



**International
Standard**

ISO 7801

**Metallic materials — Wire —
Reverse bend test**

Matériaux métalliques — Fils — Essai de pliage alterné

**Second edition
2024-11**

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 2, *Ductility testing*.

This second edition cancels and replaces the first edition (ISO 7801:1984), which has been technically revised.

The main changes are as follows:

- symbols for typical shaped wires have been added;
- examples of the cross-section of round wire, shaped wire and clad wire are shown in [Figure 1](#);
- [Table 1](#) has been adjusted to include the limits of the diameter and the symbol, y , of distance and tolerance;
- the rule of tensile force for reverse bend test has been updated;
- the definition of test ending criterion has been changed for ease of application;
- [Annex A](#) has been added to provide information on the testing cylindrical support radius for shaped wires;
- [Annex B](#) has been added to provide information on devices applying force to test pieces.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Metallic materials — Wire — Reverse bend test

1 Scope

This document specifies a method for determining the ability of metallic wire of diameter or characteristic dimension from 0,3 mm to 10 mm to undergo plastic deformation during reverse bend test.

The range of applicable diameters or characteristic dimensions is more precisely specified in the relevant product standard.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Symbols

The symbols and designations used in reverse bend test of round wires and shaped wires are shown in [Figure 1](#).

d	diameter of a round wire (if clad wire, it means outer diameter)	mm
d_g	diameter of guide hole	mm
F	applied tension force	N
h	characteristic dimension for a shaped wire (e.g. the characteristic dimension for some shaped wires is the height of the cross-section and is usually specified in the relevant standard)	mm
L	distance from the top tangential plane of cylindrical supports to the bottom face of guide	mm
N_b	number of reverse bends	—
r	radius of cylindrical supports	mm
y	distance from a plane, defined by the axes of the cylindrical supports, to the top edge of gripping faces	mm

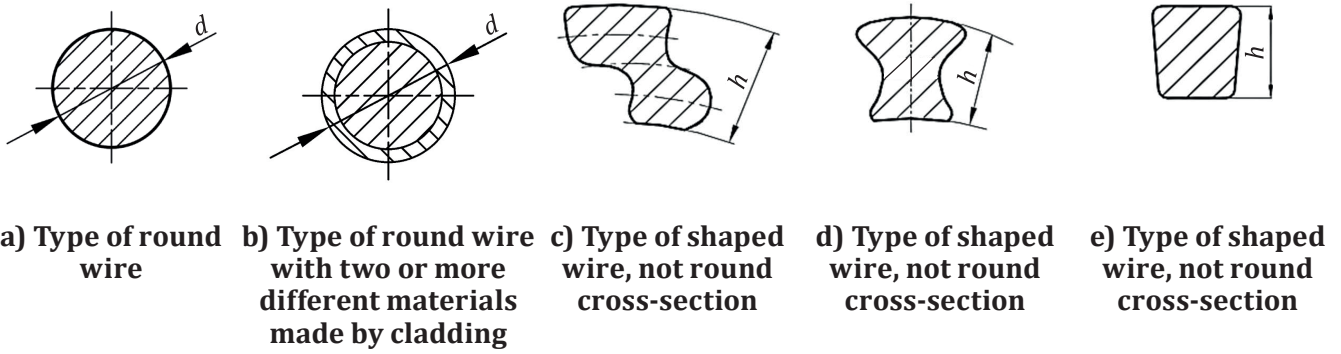
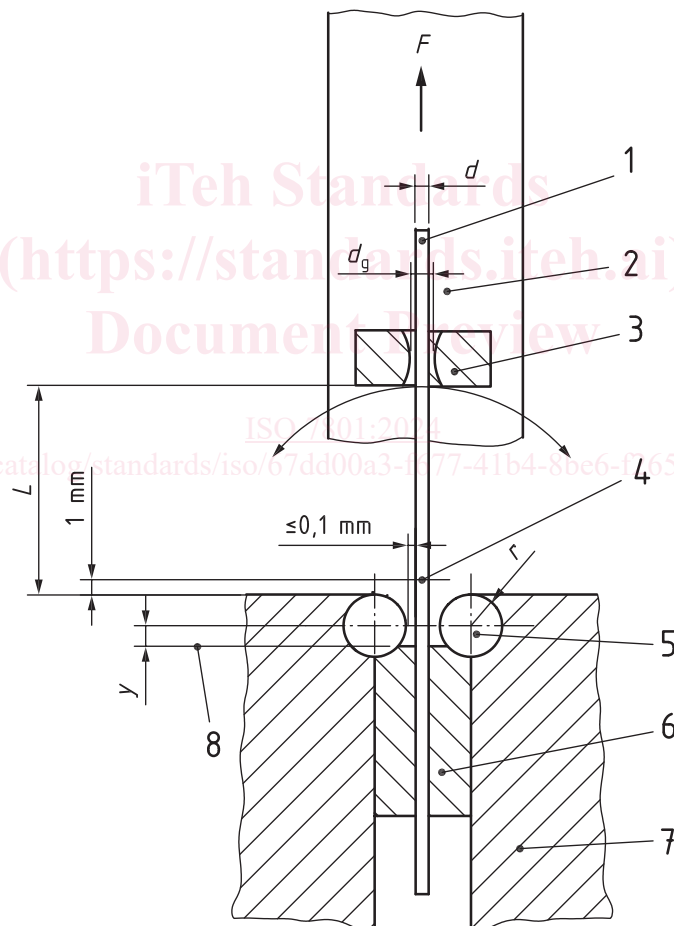


Figure 1 — Typical cross-sections of wires

5 Principle

The reverse bend test consists of repeated bending, through 90° in opposite directions, of a tested piece at one end, each bend being over a cylindrical support of a specified radius shown in [Figure 2](#).



Key

- | | | | |
|---|----------------------------------|---|--------------------------------|
| 1 | test piece | 5 | cylindrical supports A and B |
| 2 | bending arm | 6 | gripping faces of supports |
| 3 | guide | 7 | supports |
| 4 | pivoting axis of the bending arm | 8 | top edge of the gripping faces |

Figure 2 — Principle of reverse bend test