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**Metallic materials — Tube — Ring  
tensile test**

*Matériaux métalliques — Tubes — Essai de traction sur anneaux*

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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 documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. [www.iso.org/directives](http://www.iso.org/directives)

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. [www.iso.org/patents](http://www.iso.org/patents)

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committee responsible for this document is ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 2, *Ductility testing*.

This third edition cancels and replaces the second edition (ISO 8496:1998), of which it constitutes a minor revision.

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# Metallic materials — Tube — Ring tensile test

## 1 Scope

This International Standard specifies a method for a ring tensile test of tubes to reveal surface and internal defects by subjecting the test piece to strain until fracture occurs. This test may also be used to assess the ductility of tubes.

The ring tensile test is applicable to tubes having an outside diameter exceeding 150 mm and a wall thickness no greater than 40 mm. The inside diameter shall be greater than 100 mm.

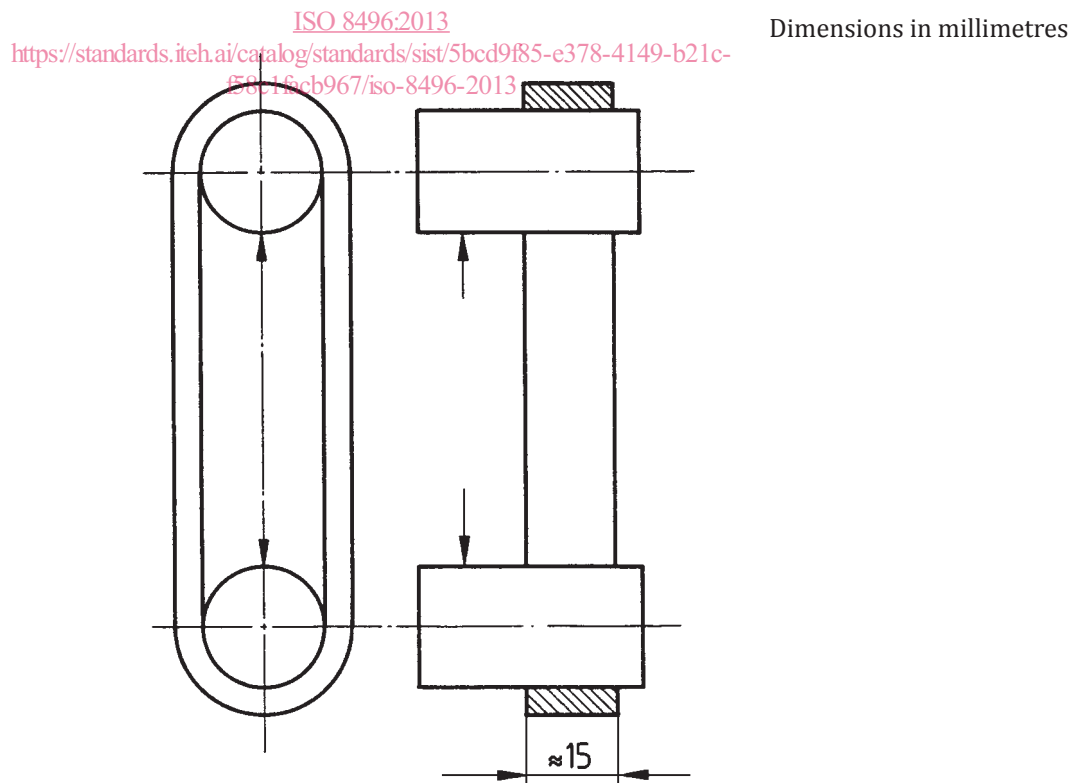
## 2 Principle

Subjecting a ring cut from the end of a tube to strain in the circumferential direction until fracture occurs.

## 3 Apparatus

Use **two circular pins**, of equal diameter with parallel axes, and movable in relation to each other while still remaining parallel.

In principle, the diameter of the pins shall be the minimum permissible from strength considerations but, provided that the inside diameter of the tube allows, should be at least 3 times the wall thickness of the tube to be tested (see [Figure 1](#)).



## 4 Test piece

4.1 The test piece shall be a ring cut from the tube with the end faces perpendicular to the axis.

4.2 The length of the test piece (width of the ring) shall be approximately 15 mm. If the thickness exceeds 15 mm, the length of the test piece may be equal to the thickness.

4.3 The ends of the test piece shall be free from burrs. The edges may be rounded by filing or chamfered by other methods.

NOTE Non-rounded or non-chamfered edges are permissible, if the test result meets the test requirements.

## 5 Procedure

5.1 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 °C ± 5 °C.

5.2 Place the ring cut from the tube over the pins. Subject the ring to strain by moving the pins away from each other at a specified rate until it fractures.

In cases of dispute, the rate shall not exceed 5 mm/s.

5.3 Interpretation of the ring tensile test 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 the expected fracture behaviour was obtained and no other cracks are visible without the use of magnifying aids.

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## 6 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) a reference to this International Standard, i.e. ISO 8496;
- b) identification of the test piece;
- c) dimensions of the test piece;
- d) result of the test.

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