



SLOVENSKI STANDARD
SIST EN 10232:1998
01-avgust-1998

Kovinski materiali - Cev (narezana na dolžino) - Upogibni preskus

Metallic materials - Tube (in full section) - Bend test

Metallische Werkstoffe - Rohr (Rohrabschnitt) - Biegeversuch

Matériaux métalliques - Tubes - Essai de cintrage sur tronçons

Ta slovenski standard je istoveten z: EN 10232:1993

[SIST EN 10232:1998](https://standards.iteh.ai/catalog/standards/sist/en-10232-1998)

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ICS:

77.040.10 Mehansko preskušanje kovin Mechanical testing of metals

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en

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EUROPEAN STANDARD

EN 10232

NORME EUROPÉENNE

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Descriptors: Metal tubes, mechanical tests, bend tests

English version

Metallic materials - Tube (in full section) - Bend test

Matériaux métalliques - Tubes - Essai de cintrage sur tronçons

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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.

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CENEuropean Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by sub-committee ECISS/TC 29, the secretariat of which has been allocated to the United Kingdom (BSI).

No meeting of the sub-committee has been held but the following countries voted positively by the PQ-procedure on the acceptability of the reference document as a European Standard:

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Belgium, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom. No country voted negatively.

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of an identical text or by endorsement, at the latest by April 1994, and conflicting national standards shall be withdrawn at the latest by April 1994.

In accordance with the CEN/CENELEC Internal Regulations, following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This standard is based on ISO 8491:1986 "Metallic materials - Tube (in full section) - Bend test" which has been editorially changed in the light of the comments received. A minor technical change has been made in the procedure which, for welded tubes, requires the position of the weld to be at 90° to the plane of bending. The usage of symbols has been aligned with the requirements of ISO 3545-1:1989.



1 Scope

This European Standard specifies a method for determining the ability of full-section metallic tubes of circular cross section to undergo plastic deformation in bending. It is intended for tubes with an outside diameter not greater than 65 mm although the range of the outside diameter for which this European Standard is applicable can be more exactly specified in the relevant product standard.

Bend tests of the test pieces taken from tubes in the form of transverse strips should be made in accordance with ISO 7438:1985 so that the original curvature of the test piece is increased.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 3545-1:1989	Steel tubes and fittings - Symbols for use in specifications - Part 1: Tubes and tubular accessories with circular cross-section
ISO 7438:1985	Metallic materials - Bend test

3 Principle

Bending a straight tube in full section around a grooved former of a specified radius r - until the angle of bend α (see figure 1) reaches the value specified in the relevant product standard.

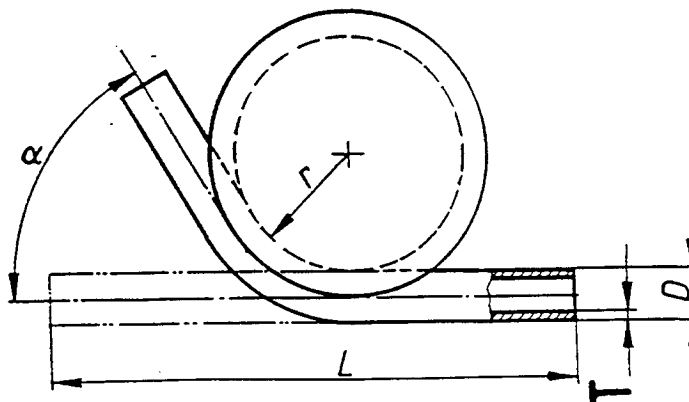


Figure 1: Symbols for bend test

4 Symbols, descriptions and units

Symbols, descriptions and units for the bend test of tubes in full section are in accordance with ISO 3545-1:1989 and are given in figure 1 and table 1.

Table 1: Symbols, descriptions and units

Symbol	Description	Unit
D	Outside diameter of the tube	mm
T	Wall thickness of the tube	mm
L	Length of the test piece before the test	mm
r	Inside radius at the bottom of the groove	mm
α	Angle of the bend	degree

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5 Testing equipment

5.1 The bend test of tubes shall be carried out on tube bending machines designed to restrict the development of ovality of the section of tube.

5.2 The tube bend former of the machine shall have a groove corresponding in profile to the outside diameter of the tube. The radius r at the bottom of the groove shall be specified in the relevant product standard.

NOTE: The tolerance of radius r and the depth and ovality of the groove all have an effect on the test result.

6 Test piece

The test piece shall be a portion of a straight tube of any length which will allow the test to be carried out on the tube bending machine.

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7 Procedure

7.1 In general, the test shall be carried out at ambient temperature within the limits of 10°C to 35°C. The test carried out under controlled conditions shall be made at a temperature of (23 ± 5) °C.

7.2 Bend the unfilled test piece of the tube by means of a tube bending machine, ensuring contact between the test piece and the tube bend former over the length of bend, until the specified angle of bend is reached.

7.3 If welded tubes are subjected to the test the position of the weld shall be at 90° to the plane of bending, i.e. on the neutral axis, unless otherwise indicated in the relevant product standard.

7.4 Interpretation of the bend test of tubes shall be carried out according to the requirements of the relevant product standard. When these requirements are not specified, absence of cracks visible without the use of magnifying aids shall be considered as evidence that the test piece passed the test.

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8 Test report

8.1 A test report shall be provided when so specified in the relevant product standard.

8.2 The test report shall include at least the following information:

- a) reference to this European Standard;
- b) identification of the test piece;
- c) dimensions of the test piece;
- d) angle of the bend α and radius r ;
- e) position of the weld in relation to the plane of bending;
- f) result of the test.

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