
**Korozija kovin in zlitin - Ugotavljanje pokanja zaradi napetostne korozije - 10. del:
Reverzna metoda "U-upognjenci" (ISO 7539-10:2013)**

Corrosion of metals and alloys - Stress corrosion testing - Part 10: Reverse U-bend method (ISO 7539-10:2013)

Korrosion der Metalle und Legierungen - Prüfung der Spannungsrisskorrosion - Teil 10: Vorbereitung und Anwendung von reversierten Bügelproben (ISO 7539-10:2013)

Corrosion des métaux et alliages - Essais de corrosion sous contrainte - Partie 10: Méthode par pliage en U inverse (ISO 7539-10:2013)

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Ta slovenski standard je istoveten z: EN ISO 7539-10:2014

ICS:

77.060

Korozija kovin

Corrosion of metals

SIST EN ISO 7539-10:2015**en**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 7539-10

December 2014

ICS 77.060

English Version

**Corrosion of metals and alloys - Stress corrosion testing - Part
10: Reverse U-bend method (ISO 7539-10:2013)**

Corrosion des métaux et alliages - Essais de corrosion sous
contrainte - Partie 10: Méthode d'essai par cintrage en U
inversé (ISO 7539-10:2013)

Korrosion der Metalle und Legierungen - Prüfung der
Spannungsrissskorrosion - Teil 10: Vorbereitung und
Anwendung von reversierten Bügelproben (ISO 7539-
10:2013)

This European Standard was approved by CEN on 16 December 2014.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Page

Foreword.....	3
---------------	---

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN ISO 7539-10:2015](https://standards.iteh.ai/catalog/standards/sist/15a3bc5f-c886-4d32-8fac-4bdbe1e86f02/sist-en-iso-7539-10-2015)

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Foreword

The text of ISO 7539-10:2013 has been prepared by Technical Committee ISO/TC 156 “Corrosion of metals and alloys” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 7539-10:2014 by Technical Committee CEN/TC 262 “Metallic and other inorganic coatings” the secretariat of which is held by BSI.

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 June 2015, and conflicting national standards shall be withdrawn at the latest by June 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 7539-10:2013 has been approved by CEN as EN ISO 7539-10:2014 without any modification.

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SIST EN ISO 7539-10:2015

<https://standards.iteh.ai/catalog/standards/sist/15a3bc5f-c886-4d32-8fac-4bdbe1e86f02/sist-en-iso-7539-10-2015>

INTERNATIONAL STANDARD

**ISO
7539-10**

First edition
2013-03-01

Corrosion of metals and alloys — Stress corrosion testing —

Part 10: Reverse U-bend method

*Corrosion des métaux et alliages — Essais de corrosion sous
contrainte —*

iTeh STANDARD PREVIEW
Partie 10: Méthode par pliage en U inverse
(standards.iteh.ai)

SIST EN ISO 7539-10:2015

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Reference number
ISO 7539-10:2013(E)

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Published in Switzerland

Contents

Page

Foreword	iv
1 Scope	1
2 Normative reference	1
3 Terms and definitions	1
4 Principle	1
5 Specimens	2
5.1 General.....	2
5.2 Tubing and piping.....	2
5.3 Other products.....	3
6 Experimental procedure	3
7 Post-exposure evaluation	3
8 Test report	4
Annex A (informative) Preparation of non-pre-strained half tube RUB specimen	5
Annex B (informative) RUB specimens with a gauge section	7

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 7539-10:2015](https://standards.iteh.ai/catalog/standards/sist/15a3bc5f-c886-4d32-8fac-4bdbe1e86f02/sist-en-iso-7539-10-2015)

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ISO 7539-10:2013(E)

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

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

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 156, *Corrosion of metals and alloys*.

ISO 7539 consists of the following parts, under the general title *Corrosion of metals and alloys — Stress corrosion testing*:

- Part 1: *General guidance on testing procedures*
- Part 2: *Preparation and use of bent beam specimens*
- Part 3: *Preparation and use of U-bend specimens*
- Part 4: *Method for the preparation and use of uniaxially loaded tension specimens*
- Part 5: *Preparation and use of C-ring specimens*
- Part 6: *Preparation and use of pre-cracked specimens for tests under constant load or constant displacement*
- Part 7: *Method for slow strain rate testing*
- Part 8: *Preparation and use of specimens to evaluate weldments*
- Part 9: *Preparation and use of pre-cracked specimens for tests under rising load or rising displacement*
- Part 10: *Reverse U-bend test method*
- Part 11: *Guidelines for testing the resistance of metals and alloys to hydrogen embrittlement and hydrogen-assisted cracking*

Corrosion of metals and alloys — Stress corrosion testing —

Part 10:

Reverse U-bend method

WARNING — — This International Standard may involve hazardous materials, operations, and equipment. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This part of ISO 7539 covers procedures for designing, preparing and using reversed U-bend (RUB) test specimens for investigating the susceptibility of the metal to stress corrosion cracking. The term “metal” as used in this standard includes alloys.

2 Normative reference

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 7539-1, *Corrosion of metals and alloys — Stress corrosion testing — Part 1: General guidance on testing procedures* <https://standards.iteh.ai/catalog/standards/sist/15a3bc5f-c886-4d32-8fac-4bdbc1e86f02/sist-en-iso-7539-10-2015>

ISO 8407, *Corrosion of metals and alloys — Removal of corrosion products from corrosion test specimens*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7539-1 apply.

4 Principle

The RUB test is a particularly severe test for assessing susceptibility to stress corrosion cracking. The test is intended primarily for application to metals with high corrosion resistance, such as Ni-based alloys, with the advantage compared to methods such as the conventional U-bend test of having significantly less stress relaxation. It is used primarily as a screening test for tubing, piping, plate, bar and other products including welded materials. It may also be used as an acceptance test for performance in service subject to agreement between the parties.

The principle of the test is to introduce very severe stresses in a high corrosion resistance metal, with minimum relaxation, in order to enhance the likelihood of inducing stress corrosion cracking.

The test consists of exposing to the corroding medium a piece of metal of semicircular section bent back on itself (i.e. reversed bent) into a U-shape and held in a manner which ensures that there are initial tensile stresses in excess of the yield strength over a large proportion of the inner surface. The test is accelerated by the presence of complex bi-axial stresses that may or may not exist in service. In the act of forming specimens, varying amounts of cold work may be introduced and this deformation may influence the stress corrosion cracking tendency as compared to that of the material in the original condition.

The test is normally performed in the laboratory by exposing the specimens to simulated service conditions.