

इंटरनेट

मानक

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Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

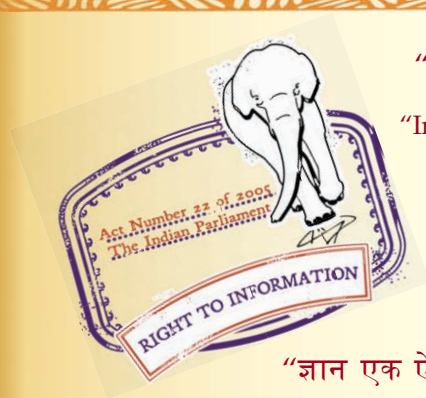
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

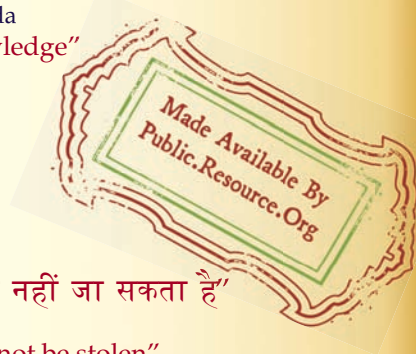
IS 2329 (2005): Method for bend test on metallic tubes (in full section) [MTD 3: Mechanical Testing of Metals]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

धात्विक सामग्री — नलिका (समस्त अनुभाग) — बंक परीक्षण
(दूसरा पुनरीक्षण)

Indian Standard

METALLIC MATERIALS — TUBE (IN FULL
SECTION) — BEND TEST
(*Second Revision*)

ICS 77.040.10

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

NATIONAL FOREWORD

This Indian Standard (Second Revision) which is identical with ISO 8491 : 1998 'Metallic materials — Tube (in full section) — Bend test' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Mechanical Testing of Metals Sectional Committee and approval of the Metallurgical Engineering Division Council.

This Indian Standard was originally published in 1963 and subsequently revised in 1985. This revision of the standard has been taken up to align it with ISO 8491 by adoption, under dual numbering system.

The text of the ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain terminology and conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to the following International Standard for which Indian Standard also exists. The corresponding Indian Standard which is to be substituted in its place is listed below along with its degree of equivalence for the edition indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 7438 : 1985 Method materials — Bend test	IS 1599 : 1995 Method for bend test (<i>second revision</i>)	Technically equivalent

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

METALLIC MATERIALS — TUBE (IN FULL SECTION) — BEND TEST (*Second Revision*)

1 Scope

This International 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 no greater than 65 mm, although the range of the outside diameter for which this International Standard is applicable may be more exactly specified in the relevant product standard.

NOTE — Bend tests of the test pieces taken from tubes in the form of transverse strips should be made in accordance with ISO 7438 so as to increase the original curvature of the test piece.

2 Symbols, designations and units

Symbols, designations and units for the bend test of tubes in full section are given in table 1 and are shown in figure 1.

Table 1

Symbol	Designation	Unit
a^a	Wall thickness of the tube	mm
D	Outside diameter 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

^a The symbol T is also used in steel tube standards.

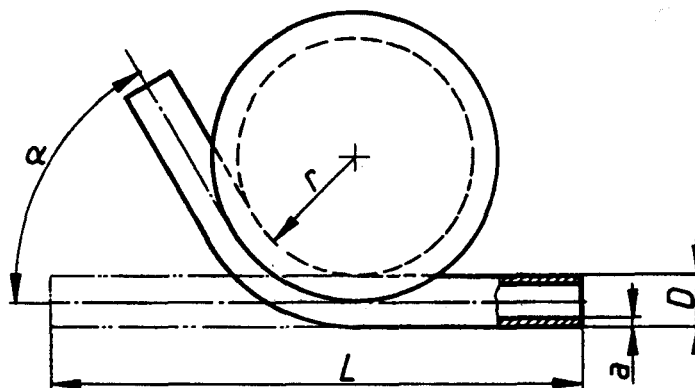


Figure 1

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.

4 Testing equipment

4.1 Tube-bending machines, designed to prevent the section of the tube from becoming oval.

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

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

5 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.

6 Procedure

6.1 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.

6.2 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.

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

6.4 Interpretation of the bend test of tubes shall be carried out in accordance with the requirements of the relevant product standard. When these requirements are not specified, the test piece shall be considered to have passed the test if no cracks are visible without the use of magnifying aids.

7 Test report

A test report shall be provided when so specified in the relevant product standard. In this case, the test report shall include at least the following information:

- a) reference to this International Standard, i.e. ISO 8491;
- b) identification of the test piece;
- c) dimensions of the test piece;
- d) angle of bend α and radius r ;
- e) position of the weld in relation to the plane of bending, if relevant;
- f) result of the test.

Annex A

(informative)

Bibliography

- [1] ISO 7438:1985, *Metallic materials — Bend test*.

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc : No. MTD 3 (4429).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002
Telephones : 2323 0131, 2323 3375, 2323 9402 Website : www.bis.org.in

Regional Offices :

	Telephones
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110 002	{ 2323 7617 2323 3841
Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Kankurgachi KOLKATA 700 054	{ 2337 8499, 2337 8561 2337 8626, 2337 9120
Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160 022	{ 260 3843 260 9285
Southern : C. I. T. Campus, IV Cross Road, CHENNAI 600 113	{ 2254 1216, 2254 1442 2254 2519, 2254 2315
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