

---

---

**Non-destructive testing of steel tubes —  
Automated ultrasonic testing of seamless  
and welded (except submerged  
arc-welded) steel tubes for verification of  
hydraulic leak-tightness**

*Essais non destructifs des tubes en acier — Contrôle automatisé par  
ultrasons pour vérification de l'étanchéité hydraulique des tubes en  
acier sans soudure et soudés (sauf à l'arc immergé)*

Sample Document

get full document from [standards.iteh.ai](https://standards.iteh.ai)



**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

# Sample Document

get full document from [standards.iteh.ai](https://standards.iteh.ai)



## **COPYRIGHT PROTECTED DOCUMENT**

© ISO 2010

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

## Contents

Page

Foreword .....	iv
<b>1 Scope .....</b>	<b>1</b>
<b>2 Normative references .....</b>	<b>1</b>
<b>3 Terms and definitions .....</b>	<b>1</b>
<b>4 General requirements .....</b>	<b>2</b>
<b>5 Method of test .....</b>	<b>3</b>
<b>6 Reference tube.....</b>	<b>3</b>
6.1 General .....	3
6.2 Types of reference notches .....	3
6.3 Dimensions of reference notches.....	4
6.3.1 Width, $w$ .....	4
6.3.2 Depth, $d$ .....	4
6.3.3 Notch length.....	4
6.4 Reference hole.....	4
6.5 Verification of the reference standards.....	5
<b>7 Equipment calibration and checking.....</b>	<b>5</b>
7.1 General .....	5
7.2 Adjustment of the trigger/alarm level.....	5
7.3 Calibration check and re-calibration .....	5
<b>8 Acceptance .....</b>	<b>6</b>
<b>9 Test method .....</b>	<b>6</b>
<b>Annex A (normative) Manual/semi-automated testing of untested ends and suspected areas .....</b>	<b>7</b>

## 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 10332 was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 19, *Technical delivery conditions for steel tubes for pressure purposes*.

This second edition cancels and replaces the first edition (ISO 10332:1994), which has been technically revised.

Sample Document

get full document from [standards.iteh.ai](https://standards.iteh.ai)

# Non-destructive testing of steel tubes — Automated ultrasonic testing of seamless and welded (except submerged arc-welded) steel tubes for verification of hydraulic leak-tightness

## 1 Scope

This International Standard specifies requirements for automated ultrasonic shear-wave (generated by single element probes or the phased-array technique) testing of seamless and welded (except submerged arc-welded) steel tubes, for verification of hydraulic leak-tightness.

The testing technique is applied for the detection of predominantly longitudinal imperfections.

Where applicable, Lamb-wave testing may be applied at the discretion of the manufacturer.

This International Standard is applicable to the inspection of tubes with an outside diameter greater than or equal to 10 mm, and with an outside diameter-to-thickness ratio greater than or equal to 5.

## 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*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5577, ISO 11484 and the following apply.

### 3.1

#### reference standard

standard for the calibration of non-destructive testing equipment

EXAMPLE Drill hole(s), notch(es), recess(es).

### 3.2

#### reference tube

tube or length of tube containing the reference standard(s)

### 3.3

#### reference sample

sample containing the reference standard(s)