

	DIN EN 4800-001	
ICS 49.025.30	<div>Entwurf</div>	Einsprüche bis 2024-04-16 Vorgesehen als Ersatz für DIN EN 4800-001:2011-06
<p>Luft- und Raumfahrt – Titan und Titanlegierungen – Technische Lieferbedingungen – Teil 001: Platten, Bleche und Bänder; Englische Fassung prEN 4800-001:2023</p> <p>Aerospace series – Titanium and titanium alloys – Technical specification – Part 001: Plate, sheet and strip; English version prEN 4800-001:2023</p> <p>Série aérospatiale – Titane et alliages de titane – Spécification technique – Partie 001: Plaques, tôles et bandes; Version anglaise prEN 4800-001:2023</p> <p>Anwendungswarnvermerk</p> <p>Dieser Entwurf mit Erscheinungsdatum 2024-02-16 wird der Öffentlichkeit zur Prüfung und Stellungnahme vorgelegt.</p> <p>Weil das beabsichtigte Dokument von der vorliegenden Fassung abweichen kann, ist die Anwendung dieses Entwurfs besonders zu vereinbaren.</p> <p>Stellungnahmen werden erbeten</p> <ul style="list-style-type: none">– vorzugsweise online im Norm-Entwurfs-Portal von DIN unter www.din.de/go/entwuerfe bzw. für Norm-Entwürfe der DKE auch im Norm-Entwurfs-Portal der DKE unter www.entwuerfe.normenbibliothek.de, sofern dort wiedergegeben;– oder als Datei per E-Mail an nl@din.de möglichst in Form einer Tabelle. Die Vorlage dieser Tabelle kann im Internet unter www.din.de/go/stellungnahmen-norm-entwuerfe oder für Stellungnahmen zu Norm-Entwürfen der DKE unter www.dke.de/stellungnahme abgerufen werden;– oder in Papierform an den DIN-Normenausschuss Luft- und Raumfahrt (NL), 10772 Berlin oder Am DIN-Platz, Burggrafenstr. 6, 10787 Berlin. <p>Es wird gebeten, mit den Kommentaren zu diesem Entwurf jegliche relevanten Patentrechte, die bekannt sind, mitzuteilen und unterstützende Dokumentationen zur Verfügung zu stellen.</p> <p>Gesamtumfang 31 Seiten</p> <p>DIN-Normenausschuss Luft- und Raumfahrt (NL)</p>		

Nationales Vorwort

Der Verband der Europäischen Luft-, Raumfahrt- und Verteidigungsindustrie – Normung (ASD-STAN) ist vom Europäischen Komitee für Normung (CEN) für zuständig erklärt worden, Europäische Normen (EN) für das Gebiet der Luft- und Raumfahrt auszuarbeiten. Durch die Vereinbarung vom 3. Oktober 1986 wurde ASD Assoziierte Organisation (ASB) des CEN.

Das vorliegende Dokument (prEN 4800-001:2023) wurde von ASD-STAN, Fachbereich Werkstoffe, unter Mitwirkung deutscher Experten des DIN-Normenausschusses Luft- und Raumfahrt (NL) erarbeitet.

Das zuständige deutsche Normungsgremium ist der Arbeitsausschuss NA 131-02-05 AA „Metallische Werkstoffe“ im DIN-Normenausschuss Luft- und Raumfahrt (NL).

Der vorliegende Norm-Entwurf enthält zur technischen Kommentierung einen Europäischen Norm-Entwurf (prEN) ausschließlich in Englischer Fassung aus der CEN-Umfrage.

Ein zweiter Norm-Entwurf wird nur die Deutsche Fassung der veröffentlichten ASD-STAN prEN enthalten. Es wird darauf hingewiesen, dass auf Grund der Verfahrensweise zur Normenerstellung bei ASD-STAN der zweite Norm-Entwurf ausschließlich der redaktionellen Prüfung der deutschen Sprachfassung dienen wird.

Entsprechend Beschluss 57/9 des Technischen Ausschusses des Beirats des DIN-Normenausschusses Luft- und Raumfahrt (NL) sind die europäischen Luft- und Raumfahrt-Normungsergebnisse zweisprachig, in Deutsch und Englisch, in das Deutsche Normenwerk zu überführen. Aus diesem Grund wird die Norm beide Sprachfassungen enthalten.

Aktuelle Informationen zu diesem Dokument können über die Internetseiten von DIN (www.din.de) durch eine Suche nach der Dokumentennummer aufgerufen werden.

Änderungen

Gegenüber DIN EN 4800-001:2011-06 wurden folgende Änderungen vorgenommen:

- a) technische Anforderungen in Tabelle 1 überarbeitet und an Neuausgabe von DIN EN 2955 angepasst;
- b) Dokument redaktionell überarbeitet.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 4800-001

December 2023

ICS 49.025.30

Will supersede EN 4800-001:2010

English Version

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

Série aérospatiale - Titane et alliages de titane -
Spécification technique - Partie 001: Plaques, tôles et
bandes

Luft- und Raumfahrt - Titan und Titanlegierungen -
Technische Lieferbedingungen - Teil 001: Platten,
Bleche und Bänder

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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

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.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword	3
Introduction	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions	6
4 Wording of order	7
5 Health and safety	7
6 Technical requirements	7
6.1 General.....	7
6.2 Qualification requirements.....	8
6.3 Release requirements	8
6.3.1 Release tests	8
6.3.2 Retests.....	8
6.3.3 Rejection	8
6.3.4 Special tests.....	8
6.3.5 Capability clause	8
6.3.6 Statistical process control.....	9
6.3.7 Inspection and test report	9
6.4 Traceability	9

European foreword

This document (prEN 4800-001:2023) 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 4800-001:2010.

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.

1 Scope

This document specifies the requirements for the ordering, manufacture, testing, inspection and delivery of titanium and titanium alloy plate, sheet and strip. It is applied when referred to and in conjunction with the EN material standard unless otherwise specified on the drawing, order or inspection schedule.

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.

EN 2002-001, *Aerospace series — Metallic materials — Test methods — Part 001: Tensile testing at ambient temperature*¹

EN 2002-002, *Aerospace series — Metallic materials — Test methods — Part 002: Tensile testing at elevated temperature*

EN 2002-005, *Aerospace series — Test methods for metallic materials — Part 005: Uninterrupted creep and stress-rupture testing*

EN 2002-6, *Aerospace series — Test methods for metallic materials — Part 6: Bend testing*²

EN 2003-009, *Aerospace series — Test methods — Titanium and titanium alloys — Part 009: Determination of surface contamination*

EN 2032-001, *Aerospace series — Metallic materials — Part 001: Conventional designation*

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

EN 2078, *Aerospace series — Metallic materials — Manufacturing schedule, inspection schedule, inspection and test report — Definition, general principles, preparation and approval*

EN 2955, *Aerospace series — Recycling of titanium and titanium alloy scrap*

EN 3114-001, *Aerospace series — Test method — Microstructure of ($\alpha + \beta$) titanium alloy wrought products — Part 001: General requirements*

EN 3114-003, *Aerospace series — Test method — Microstructure of ($\alpha + \beta$) titanium alloy wrought products — Part 003: Microstructure of plate*

EN 3114-004, *Aerospace series — Test method — Microstructure of ($\alpha + \beta$) titanium alloy wrought products — Part 004: Microstructure of sheet for superplastic forming*

EN 3683, *Aerospace series — Test methods — Titanium alloy wrought products — Determination of primary α content — Point count method and line intercept method*

EN 3684, *Aerospace series — Test methods — Titanium alloy wrought products — Determination of β transus temperature — Metallographic method*

¹ Published as ASD-STAN Standard at the date of publication of this document by Aerospace and Defence industries Association of Europe — Standardization (ASD-STAN), <https://www.asd-stan.org/>.

² Published as ASD-STAN Standard at the date of publication of this document by Aerospace and Defence industries Association of Europe — Standardization (ASD-STAN), <https://www.asd-stan.org/>.

EN 3873, *Aerospace series — Test methods for metallic materials — Determination of fatigue crack growth rates using Corner-Cracked (CC) test pieces*

EN 3874, *Aerospace series — Test method for metallic materials — Constant amplitude force-controlled low cycle fatigue testing*³

EN 3976, *Aerospace series — Titanium and titanium alloys — Test method — Chemical analysis for the determination of hydrogen content*

EN 3987, *Aerospace series — Test methods for metallic materials — Constant amplitude force-controlled high cycle fatigue testing*

EN 3988, *Aerospace series — Test method for metallic materials — Constant amplitude strain-controlled low cycle fatigue testing*⁴

EN 4050-1, *Aerospace series — Test method for metallic materials — Ultrasonic inspection of bars, plates, forging stock and forgings — Part 1: General requirement*

EN 4050-4, *Aerospace series — Test method for metallic materials — Ultrasonic inspection of bars, plates, forging stock and forgings — Part 4: Acceptance criteria*

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

EN 9100, *Quality Management Systems — Requirements for Aviation, Space and Defence Organizations*

EN ISO 643, *Steels — Micrographic determination of the apparent grain size (ISO 643)*

EN ISO 4288, *Geometrical product specifications (GPS) — Surface texture: Profile method — Rules and procedures for the Assessment of surface texture (ISO 4288)*

EN ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1)*

EN ISO 6892-2, *Metallic materials — Tensile testing — Part 2: Method of test at elevated temperature (ISO 6892-2)*

EN ISO 12737, *Metallic materials — Determination of plane-strain fracture toughness (ISO 12737)*

TR 2410, *Aerospace series — Metallic materials — Relationship between dimensional standards and material standards*⁵

AMS 2750, *Pyrometry*

3 Terms and definitions

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

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

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

³ Published as ASD-STAN Standard at the date of publication of this document by Aerospace and Defence industries Association of Europe — Standardization (ASD-STAN), <https://www.asd-stan.org/>.

⁴ Published as ASD-STAN Standard at the date of publication of this document by Aerospace and Defence industries Association of Europe — Standardization (ASD-STAN), <https://www.asd-stan.org/>.

⁵ Published as ASD-STAN Technical Report at the date of publication of this document by AeroSpace and Defence industries Association of Europe — Standardization (ASD-STAN), <https://www.asd-stan.org/>.

- IEC Electropedia: available at <https://www.electropedia.org/>

4 Wording of order

The order shall clearly indicate:

- quantities to be supplied;
- dates of delivery;
- material standard number;
- delivery condition and metallurgical code of products;
- dimensions and tolerances or reference to an appropriate dimensional standard;
- product designation, when required;
- forwarding address;
- nature and type of packing, if required;
- definition and frequency of any special tests and their retest procedures, if required.

5 Health and safety

The product in the delivery condition shall fulfil the current health and safety laws of the area of the country when and where it is to be delivered.

A product safety data sheet shall be available.

6 Technical requirements

6.1 General

The product shall be manufactured in accordance with the requirements of the relevant material standard and the applicable requirements of this specification. A manufacturing schedule shall be established and applied in accordance with EN 2078.

Product shall satisfy the requirements of the material standard and/or order and shall be free from irregularities prejudicial to the subsequent manufacture or use of this product.

Notwithstanding previous acceptance complying with this material standard, any product that is found, at a later stage, to contain such defects shall be rejected.

Unless otherwise specified, the requirements in Tables 1 and 2 shall apply in conjunction with those of the relevant material standard. Table 1 relates to lines 1 to 29 (inclusive) of the material standard and Table 2 relates to lines 30 onwards in which the sub-line format is also used. Lines 2 to 98 may also be opened in line 100 if the material standard details specific qualification requirements. If a specific line number is not shown in Table 1 and Table 2, the requirement is stated in the material standard and/or order.

The requirements of the order and/or material standard shall over-ride the requirements of the technical specification.

6.2 Qualification requirements

Qualification requirements when invoked by the material standard and/or order are detailed in Table 1 and Table 2. Unless otherwise agreed between the manufacturer and purchaser the qualification phase shall be run on the first three batches coming from three ingots.

6.3 Release requirements

6.3.1 Release tests

Release testing shall be the responsibility of the manufacturer.

The purchaser reserves the right to perform any of the inspections and/or tests required by the material standard and/or order.

The test samples shall be representative of the product.

When required the manufacturer shall inform the purchaser of the planned dates for extraction of samples and release testing in order that these operations may be witnessed.

Table 1 and Table 2 detail the requirements for each line of the material standard. Unless otherwise specifically requested by the purchaser, a particular inspection and/or test for release shall be carried out if corresponding acceptance criteria and/or values are stated in the applicable material standard, but see also in 6.3.5.

6.3.2 Retests

If the test procedure or test piece preparation is faulty, testing shall be re-applied at the original frequency after rectification of the original cause of failure.

When failure cannot be attributed to faulty testing, or test piece preparation, further test samples shall be selected at twice the original frequency from the product, one of which shall be that on which the original results were obtained unless already withdrawn by the manufacturer after suitable identification of the cause of failure. If all retest results are satisfactory, the batch shall be accepted. If one or more tests are unsatisfactory, the batch shall be:

- rejected; or
- 100 % retested and the conforming products accepted; or
- partially or fully re-heat treated if heat treatment can rectify the cause of the failure and tested as a completely new batch except for chemical composition, for which redetermination of hydrogen content is required. No product or test sample shall be re-heat treated more than twice.

6.3.3 Rejection

Any failure to meet the requirements of the material standard shall be cause for rejection.

6.3.4 Special tests

Special tests may be required by the purchaser. In such cases, the nature of the test, method, frequency and technical requirements shall be specified on the order or inspection schedule and shall be mutually agreed by the manufacturer and purchaser.

6.3.5 Capability clause

Where this is invoked and where sufficient evidence exists, the test shall not be carried out (unless specifically requested by the purchaser). However, this in no way reduces the obligations of the manufacturer to fulfil the requirements. If subsequent testing indicates that the product does not comply with the requirements, the batch shall be rejected.