



**BSI Standards Publication**

## **Corrosion of metals and alloys — Stress corrosion testing**

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Part 6: Preparation and use of precracked specimens for tests under constant load or constant displacement

This is a preview of BS EN ISO 7539-6:2018+A1:2024. [Click here to purchase the full version from the ANSI store.](#)

## National foreword

This British Standard is the UK implementation of EN ISO 7539-6:2018+A1:2024. It is identical to ISO 7539-6:2018, incorporating amendment 1:2024. It supersedes BS ISO 7539-6:2018, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment 1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee ISENF/8.

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30 November 2018	Implementation of ISO corrected text November 2018: see ISO Foreword for details
31 May 2024	Implementation of ISO amendment 1:2024 with CEN endorsement A1:2024

## EUROPÄISCHE NORM

May 2024

ICS 77.060

Supersedes EN ISO 7539-6:2018

English Version

**Corrosion of metals and alloys - Stress corrosion testing -  
Part 6: Preparation and use of precracked specimens for  
tests under constant load or constant displacement (ISO  
7539-6:2018)**

Corrosion des métaux et alliages - Essais de  
corrosion sous contrainte - Partie 6: Préparation  
et utilisation des éprouvettes préfissurées  
pour essais sous charge constante ou sous  
déplacement constant (ISO 7539-6:2018)

Korrosion der Metalle und Legierungen - Prüfung  
der Spannungsrisskorrosion - Teil 6: Vorbereitung  
und Anwendung von angerissenen Proben  
für die Prüfung unter konstanter Kraft oder  
konstanter Verformung (ISO 7539-6:2018)

This European Standard was approved by CEN on 27 August 2018.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## European foreword

This document (EN ISO 7539-6:2018) has been prepared by Technical Committee ISO/TC 156 "Corrosion of metals and alloys" in collaboration with Technical Committee CEN/TC 262 "Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys" 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 March 2019, and conflicting national standards shall be withdrawn at the latest by March 2019.

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

This document supersedes EN ISO 7539-6:2011.

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### Endorsement notice

The text of ISO 7539-6:2018 has been approved by CEN as EN ISO 7539-6:2018 without any modification.

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## European foreword to Amendment 1

This document (EN ISO 7539-6:2018/A1:2024) has been prepared by Technical Committee ISO/TC 156 "Corrosion of metals and alloys" in collaboration with Technical Committee CEN/TC 262 "Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys" the secretariat of which is held by BSI.

This Amendment to the European Standard EN ISO 7539-6:2018 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2024, and conflicting national standards shall be withdrawn at the latest by November 2024.

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### Endorsement notice

The text of ISO 7539-6:2018/Amd 1:2024 has been approved by CEN as EN ISO 7539-6:2018/A1:2024 without any modification.

This is a preview of BS EN ISO 7539-6:2018+A1:2024. [Click here to purchase the full version from the ANSI store.](#)

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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 (see [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 (see [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.

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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 156, *Corrosion of metals and alloys*, in collaboration with the National Physical Laboratory (United Kingdom).

This fourth edition cancels and replaces the third edition (ISO 7539-6:2011), which has been technically revised to revise [Figure 14](#).

This corrected version of ISO 7539-6:2018 incorporates the following corrections:

- in [Figure 2](#), the symbol “^” has been corrected to “≥” in two places.

A list of all parts in the ISO 7539 series can be found on the ISO website.

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](http://www.iso.org/members.html).

# Corrosion of metals and alloys — Stress corrosion testing —

## Part 6:

# Preparation and use of precracked specimens for tests under constant load or constant displacement

## 1 Scope

This document specifies procedures for designing, preparing and using precracked specimens for investigating susceptibility to stress corrosion. It gives recommendations for the design, preparation and use of precracked specimens for investigating susceptibility to stress corrosion. Recommendations concerning notched specimens are given in [Annex A](#).

The term “metal” as used in this document includes alloys.

Because of the need to confine plasticity at the crack tip, precracked specimens are not suitable for the evaluation of thin products, such as sheet or wire, and are generally used for thicker products including plate bar and forgings. They can also be used for parts joined by welding.

Precracked specimens can be loaded with equipment for application of a constant load or can incorporate a device to produce a constant displacement at the loading points. Tests conducted under increasing displacement or increasing load are dealt with in ISO 7539-9.

A particular advantage of precracked specimens is that they allow data to be acquired, from which critical defect sizes, above which stress corrosion cracking can occur, can be estimated for components of known geometry subjected to known stresses. They also enable rates of stress corrosion crack propagation to be determined. The latter data can be taken into account when monitoring parts containing defects during service.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

## 3 Terms and definitions

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

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

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

### 3.1

#### crack length

*a*

distance from the crack tip to either the mouth of the notch or the loading point axis, depending on the specimen geometry