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Submerged arc-welded steel tubes for pressure purposes — Ultrasonic testing of the weld seam for the detection of longitudinal and/or transverse imperfections

*Tubes en acier soudés à l'arc submergé pour service sous pression —
Contrôle par ultrasons du cordon de soudure pour la détection des
imperfections longitudinales et/ou transversales*



Reference number
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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.

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 9765 was prepared by Technical Committee ISO/TC 17, *Steel*.

Introduction

This International Standard concerns ultrasonic testing of the weld seam of submerged arc-welded (longitudinally or spirally) tubes for the detection of imperfections oriented predominantly parallel and/or at right angles to the weld seam.

Three different acceptance levels are considered (see table 1 and table 2). The choice between these acceptance levels is within the province of the ISO Technical Committee responsible for the development of the relevant quality standards.

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1 Scope

1.1 This International Standard specifies requirements for the ultrasonic testing of the weld seam of submerged arc-welded (longitudinally or spirally) tubes for the detection of imperfections oriented predominantly parallel to and/or at right angles to the weld seam, according to three different acceptance levels (see table 1 and table 2).

1.2 This International Standard covers the inspection of tubular products with outside diameter greater than or equal to 150 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*.

3 General requirements

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

For cold-expanded tubes, the ultrasonic testing of the weld shall be carried out after expansion.

In the case of spirally welded tubes, where the tube is not to be subsequently subjected to a hydrostatic test, the acceptance test may be carried out on-line.

This inspection shall be carried out by suitably trained operators and supervised by competent personnel 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 weld of the longitudinally or spirally welded tube shall be tested using an ultrasonic technique for the detection of imperfections oriented predominantly parallel and/or at right angles to the weld seam.

In both cases, testing shall be carried out in two opposing directions of beam travel, unless otherwise agreed between purchaser and manufacturer.

4.2 During testing, the tubes and/or the transducer assembly shall be maintained in proper alignment with the weld so that the whole of the weld seam is scanned.

4.3 When the weld seam at the tube ends cannot be tested by automatic ultrasonic equipment, the manufacturer shall carry out either a manual ultrasonic test in accordance with this International Standard or a radiographic test of the weld seam which has not been automatically tested.