SLOVENSKI STANDARD
oSIST prEN 4500-004:2022

01-februar-2022

Aeronavtika - Kovinski materiali - Pravila za načrtovanje in predstavljanje standarov za materiale - 004. del: Posebna pravila za titan in titanove zlitine

Aerospace series - Metallic materials - Rules for drafting and presentation of material standards - Part 004: Specific rules for titanium and titanium alloys

Luft- und Raumfahrt - Metallische Werkstoffe - Regeln für das Erstellen und die Gestaltung von Werkstoffnormen Teil 004: Besondere Regeln für Titan und Titanlegierungen

Série aérospatiale - Matériaux métalliques - Règles pour la rédaction et la présentation des normes de matériaux - Partie 004: Règles spécifiques au titane et aux alliages de titane

Ta slovenski standard je istoveten z: **prEN 4500-004**

ICS:

49.025.30	Titan	Titanium

oSIST prEN 4500-004:2022 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 4500-004

December 2021

ICS 49.025.30

Will supersede EN 4500-004:2012

English Version

Aerospace series - Metallic materials - Rules for drafting and presentation of material standards - Part 004: Specific rules for titanium and titanium alloys

Série aérospatiale - Matériaux métalliques - Règles pour la rédaction et la présentation des normes de matériaux - Partie 004: Règles spécifiques au titane et aux alliages de titane

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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.

This draft European Standard was established by CEN 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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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Ref. No. prEN 4500-004:2021 E

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European foreword

This document (prEN 4500-004:2021) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (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.

This document will supersede EN 4500-004:2012.

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.

The EN 4500 series (*Aerospace series — Metallic materials — Rules for drafting and presentation of material standards*) is composed by the following documents:

- General rules — EN 4500-001;
- Aluminium, aluminium alloys and magnesium alloys — EN 4500-002;
- Heat-resisting alloys — EN 4500-003;
- Titanium and titanium alloys — EN 4500-004;
- Steels — EN 4500-005;
- Filler metals for welding — EN 4500-002 to EN 4500-005;
- Filler metals for brazing — EN 4500-006.

1 Scope

The EN 4500 series specifies the rules for the drafting and presentation of metallic material standards for aerospace applications. This Part 004 specifies the “Specific rules for titanium and titanium alloys”.

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.

FprEN 4259, *Aerospace series — Metallic materials — Definition of general terms*

EN 4500-001, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 001: General rules*

EN 4800-001, *Aerospace series — Titanium and titanium alloys — Technical specification — Part 001: Plate, sheet and strip*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in FprEN 4259 and EN 4500-001 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 https://www.electropedia.org/

4 Rules for drafting a European Standard for aerospace metallic materials

4.1 General

Examples given in Annexes are only intended to illustrate the rules for drafting and presentation and may not correspond to real standardized EN semi-finished products. Technological development may require the use of terms additional to those listed.

4.2 Title

4.2.1 General

According to EN 4500-001 and Annex A of this document.

The following are examples of descriptions which shall be used.

4.2.2 Method of melting

For forging stock and forgings, only the required grade shall be indicated in accordance with EN 4800-001.

For other forms, use one or more of the following terms:

- non consumable electrode vacuum melted;
- consumable electrode vacuum arc melted;
- consumable electrode vacuum arc remelted;

- multiple melted;
- plasma cold hearth melted (P.C.H.M.);
- electron-beam melted.

4.2.3 Form entries

a) sheets, strips, plates;

The terms may be qualified with one of the following terms:

1) cold rolled;

2) hot rolled;

b) bars;

The term may be qualified with one or more of the following terms:

1) rolled;

2) extruded;

3) forged;

c) sections;

The term may be qualified with the following term:

1) extruded;

d) tubes;

The term may be qualified with one or more of the following terms:

1) rolled;

2) drawn;

3) extruded;

4) seamless;

5) welded;

e) wires;

The term may be qualified with one or more of the following terms:

1) extruded;

2) rolled;

3) drawn;

f) forging stock;

g) forgings;

h) remelting stock;

i) castings;

The term may be qualified with one or more of the following terms:

1) investment;

2) rammed graphite mould;

3) hot isostatically pressed (hipped);

j) rings;

The term may be qualified with one or more of the following terms:

1) rolled;

2) forged;

3) welded.

4.2.4 Additional information entries

- For structural applications;
- for pressure applications;
- for superplastic forming;
- for machining;
- for forged fasteners;
- for machined fasteners;
- for welding.

4.3 Introduction

According to EN 4500-001 and Annex B of this document.

4.4 Scope, normative references, terms and definitions, requirements

According to EN 4500-001 and Annex C of this document.

4.5 Table 1 (1 of 3)

4.5.1 Line 1: Material designation

According to EN 4500-001 and Annex D of this document.

4.5.2 Line 2: Chemical composition

The chemical composition shall be written in accordance with EN 4500-001 and the order of presentation of elements shall conform to the following rules:

- alloy elements in decreasing maximum content order;
- gas elements in decreasing maximum content order;
- trace elements in decreasing maximum content order;
- ratio and/or total elements;
- other elements: each and total.

4.5.3 Line 3: Method of melting

According to EN 4500-001 and Annex D of this document, using the terms listed in 4.2.2.

4.5.4 Line 4.1: Form

According to EN 4500-001 and Annex D of this document.

4.5.5 Line 4.2: Method of production

According to EN 4500-001 and Annex D of this document, using the applicable terms given in 4.2.

4.5.6 Line 4.3: Limit dimension(s)

According to EN 4500-001 and Annex D of this document.

4.5.7 Line 5: Technical specification

According to EN 4500-001 and Annex D of this document.

4.5.8 Line 6.1: Delivery condition and Heat treatment

According to EN 4500-001 and Annex D of this document. One or more of the following terms shall be used:

- not heat treated;
- annealed;
- solution treated;
- quenched;
- aged;
- cold worked;
- hot isostatically pressed (hipped);
- descaled;
- machined;
- ground;

- pickled;
- stress relieved.

4.5.9 Line 6.2: Delivery condition code

According to EN 4500-001 and Annex D of this document.

4.5.10 Line 7: Use condition and Heat treatment

According to EN 4500-001 and Annex D of this document. Either the terms given in 4.5.8 shall be used or the following shall be stated:

- delivery condition.

4.5.11 Line 8.1: Test sample(s)

According to EN 4500-001 and Annex D of this document.

4.5.12 Line 8.2: Test piece(s)

According to EN 4500-001 and Annex D of this document.

4.5.13 Line 8.3: Heat treatment

According to EN 4500-001 and Annex D of this document.

4.5.14 Line 9: Dimensions concerned

According to EN 4500-001 and Annex D of this document.

4.5.15 Line 10: Thickness of cladding on each face

Not applicable to titanium and titanium alloys.

4.5.16 Line 11: Direction of test piece

According to EN 4500-001 and Annex D of this document.

4.5.17 Lines 12 to 16: Tensile (T)

According to EN 4500-001 and Annex D of this document.

4.5.18 Line 17: Hardness

According to EN 4500-001 and Annex D of this document.

4.5.19 Line 18: Shear strength

According to EN 4500-001 and Annex D of this document.

4.5.20 Line 19: Bending

According to EN 4500-001 and Annex D of this document.

4.5.21 Line 20: Impact strength

According to EN 4500-001 and Annex D of this document.

4.5.22 Lines 21 to 26: Creep (C)

According to EN 4500-001 and Annex D of this document.