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Standards

Irish Standard  
I.S. EN 1971-1:2011

# Copper and copper alloys - Eddy current test for measuring defects on seamless round copper and copper alloy tubes - Part 1: Test with an encircling test coil on the outer surface

## I.S. EN 1971-1:2011

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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SWIFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces:*  
EN 1971:1998

*This document is based on:*  
EN 1971-1:2011

*Published:*  
20 December, 2011

This document was published  
under the authority of the NSAI  
and comes into effect on:  
20 December, 2011

**ICS number:**  
77.150.30

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English Version

**Copper and copper alloys - Eddy current test for measuring defects on seamless round copper and copper alloy tubes - Part 1: Test with an encircling test coil on the outer surface**

Cuivre et alliages de cuivre - Méthode de contrôle par courants de Foucault pour le mesurage des défauts des tubes ronds sans soudure en cuivre et alliages de cuivre - Partie 1: Essai avec une bobine encerclante sur la paroi externe

Kupfer und Kupferlegierungen - Wirbelstromprüfung an Röhren zur Messung von Fehlern an nahtlos gezogenen runden Röhren aus Kupfer und Kupferlegierungen - Teil 1: Prüfung mit umfassender Spule auf der Außenseite

This European Standard was approved by CEN on 5 November 2011.

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## Foreword

This document (EN 1971-1:2011) has been prepared by Technical Committee CEN/TC 133 "Copper and copper alloys", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by June 2012, and conflicting national standards shall be withdrawn at the latest by June 2012.

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

This document supersedes EN 1971:1998.

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

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/WG 3 "Copper tubes (installation and industrial)" to revise the following document:

EN 1971:1998, *Copper and copper alloys — Eddy current test for tubes*

This is one of two parts of the standard for the eddy current test for measuring defects on seamless round copper and copper alloy tubes. The other part is:

EN 1971-2, *Copper and copper alloys — Eddy current test for measuring defects on seamless round copper and copper alloy tubes — Part 2: Test with an internal probe on the inner surface*

In comparison with the first edition of EN 1971:1998, the following significant technical changes were made:

- split of and extension in two parts;
- modification of Scope – introduction of the choice of test method with encircling coil or internal probe.

## **Introduction**

The eddy current test described in this European Standard has the objective of detecting during production potential leaks and serious defects in seamless round copper and copper alloy tubes.

The eddy current test is able to detect material inhomogeneities and their positions throughout the length of tubes. The eddy current signals of material inhomogeneities are compared with reference signals of artificially produced test defects. It is possible to identify these inhomogeneities on the inner and outer surfaces as well as within the tube wall.

Since the distribution of eddy currents decreases as the distance from the test coil increases, the amplitude of defect signals also decreases with increasing distance from the test coil. Thus the eddy current test with encircling test coil on the outer surface is less sensitive to defects on the inner surface.

The purpose of this standard is not to define a method of measuring the actual extent of the material inhomogeneities as the signal amplitude is dependent on, amongst other factors, volume, form and position of the inhomogeneity.

Due to end effects, it is not possible to effectively test the ends of the tubes. The purchaser and the supplier could agree that the end effect may be overcome by cutting to length after testing.

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