



National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 10246-7:2005

ICS 23.040.10
77.040.20

**NON-DESTRUCTIVE TESTING OF STEEL
TUBES - PART 7: AUTOMATIC FULL
PERIPHERAL ULTRASONIC TESTING OF
SEAMLESS AND WELDED (EXCEPT
SUBMERGED ARC WELDED) TUBES FOR THE
DETECTION OF LONGITUDINAL
IMPERFECTIONS**

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EUROPEAN STANDARD
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EN 10246-7

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Supersedes EN 10246-7:1996

English Version

Non-destructive testing of steel tubes - Part 7: Automatic full peripheral ultrasonic testing of seamless and welded (except submerged arc welded) tubes for the detection of longitudinal imperfections

Essais non destructifs des tubes en acier - Partie 7 :
Contrôle automatique par ultrasons sur toute la
circonférence des tubes en acier sans soudure et soudés
(sauf à l'arc immergé sous flux en poudre) pour la détection
des imperfections longitudinales

Zerstörungsfreie Prüfung von Stahlrohren - Teil 7:
Automatische Ultraschallprüfung nahtloser und
geschweißter (ausgenommen unterpulvergeschweißter)
Stahlrohre über den gesamten Rohrumfang zum Nachweis
von Längsfehlern

This European Standard was approved by CEN on 26 August 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This European Standard (EN 10246-7:2005) has been prepared by Technical Committee ECISS/TC 29 “Steel tubes and fittings for steel tubes”, the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2006, and conflicting national standards shall be withdrawn at the latest by April 2006.

This European Standard supersedes EN 10246-7:1996.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EN 10246-7:2005 (E)

1 Scope

This part of EN 10246 specifies the requirements for automatic full peripheral ultrasonic shear wave (including phased array technique) and Lamb wave testing of seamless and welded steel tubes, with the exception of submerged arc-weld (SAW) tubes, for the detection of longitudinal imperfections. This European Standard specifies acceptance levels and calibration procedures.

This part of EN 10246 is applicable to the inspection of tubes with an outside diameter > 10 mm, and with an outside diameter-to-thickness ratio ≥ 5 .

For tubes with an outside diameter-to-thickness ratio < 5 , one of the options specified in Annex B shall be used by agreement between purchaser and manufacturer.

The European Standard EN 10246 "Non-destructive testing of steel tubes" comprises the parts shown in Annex A.

2 General requirements

2.1 The ultrasonic inspection covered by this Part of EN 10246 is usually carried out on tubes after completion of all the primary production process operations.

The inspection shall be carried out by suitably trained, qualified and competent personnel approved by the manufacturer.

2.2 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 could interfere with the validity of the test.

3 Method of test

3.1 The tubes shall be tested using an ultrasonic shear wave or Lamb wave technique for the detection of predominantly longitudinal imperfections.

3.2 During testing, the tubes and the transducer assembly shall be moved relative to each other so that the whole of the tube length is scanned.

It is recognised that there may be a short length at both tube ends which cannot be tested. Any untested ends shall be dealt with in accordance with the requirements of the appropriate product standards (see also Annex C).

The relative speed of movement during testing shall not vary by more than $\pm 10\%$.

3.3 During testing, the tubes shall be scanned in two opposing circumferential directions of beam travel, unless otherwise agreed between purchaser and manufacturer.

3.4 The ultrasonic test frequency to be applied shall be in the range of 1 MHz to 15 MHz for shear wave technique and in the range of 0,3 MHz to 1 MHz for Lamb waves, depending upon the thickness and surface finish of the tube to be tested.

3.5 The maximum width of each individual transducer, measured parallel to the major axis of the tube, shall be 25 mm for shear waves and 35 mm for Lamb waves.

For U1 and U2 category tubes with an outside diameter equal to or less than 50mm, the width of any one shear wave transducer is normally restricted to a maximum of 12,5 mm (see also 4.3).

3.6 The equipment shall be capable of classifying tubes as either acceptable or suspect tubes by means of an automatic trigger/alarm level combined with a marking and/ or sorting system.

3.7 Where manual ultrasonic testing of untested tube ends and/or local suspect areas is required, this shall be carried out in accordance with Annex C.

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