubes*:

- *Part 1: Automated electromagnetic testing of seamless and welded (except submerged arc-welded) steel tubes for the verification of leaktightness*
- *Part 2: Automated eddy current testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of imperfections*
- *Part 3: Automated full peripheral flux leakage testing of seamless and welded (except submerged arc-welded) ferromagnetic steel tubes for the detection of longitudinal and/or transverse imperfections*
- *Part 4: Liquid penetrant inspection of seamless and welded steel tubes for the detection of surface imperfections*
- *Part 5: Magnetic particle inspection of seamless and welded ferromagnetic steel tubes for the detection of surface imperfections*
- *Part 6: Radiographic testing of the weld seam of welded steel tubes for the detection of imperfections*
- *Part 7: Digital radiographic testing of the weld seam of welded steel tubes for the detection of imperfections*
- *Part 8: Automated ultrasonic testing of seamless and welded steel tubes for the detection of laminar imperfections*
- *Part 9: Automated ultrasonic testing for the detection of laminar imperfections in strip/plate used for the manufacture of welded steel tubes*
- *Part 10: Automated full peripheral ultrasonic testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of longitudinal and/or transverse imperfections*

- *Part 11: Automated ultrasonic testing of the weld seam of welded steel tubes for the detection of longitudinal and/or transverse imperfections*
- *Part 12: Automated full peripheral ultrasonic thickness testing of seamless and welded (except submerged arc-welded) steel tubes*

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Non-destructive testing of steel tubes —

Part 12:

Automated full peripheral ultrasonic thickness testing of seamless and welded (except submerged arc-welded) steel tubes

1 Scope

This part of ISO 10893 specifies requirements for the automated full peripheral ultrasonic testing of seamless and welded steel tubes, with the exception of submerged arc-welded (SAW) tubes, for wall thickness measurement. It specifies the testing method and corresponding calibration procedures.

NOTE 1 Full peripheral testing does not necessarily mean that 100 % of the tube surface is scanned.

NOTE 2 This test can be carried out simultaneously with full peripheral ultrasonic testing for the detection of laminar imperfections (see ISO 10893-8) using the same ultrasonic transducers for both inspection requirements. Under these circumstances, the minimum lamination size under detection determines the percentage of the tube surface for scanning, according to ISO 10893-8.

This part of ISO 10893 can also be applicable to the testing of circular hollow sections.

This part of ISO 10893 is applicable to the thickness measurement of tubes with a specified outside diameter equal to or greater than 25,4 mm and a minimum wall thickness of 2,6 mm, unless otherwise agreed on.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5577, *Non-destructive testing — Ultrasonic inspection — Vocabulary*

ISO 9712, *Non-destructive testing — Qualification and certification of personnel*

ISO 11484, *Steel products — Employer's qualification system for non-destructive testing (NDT) personnel*