SLOVENSKI STANDARD
SIST EN ISO 7539-5:1999

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Korozija kovin in zlitin - Ugotavljanje pokanja zaradi napetostne korozije - 5. del: Priprava in uporaba preskuġancev v obliki C-obroḷ ev (ISO 7539-5:1989)

Corrosion of metals and alloys - Stress corrosion testing - Part 5: Preparation and use of C-ring specimens (ISO 7539-5:1989)

Korrosion der Metalle und Legierungen - Prüfung der Spannungsrißkorrosion - Teil 5: Vorbereitung und Anwendung von C-Ring-Proben (ISO 7539-5:1989)

Corrosion des métaux et alliages - Essais de corrosion sous contrainte - Partie 5: Préparation et utilisation des éprouvettes en forme d'anneau en C (ISO 7539-5:1989)

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Corrosion of metals and alloys - Stress corrosion testing - Part 5: Preparation and use of C-ring specimens (ISO 7539-5:1989)

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This European Standard was approved by CEN on 1995-04-08. 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.

The European Standards exist 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.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

This European Standard has been taken over by the Technical Committee CEN/TC 262 "Protection of metallic materials against corrosion" from the work of ISO/TC 156 "Corrosion of metals and alloys" of the International Organization for Standardization (ISO).

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of an identical text or by endorsement, at the latest by November 1995, and conflicting national standards shall be withdrawn at the latest by November 1995.

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

Endorsement notice

The text of the International Standard ISO 7539-5:1989 was approved by CEN as a European Standard without any modification.

INTERNATIONAL STANDARD

ISO 7539-5

First edition
1989-12-15

Corrosion of metals and alloys — Stress corrosion testing —

Part 5: Preparation and use of C-ring specimens

Corrosion des métaux et alliages — Essais de corrosion sous contrainte — Partie 5: Préparation et utilisation des éprouvettes en forme d'anneau en C

Reference number
ISO 7539-5 : 1989 (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.

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 7539-5 was prepared by Technical Committee 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: 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*
- *Part 7: Slow strain rate testing*
- *Part 8: Preparation and use of welded specimens*

Annex A forms an integral part of this part of ISO 7539.

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Introduction

This part of ISO 7539 is one of a series giving procedures for designing, preparing and using various forms of test specimen to carry out tests to establish a metals resistance to stress corrosion.

Each of the standards in the series needs to be read in association with ISO 7539-1. This helps in the choice of an appropriate test procedure to suit particular circumstances as well as giving guidance towards assessing the significance of the results of the tests.

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Corrosion of metals and alloys — Stress corrosion testing —

Part 5:
Preparation and use of C-ring specimens

1 Scope

1.1 This part of ISO 7539 covers procedures for designing, preparing, stressing, exposing and inspecting C-ring test specimens for investigating the susceptibility of a metal to stress corrosion. Analysis of the state and distribution of stress in the C-ring is presented.

The term "metal" as used in this part of ISO 7539 includes alloys.

1.2 The C-ring is a versatile, economical specimen for determining the susceptibility to stress corrosion cracking of all types of metals in a wide variety of product forms including parts joined by welding. It is particularly suitable for tests of tube, rod and plate (see figure 1). Notched specimens may also be used (see 5.3.8).

1.3 C-ring specimens may be stressed to predetermined levels, using simple equipment for application of either constant load or constant strain.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 7539. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 7539 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 7539-1 : 1987, *Corrosion of metals and alloys — Stress corrosion testing — Part 1: General guidance on testing procedures.*

ISO 7539-6 : 1989, *Corrosion of metals and alloys — Stress corrosion testing — Part 6: Preparation and use of pre-cracked specimens.*

3 Definitions

For the purposes of this part of ISO 7539, the definitions given in ISO 7539-1 are applicable.

4 Principle

4.1 The test consists of subjecting a specimen to constant load or to constant strain with a view to determining stress corrosion susceptibility by reference to one or more of the parameters enumerated in clause 7.

4.2 Corrosive environments may cause a deterioration of the properties of stressed materials beyond those observed with the same combination of environment and material when the latter is not subjected to stress. This enhanced deterioration may be expressed in a number of different ways for the purpose of assessing stress corrosion susceptibility.

4.3 The commonest form of deterioration due to stress corrosion involves the initiation and growth of cracks, one or more of which may eventually lead to total failure of a specimen if the test is conducted for an appropriate time.

4.4 Wide variations in test results may be obtained for a given metal and environment even when testing nominally identical specimens and the replication of tests is frequently necessary. If specimens are prepared to different sizes or orientations or are subjected to different stressing procedures, test results may be even more variable.

4.5 The time required for cracks to appear after exposure of stressed specimens to the test environment or the threshold stress below which cracks do not appear can be used as a measure of the stress corrosion resistance of the material in the test environment at the stress level employed.