

# INTERNATIONAL STANDARD

**ISO**  
**9302**

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## **Seamless and welded (except submerged arc-welded) steel tubes for pressure purposes — Electromagnetic testing for verification of hydraulic leak-tightness**

*Tubes en acier sans soudure et soudés (sauf à l'arc immergé) pour service  
sous pression — Contrôle électromagnétique pour vérification de  
l'étanchéité*



Reference number  
ISO 9302:1994(E)

## 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.

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.

International Standard ISO 9302 was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 19, *Technical delivery conditions for steel tubes for pressure purposes*.

Annexes A and B of this International Standard are for information only.

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# Seamless and welded (except submerged arc-welded) steel tubes for pressure purposes — Electromagnetic testing for verification of hydraulic leak-tightness

## 1 Scope

This International Standard specifies requirements for electromagnetic testing of seamless and welded tubes (ferromagnetic steels), for pressure purposes, with the exception of submerged arc-welded (SAW) tubes, for verification of hydraulic leak-tightness. It is applicable to the inspection of tubes with an outside diameter greater than or equal to 4 mm.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 235:1980, *Parallel shank jobber and stub series drills and Morse taper shank drills*.

ISO 286-2:1988, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts*.

ISO 4200:1991, *Plain end steel tubes, welded and seamless — General tables of dimensions and masses per unit length*.

ISO 11484:—<sup>1)</sup>, *Steel tubes for pressure purposes — Qualification and certification of non-destructive testing (NDT) personnel*.

## 3 General requirements

**3.1** The electromagnetic inspection covered by this International Standard is usually carried out on tubes after completion of all the primary production process operations.

This inspection shall be carried out by personnel certificated in accordance with ISO 11484, as nominated by the manufacturer. In the case of third-party inspection, this shall be agreed between the purchaser and manufacturer.

**3.2** The tubes to be tested shall be sufficiently straight to ensure the validity of the test. The surfaces shall be sufficiently free from foreign matter which would interfere with the validity of the test.

## 4 Method of test

**4.1** The tubes shall be tested for verification of hydraulic leaktightness using a concentric coil or a rotating tube/pancake coil eddy current technique, or a rotating tube/magnetic transducer flux leakage technique. See figures 1 to 3.

### NOTES

1 It is recognized that there is a short length at both tube ends which may not be able to be tested.

2 Guidance notes on limitations associated with the eddy current test method and the magnetic transducer/flux leakage technique are given in annexes A and B respectively.

1) To be published.