



SLOVENSKI STANDARD

SIST EN 10275:2000

01-april-2000

Kovinski materiali - Hidravlični tlačni preskus širjenja cevi

Metallic materials - Tube ring hydraulic pressure test

Metallische Werkstoffe - Hydraulischer Ringaufweitversuch

Matériaux métalliques - Essai d'expansion hydraulique sur anneau tubulaire

Ta slovenski standard je istoveten z: **EN 10275:1999**

[SIST EN 10275:2000](#)

<https://standards.iteh.ai/catalog/standards/sist/1410bb45-3574-4320-b115-49bb64740aba/sist-en-10275-2000>

ICS:

77.040.10 Mehansko preskušanje kovin Mechanical testing of metals

SIST EN 10275:2000

en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 10275

May 1999

ICS 77.040.10

English version

Metallic materials - Tube ring hydraulic pressure test

Matériaux métalliques - Essai d'expansion hydraulique sur anneau tubulaire

Metallische Werkstoffe - Hydraulischer Ringaufweitversuch

This European Standard was approved by CEN on 16 April 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard has been prepared by Technical Committee ECISS/TC 29 "Steel tubes and fittings for steel tubes", the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 1999, and conflicting national standards shall be withdrawn at the latest by November 1999.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association. This European Standard is considered to be a supporting standard to those application and product standards which in themselves support an essential safety requirement of a New Approach Directive and which make reference to this European Standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This European Standard specifies the ring hydraulic pressure test for metallic tubes. It is generally applied to tubes with an outside diameter generally greater than 120 mm and outside diameter to thickness ratio not less than 20.

The objective of this test is to ascertain the value of the hoop stress required to produce a specified total circumferential (hoop) strain.

2 Symbols

Symbols and corresponding designations are given in table 1.

Table 1: Symbols and designations

Symbol	Unit	Designation
T	mm	Measured tube test ring thickness
D	mm	Measured outside diameter of the tube test ring
L	mm	Length of tube test ring
p	N/mm ²	Hydrostatic pressure to produce the specified total strain
x		Specified total strain
R_{tx}	N/mm ²	Hoop strength at the specified total strain

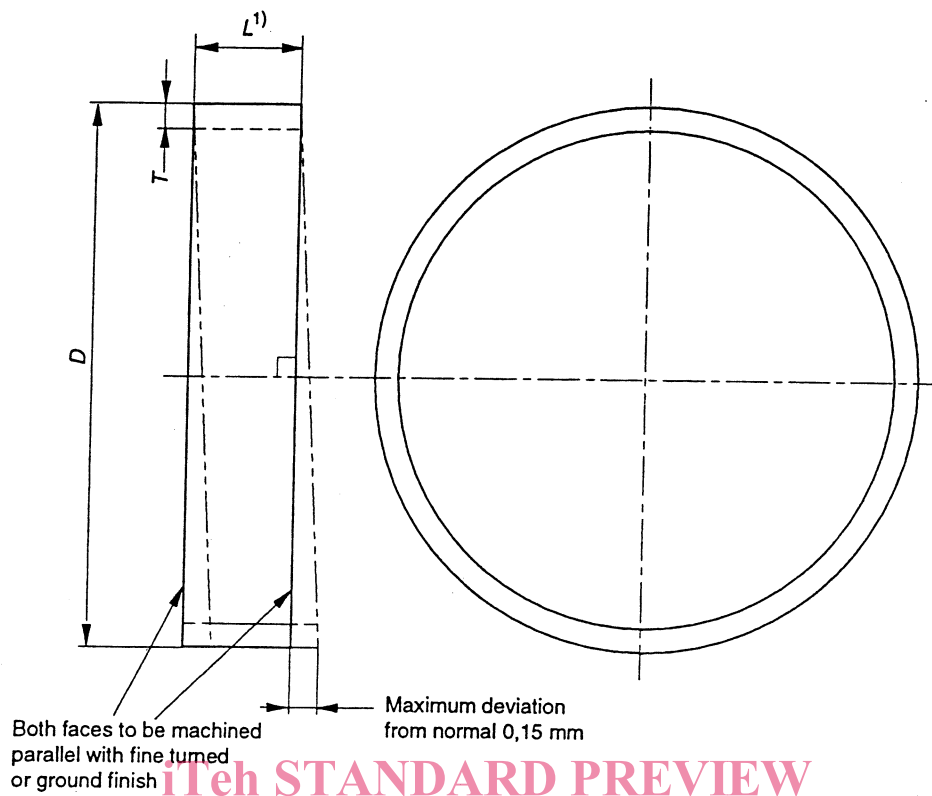
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3 Principle

The test involves the unrestrained expansion of the test ring between two platens, under internal hydraulic pressure; the outer circumference of the tube is the effective test piece gauge length.

The test is carried out on a test piece (see figure 1) removed from a welded or seamless tube of thickness up to a limit dependent upon the capacity of the machine and the strength of the tube. Where the hydraulic pressure required to produce the specified circumferential strain exceeds the capacity of the test machine modified tests may be carried out as described in annex A.

The test is specified when a measure of the hoop strength is required which is not influenced by cold forming and residual stress introduced when flattening a standard tensile test piece. The standard tensile test is necessary however, when tensile strength and elongation measurements are required.



¹⁾ Tolerance on $L \pm 0,25$ mm [SIST EN 10275:2000](http://standards.iteh.ai/catalog/standards/sist/1410bb45-3574-4320-b115-49bb64740aba/sist-en-10275-2000)
[L is commonly taken as 76 mm.](http://standards.iteh.ai/catalog/standards/sist/1410bb45-3574-4320-b115-49bb64740aba/sist-en-10275-2000)

NOTE: Remove all sharp edges and protect machined surfaces.

Figure 1:. Test ring dimensions and tolerances

4 Apparatus

4.1 The testing machine shall be capable of allowing the test ring to expand freely without imposing any end restraint. This shall be achieved by leaving a small gap between the test piece and the top platen. Pressure loss during testing shall be prevented by the use of a flexible seal.

NOTE: A typical testing machine is shown schematically in figure 2.

4.2 To reduce friction between the test piece, platens and inner die to a minimum, the platens shall be parallel and have a fine turned or ground finish. Prior to each test, friction at the contact surfaces shall be further minimized either by the use of a lubricant e.g. graphited grease or by the use of PTFE (polytetrafluorethylene) sheet. The platens shall be inspected regularly and any ridges that develop shall be removed.

4.3 Stress shall be applied to the test ring by means of a pressurized fluid. Provision shall be made to remove any air in the system through a bleed line.

5 Test ring

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5.1 Shape and position

5.1.1 Prior to separation from the main body of the tube the test ring shall be marked with a unique identification.

5.1.2 The test ring may be prepared from an oversize flame cut sample. Final preparation shall be by a cold machining process to ensure removal of any heat affected zones. The machined edges shall have a fine turned or ground finish and be free from burrs.

5.1.3 The dimensions and tolerances for the test piece are given in figure 1. The machined edges shall be parallel and normal to the axis of the tube to within 0,15 mm measured across the diameter.

5.2 Determination of dimensions

5.2.1 The outside diameter of the test ring shall be calculated from measurement of the tube circumference, e.g. using a flexible steel tape. The maximum tolerance on the accuracy of this measurement shall be ± 1 mm.

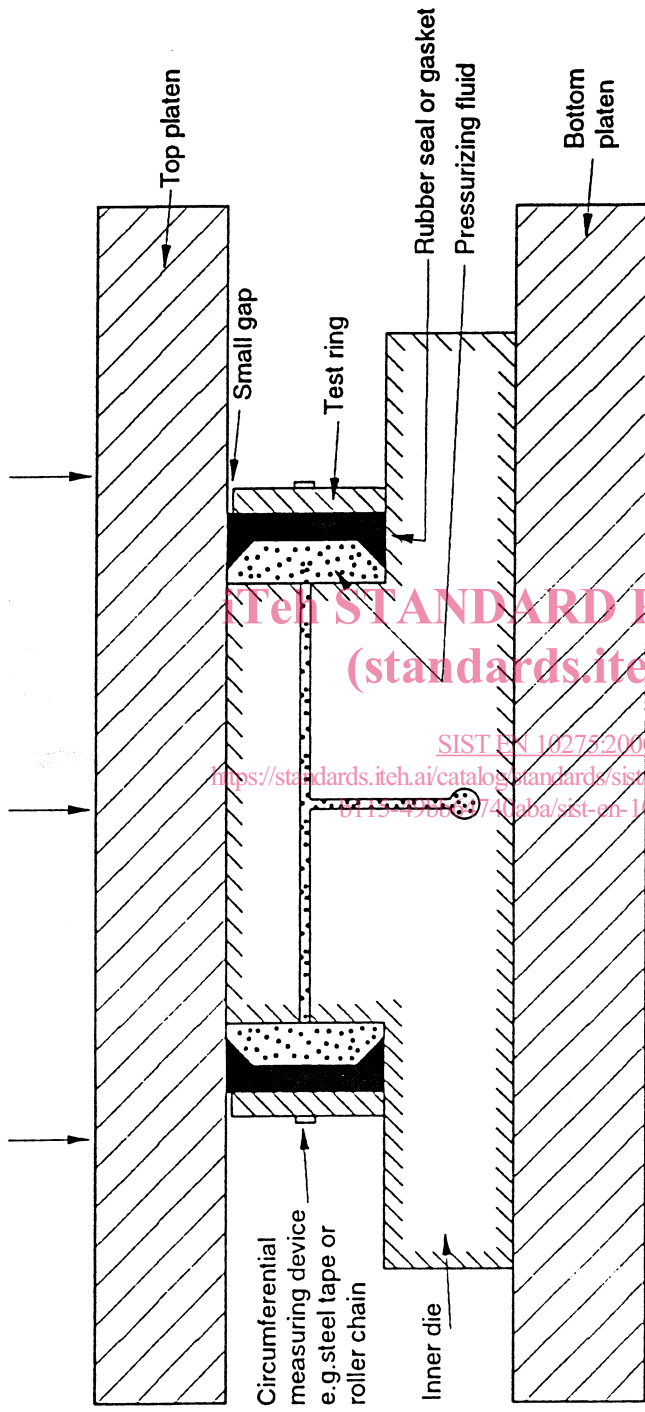


Figure 2: Schematic diagram of testing machine (with installed test ring)