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International Standard 7438

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Metallic materials — Bend test

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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 7438 was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*.

It cancels and replaces ISO Recommendations ISO/R 85-1959, ISO/R 87-1959, ISO/R 398-1964 and ISO/R 954-1969, of which it constitutes a technical revision.

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INTERNATIONAL STANDARD ISO 7438-1985 (E)

Metallic materials — Bend test

1 Scope and field of application

This International Standard specifies the method for determining the ability of metallic materials to undergo plastic deformation in bending.

This International Standard applies to the bend test of test pieces taken from metallic products as specified in the relevant product standard. It is not applicable to certain materials and/or products, for example tubes in full section or welded joints, for which other standards exist.

2 Principle

The bend test consists in submitting a test piece of round, square, rectangular, or polygonal cross-section to plastic deformation by bending, without changing the direction of loading, until a specified angle of bend is reached.

The axes of the two legs of the test piece remain in a plane perpendicular to the axis of bending. In the case of a 180° bend, the two lateral surfaces may, depending on the requirements of the material standard, lie flat against each other or may be parallel at a specified distance, an insert being used to control this distance.

3 Symbols and designations

Symbols and designations used in the bend test are shown in figures 1 and 2, and specified in table 1.

Table 1

Symbol	Designation	Unit
a	Thickness or diameter of test piece (or diameter of the inscribed circle for pieces of polygonal cross-section)	mm
b	Width of test piece	mm
L	Length of test piece	mm
l	Distance between supports	mm
D	Diameter of mandrel	mm
α	Angle of bend	degree
r	Internal radius of bend portion of test piece after bending	mm

4 Test equipment

The bend test shall be carried out in testing machines or presses equipped with the following devices:

a) bending device with two supports and a mandrel as shown in figure 1;

b) bending device with a V-block and a mandrel as shown in figure 2;

c) bending device with a clamp as shown in figure 3.