
**Aeronavtika - Kovinski materiali - Pravila za načrtovanje in predstavljanje
standarov za materiale - 001. del: Splošna pravila**

Aerospace series - Metallic materials - Rules for drafting and presentation of material standards - Part 001: General rules

Luft- und Raumfahrt - Metallische Werkstoffe - Regeln für das Erstellen und die Gestaltung von Werkstoffnormen Teil 001: Allgemeine Regeln

Série aérospatiale - Matériaux métalliques - Règles pour la rédaction et la présentation des normes de matériaux - Partie 001: Règles générales

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Ta slovenski standard je istoveten z: EN 4500-001:2012

ICS:

49.025.05	Železove zlitine na splošno	Ferrous alloys in general
49.025.15	Neželezove zlitine na splošno	Non-ferrous alloys in general

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EUROPEAN STANDARD

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Aerospace series - Metallic materials - Rules for drafting and presentation of material standards - Part 001: General rules

Série aérospatiale - Matériaux métalliques - Règles pour la rédaction et la présentation des normes de matériaux - Partie 001: Règles générales

Luft- und Raumfahrt - Metallische Werkstoffe - Regeln für das Erstellen und die Gestaltung von Werkstoffnormen - Teil 001: Allgemeine Regeln

This European Standard was approved by CEN on 23 June 2012.

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 CEN-CENELEC Management Centre or to any CEN member.

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.

CEN members are the national standards bodies of 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 United Kingdom.

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Foreword

This document (EN 4500-001:2012) 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 Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

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 April 2013, and conflicting national standards shall be withdrawn at the latest by April 2013.

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 organisations 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.

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EN 4500-001:2012 (E)**Introduction**

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

1 Scope

This European Standard specifies the general rules for the drafting and presentation of metallic material standards for aerospace applications.

It is supported by additional rules specific to:

- Aluminium, aluminium alloys and magnesium alloys EN 4500-2;
- Heat resisting alloys EN 4500-003;
- Titanium and titanium alloys EN 4500-004;
- Steels EN 4500-005;
- Filler metals for welding EN 4500-2 to EN 4500-005;
- Filler metals for brazing EN 4500-6.

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2 Normative references

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.

EN 2002-001, *Aerospace series — Metallic materials — Test methods — Part 001: Tensile testing at ambient temperature*

EN 2032-1, *Aerospace series — Metallic materials — Part 1: Conventional designation*

EN 2032-2, *Aerospace series — Metallic materials — Part 2: Coding of metallurgical condition in delivery condition*

EN 2043, *Aerospace series — Metallic materials — General requirements for semi-finished product qualification (excluding forgings and castings)*¹⁾

EN 4258, *Aerospace series — Metallic materials — General organization of standardization — Links between types of EN standards and their use*

EN 4259, *Aerospace series — Metallic materials — Definition of general terms*¹⁾

1) Published as ASD-STAN Prestandard at the date of publication of this standard (www.asd-stan.org).

EN 4500-2, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 2: Specific rules for aluminium, aluminium alloys and magnesium alloys*

EN 4500-003, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 003: Specific rules for heat resisting alloys*

EN 4500-004, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 004: Specific rules for titanium and titanium alloys*

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EN 4500-005, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 005: Specific rules for steels*¹⁾

EN 4500-6, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 6: Specific rules for filler metals for brazing*¹⁾

ISO 80000-1, *Quantities and units — Part 1: General*

ISO 80000-2, *Quantities and units — Part 2: Mathematical signs and symbols to be used in the natural sciences and technology*

ISO 80000-3, *Quantities and units — Part 3: Space and time*

ISO 80000-4, *Quantities and units — Part 4: Mechanics*

ISO 80000-5, *Quantities and units — Part 5: Thermodynamics*

ISO 80000-10, *Quantities and units — Part 10: Atomic and nuclear physics*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 4259 and the following apply.

3.1**alloying elements**

elements other than base metal, for which the mass content gives the typical characteristics of the alloy

3.2**limit dimension and equivalent diameter D_e**

the limit dimension is the maximum size, expressed as the equivalent diameter (D_e), in which the mechanical properties can be obtained at the specified test piece positions, when heat-treated in accordance with the material standard

4 Rules for drafting and presentation**4.1 General**

NOTE Examples given in part 2 to 6 are only intended to illustrate the rules for drafting and presentation and may not correspond to real standardized EN products. Technological development may require the use of terms additional to those listed.

4.2 Page 1: Title of the material standard

The title shall give sufficient information to unambiguously identify the semi-finished product, in the use condition (see 4.5.11).

- Consequently:
1. the same title shall not be used for different material standards;
 2. overlapping of mechanical property limits for otherwise identical material standards shall not normally be permitted.

Each part of the title shall consist of one or several different lines:

- aerospace series;
- the family of metallic material, followed by the designation of the metallic material in accordance with EN 2032-1;
- method of melting, if appropriate (except for titanium and titanium alloys);
- use condition and heat treatment;
- the forms written in singular, or plural, in conformity with the language used and, if appropriate, the method of production and/or final intended use;
- limiting dimensions;
- relevant mechanical property or physical property limits, if appropriate.

4.3 Page 2

Blank, in principle. Foreword, if necessary.

4.4 Page 3

Clause 0: Introduction

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This clause shall read:

- "This standard is part of the series of EN metallic material standards for aerospace applications. The general organization of this series is described in EN 4258";
- "This standard has been prepared in accordance with EN 4500-2" or "EN 4500-003" or "EN 4500-004" or "EN 4500-005" or "EN 4500-6".

Clause 1: Scope

This clause shall read: "This standard specifies the requirements relating to:"

Repeat all information in the title, presented in the same format, followed by "for aerospace applications".

If necessary, further information may be added to clarify the scope.

NOTE Other common designation (*insert designation*).

Clause 2: Normative references

This clause shall read:

"The following referenced documents are indispensable for the application 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."

Followed by the list of documents, with their titles, to which reference is made in the text.

EN 4500-001:2012 (E)**4.5 Page 4: corresponds to form 1 given in Annex A****4.5.1 General**

Form 1 is a fixed format.

If there is insufficient space on a line:

- use notes;
- repeat the line(s).

Complete the relevant lines with the pertinent requirements, according to 4.5.2 to 4.5.24.

Requirements (test method, frequency of testing, sample type, test piece definition, heat treatment condition of test piece, testing condition) that are already specified in the technical specification or the test method standard called up by the technical specification referenced on line 5, shall not be repeated, in this case write "See EN XXXX".

If it is necessary to modify the requirements of the technical specification or test method, use notes in the table.

A hyphen shall be marked on those lines that are not required.

Values other than those mentioned on lines 2, 12, 19, 21, 23 and 25 shall be preceded by a sign depending on whether they are minimum or maximum values (<, >, ≤, ≥).

Where more than one

- test method;
- test condition;
- test value.

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is stated, all are mandatory except when indicated by a note, which one is to be used.

Symbols for sizes and units:

See ISO 80000-1, ISO 80000-2, ISO 80000-3, ISO 80000-4, ISO 80000-5 and ISO 80000-10.

Specific examples are given for each family of metallic material in EN 4500-2 to EN 4500-6.

4.5.2 Page 4, line 1: Material designation

This line shall give the family of the metallic material and the conventional designation, in accordance with EN 2032-1.

4.5.3 Page 4, line 2: Chemical composition

The chemical symbols of the elements shall be written in the first line of boxes, in accordance with established conventions (see ISO 80000-10).

The second line of boxes shall indicate the minimum content of that element.

The third line of boxes shall indicate the maximum content of that element.

The mass content of alloying elements shall be explicitly defined by the specified values in the second and third line of the boxes.

The mass content of other identified elements (e.g. trace elements, impurities, base metal for filler metals, etc.) shall only be specified by a minimum and/or a maximum value, as applicable.

When other elements are not identified, indicate them as "others", subdivided into "each" and "total".

For each element shown, the absence of a value shall be indicated by means of a hyphen.

Ratio and/or total content of two or more elements may be specified on line 2.

All values V shall be expressed in mass percentage. When very low values are expressed in mass parts per million, a note shall be used to define the abbreviation "p.p.m.".

The following rules shall be observed for the value V:

- $V_{\min.}$ or $V_{\max.} \leq 0,01 \%$ express $V_{\min.}$ and $V_{\max.}$ in "p.p.m.";
- $V_{\min.} > 0,01 \%$ express in %. The number of decimal places written shall be consistent with the accuracy required.

The base metal shall be indicated in the last column of the second line of boxes by means of a minimum and/or maximum value or by the expression "base".

The standard order for presentation of the elements for each family of metallic materials is specified in EN 4500-2 to EN 4500-6.

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4.5.4 Page 4, line 3: Method of melting

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Line 3 shall be completed when one or several specific methods of melting are required.

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Modification to line 3 (by addition of further melting methods or changes to melting methods) shall not change the EN reference number if the requirements defined in lines 12 to 99 do not change.

When several methods of melting can be used under the same EN reference (i.e. the requirements in the lines 12 to 99 do not change), line 3 shall contain a note which will state in line 98 ; "the melting route for qualification and delivery of products shall be identical".

4.5.5 Page 4, line 4.1: Form

The form or similar forms of the products covered by the standard shall be stated using the same terms as specified in the title.

4.5.6 Page 4, line 4.2: Method of production

The method or methods of production shall be indicated, if necessary.

In the case of castings or forgings, indicate requirements for remelting stock or forging stock as follows:

- cast from remelting stock EN XXXX; or
- forged from forging stock EN XXXX.