

Copper and copper alloys — Determination of residual stresses in the border area of slit strip

The European Standard EN 13147:2001 has the status of a British Standard

ICS 77.150.30

National foreword

This British Standard is the official English language version of EN 13147:2001.

The UK participation in its preparation was entrusted by Technical Committee NFE/34, Copper and copper alloys, to Subcommittee NFE/34/1, Wrought and unwrought copper and copper alloys, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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This British Standard, having been prepared under the direction of the Engineering Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 June 2001

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Copper and copper alloys - Determination of residual stresses in the border area of slit strip

Cuivre et alliages de cuivre - Détermination des contraintes résiduelles sur les rives des bandes cisailées

Kupfer und Kupferlegierungen - Bestimmung von Restspannungen im Schnittkantenbereich von Bändern

This European Standard was approved by CEN on 8 March 2001.

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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 Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard 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 October 2001, and conflicting national standards shall be withdrawn at the latest by October 2001.

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/WG 2 "Rolled flat products" to prepare the following standard:

EN 13147, *Copper and copper alloys — Determination of residual stresses in the border area of slit strip.*

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

Introduction

Rolled strips have residual stresses caused by the production processes. The direction, distribution and level of the stresses depend on the machinery, the sequence of the selected operations and on the material, the mechanical properties and the dimensions of the strip.

The effects of stresses adjacent to the slit edges have significant importance during later processing stages, e.g. stamping. The test method described below, is to measure these effects under special conditions.

This standard is used only as a reference method for determination of residual stresses and can be applied only if there is agreement between the purchaser and the supplier that the method is a suitable means for determining the influence that the stresses detected will have on subsequent processes.

1 Scope

This European Standard specifies a method for the determination of residual stresses in the areas adjacent to the slit edges of wrought copper and copper alloy strip, by measurement of the angle of twist, longitudinal curvature and sideways curvature of test pieces cut from strip.

2 Terms and definitions

For the purposes of this standard, the following terms and definitions apply:

2.1

strip

flat rolled product of rectangular cross-section and uniform thickness from 0,08 mm up to and including 0,80 mm, supplied level wound as coils, or traverse wound on cores or spools, with slit edges. The thickness does not exceed one tenth of the width

2.2

sideways curvature

displacement from the fixed gauge length H of the distorted test piece perpendicular to the rolling direction and in the plane of the strip

2.3

longitudinal curvature

displacement from the fixed gauge length H of the distorted test piece perpendicular to the rolling direction and perpendicular to the plane of the strip

2.4

edge twist

twist angle from the fixed gauge length H of the distorted test piece

3 Principle

Test pieces are cut in the direction of rolling from the areas adjacent to the slit edges of a sample strip according to a set procedure. A test piece is clamped on the turntable of the measuring equipment described in 4.2, and the components of distortion, i.e. sideways curvature, longitudinal curvature and edge twist, caused by the residual stresses, are measured.