SLOVENSKI STANDARD
oSIST prEN 3988:2026

01-april-2026

Aeronavtika - Preskusne metode za kovinske materiale - Preskusi utrujenosti z nizkim številom ciklov s konstantno amplitudo in nadzorom deformacije

Aerospace series - Test methods for metallic materials - Constant amplitude strain-controlled low cycle fatigue testing

Luft- und Raumfahrt - Prüfverfahren für metallische Werkstoffe - Dehnungsgesteuerter Kurzzeit-Ermüdungsversuch (LCF) mit konstanter Amplitude

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Série aérospatiale - Méthodes d'essais applicables aux matériaux métalliques - Essais de fatigue oligocyclique en déformation imposée

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Ta slovenski standard je istoveten z: **prEN 3988**

ICS:

49.025.01	Materiali za letalsko in vesoljsko gradnjo na splošno	Materials for aerospace construction in general

oSIST prEN 3988:2026 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 3988

February 2026

ICS 49.025.01

English Version

Aerospace series - Test methods for metallic materials - Constant amplitude strain-controlled low cycle fatigue testing

Série aérospatiale - Méthodes d'essais applicables aux matériaux métalliques - Essais de fatigue oligocyclique en déformation imposée

Luft- und Raumfahrt - Prüfverfahren für metallische Werkstoffe - Dehnungsgesteuerter Kurzzeit-Ermüdungsversuch (LCF) mit konstanter Amplitude

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard, 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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (prEN 3988:2026) has been prepared by ASD-STAN.

After enquiries and votes carried out in accordance with the rules of this Association, this document has received the approval of the National Associations and the Official Services of the member countries of ASD-STAN, prior to its presentation to CEN.

This document is currently submitted to the CEN Enquiry.

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Introduction

This document is part of the series of EN metallic material standards for aerospace applications. The general organization of this series is described in EN 4258.

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1 Scope

This document applies to uniaxial strain-controlled low cycle fatigue testing of metallic materials governed by EN aerospace standards. It defines the properties that need to be determined and the terms used in describing the tests and test pieces.

It specifies the equipment, the test pieces, the method of testing and the presentation of results. It applies to testing at ambient and elevated temperatures.

The purpose of this document is to ensure the comparability and reproducibility of the test results. It does not cover the evaluation or interpretation of the results.

This document is restricted to the use of test pieces having a circular cross-section. In some particular cases the practice can be applied to flat test pieces. The major difficulties concern the preparation of the test pieces and their alignment in the grips.

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.

ASTM E1012:2019,[1] *Standard Practice for Verification of Testing Frame and Specimen Alignment Under Tensile and Compressive Axial Force Application*

3 Terms and definitions

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For the purposes of this document, the following terms and definitions apply.

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

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— ISO Online browsing platform: available at https://www.iso.org/obp/

— IEC Electropedia: available at https://www.electropedia.org/

3.1
force
F
instantaneous load applied to the test section, in kN

Note 1 to entry: Tensile forces are considered to be positive and compressive forces negative.

3.2
strain
ε
extension of the test piece gauge length, due to the force which is applied to the test piece, divided by its original gauge length

Note 1 to entry: It is taken to be positive when the gauge length increases in length and negative when it contracts as a percentage.

[1] www.astm.org.

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3.3
maximum strain
ε_{max}
highest algebraic value of strain applied during the strain cycle as a percentage

3.4
minimum strain
ε_{min}
lowest algebraic value of strain applied during the strain cycle as a percentage

3.5
mean strain
ε_{m}
half the algebraic sum of maximum and minimum strains as a percentage

3.6
strain range
$\Delta\varepsilon$
algebraic difference between the maximum and minimum strains as a percentage

Note 1 to entry: The total strain range includes elastic and plastic strain ranges.

3.7
strain amplitude
ε_{a}
half the strain range as a percentage

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3.8
strain ratio
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$R\varepsilon$
algebraic ratio of the minimum strain to the maximum strain

Note 1 to entry: The A ratio, which is defined as the ratio of strain amplitude to the mean strain, is sometimes used.

3.9
stress
σ
force divided by the nominal cross-sectional area, in MPa

Note 1 to entry: It is the independent variable in a stress-controlled fatigue test.

Note 2 to entry: The nominal cross-sectional area (engineering stress) is that calculated from measurements taken at ambient temperature and no account is taken for the change in section as a result of expansion at elevated temperatures.

3.10
maximum stress
σ_{max}
highest algebraic value of stress applied, in MPa

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