

International Standard



8492

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Metallic materials — Tube — Flattening test

Matériaux métalliques — Tubes — Essai d'aplatissement

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8492 was prepared by Technical Committee ISO/TC 164,
Mechanical testing of metals.

It cancels and replaces ISO Recommendations R 202-1961, R 955-1969 and R 1556-1971, of which it constitutes a technical revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Metallic materials — Tube — Flattening test

1 Scope and field of application

This International Standard specifies a method for determining the ability of metallic tubes of circular cross-section having an outside diameter not greater than 400 mm and a thickness not greater than 15 % of the outside diameter, to undergo plastic deformation by flattening. The range of the outside diameter, or thickness, for which this International Standard is applicable may be more exactly specified in the relevant standard.

This test may be used to show up defects in the tube.

2 Principle

Flattening the end of a tube or a test piece of specified length cut from a tube, in a direction perpendicular to the longitudinal axis of the tube until the distance between platens measured under load in the direction of flattening, reaches a value specified in the relevant standard [see figures a) and b)].

In the case of close flattening, the internal surfaces of the test piece shall be in contact over at least half of the internal width b of the flattened test piece [see figure c)].

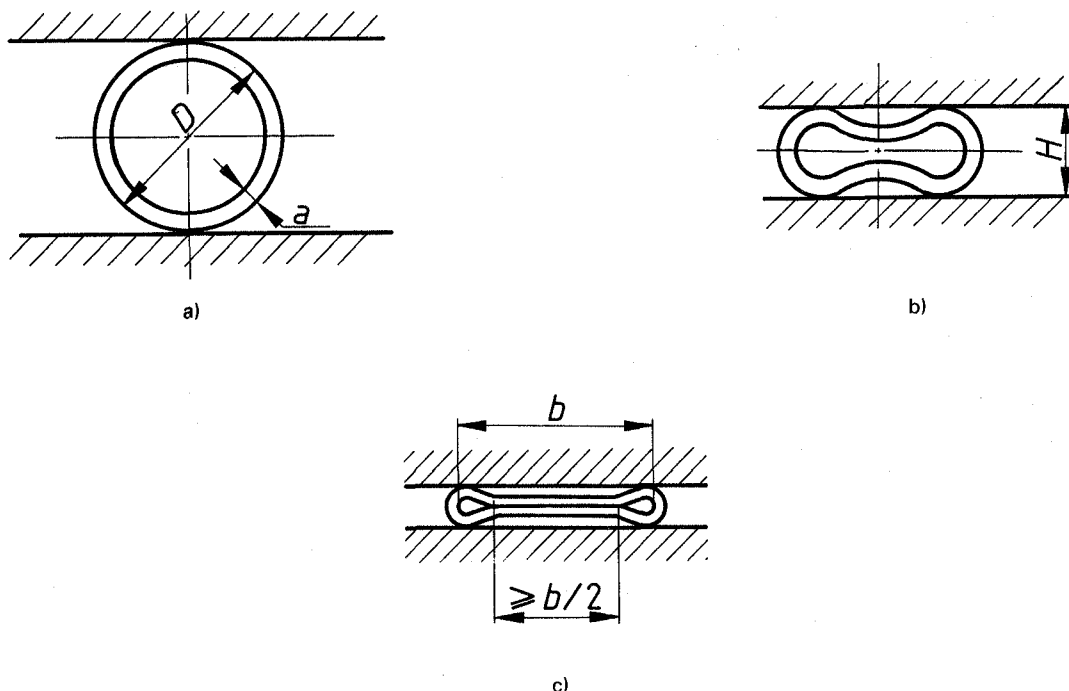


Figure — Symbols for flattening test

3 Symbols, designations and units

Symbols, designations and units for the flattening test are given in the figure and the table.

Table – Symbols, designations and units

Symbol	Designation	Unit
<i>D</i>	Outside diameter of the tube	mm
<i>a</i>	Wall thickness of the tube	mm
<i>b</i>	Inside width of the flattened test piece	mm
<i>L</i>	Length of the test piece	mm
<i>H</i>	Distance between platens measured under load	mm

4 Testing equipment

4.1 The machine used for the test shall be able to flatten the test piece to the prescribed distance *H* between two plane, parallel, rigid platens.

4.2 The width of the platens shall exceed the width of the test piece after flattening, i.e. at least $1,6 D$, and the length of the platens shall extend over the whole length of the test piece.

5 Test piece

5.1 When a test piece is cut from a tube, the length shall be approximately 1,5 times the outside diameter of the tube, but not less than 10 mm nor more than 100 mm. A length of 40 mm is generally used. The edges of the test piece may be rounded by filing.

5.2 When the test is carried out on the end of a full-length tube, the tube shall be cut at right angles to the axis of the tube to a depth of at least 80 % of the tube outside diameter. The cut shall be at a distance from the end of the tube equal to the length of the test piece.

6 Procedure

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

6.2 Place the test piece between two platens.

6.3 Ensure that the weld of the welded tubes is in position as required by the relevant standard.

6.4 Flatten the test piece by moving the platens in a direction perpendicular to the longitudinal axis of the tube.

6.5 In case of dispute, the rate of movement of the platens shall not exceed 25 mm/min.

6.6 Interpretation of the flattening test shall be carried out according to the requirements of the relevant 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. Slight premature failure at the edges shall not be considered cause for rejection.

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7 Test report

The test report shall include at least the following information:

- a) reference to this International Standard;
- b) identification of the test piece;
- c) dimensions of the test piece;
- d) distance between platens;
- e) position of the weld, if relevant;
- f) result of the test.