



SLOVENSKI STANDARD SIST EN 3684:2009

01-julij-2009

5 YfcbUj h_U!`DfYg_i gbY'a YrcXY!'; bYHb]nXY_]n`h]Hbcj Yn`h]bY!'8 c`c Yj Ub^Y
hYa dYfUhi fY£!fUbgj g!'A YHJc[fUg_Ua YrcXU

OE![] æ^Á^!ã•ÄV^•Á ^c@ã•ÄVãã ã { Äe|| ^Á i| ~* @Á i| ä &•ÄÖ^c!i { ä æã } Á-Á
dæ•~•Ä^ {] ^!æ |^ÄT ^æ|| *!æ @Ä ^c@ã

Luft- und Raumfahrt - Prüfverfahren - Knetzeugnisse aus Titanlegierungen -
Bestimmung der β -Transus-Temperatur - Metallographisches Verfahren

(standards.iteh.ai)

Série aérospatiale - Méthodes d'essais - Demi-produits corroyés en alliages de titane -
Détermination de la température de transus β - Méthode métallographique

[https://standards.iteh.ai/catalog/standards/sist/0954bdcb-ca8f-4a60-aaed-](https://standards.iteh.ai/catalog/standards/sist/0954bdcb-ca8f-4a60-aaed-c0b9ca655a59/sist-en-3684-2009)

[c0b9ca655a59/sist-en-3684-2009](https://standards.iteh.ai/catalog/standards/sist/0954bdcb-ca8f-4a60-aaed-c0b9ca655a59/sist-en-3684-2009)

Ta slovenski standard je istoveten z: EN 3684:2007

ICS:

49.025.30 Titan Titanium

SIST EN 3684:2009 en,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 3684:2009

<https://standards.iteh.ai/catalog/standards/sist/0954bdc8-ca8f-4a60-aaed-c0b9ca655a59/sist-en-3684-2009>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 3684

March 2007

ICS 49.025.30

English Version

**Aerospace series - Test methods - Titanium alloy wrought
products - Determination of β transus temperature -
Metallographic method**

Série aérospatiale - Méthodes d'essais - Demi-produits
corroyés en alliages de titane - Détermination de la
température de transus β - Méthode métallographique

Luft- und Raumfahrt - Prüfverfahren - Knetzeugnisse aus
Titanlegierungen - Bestimmung der β -Transus-Temperatur
- Metallographisches Verfahren

This European Standard was approved by CEN on 5 October 2006.

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 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 Management Centre has the same status as the official versions.

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)
<https://standards.iteh.ai/catalog/standards/sist/0794bdcb-ca8f-4a60-aacd-c0b9ca655a59/sist-en-3684-2009>



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

Page

Foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Principle	4
5 Procedure	4
6 Test report	5

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 3684:2009](https://standards.iteh.ai/catalog/standards/sist/0954bdcb-ca8f-4a60-aaed-c0b9ca655a59/sist-en-3684-2009)

<https://standards.iteh.ai/catalog/standards/sist/0954bdcb-ca8f-4a60-aaed-c0b9ca655a59/sist-en-3684-2009>

Foreword

This document (EN 3684:2007) 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 September 2007, and conflicting national standards shall be withdrawn at the latest by September 2007.

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 organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

ITEH STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 3684:2009](https://standards.iteh.ai/catalog/standards/sist/0954bdcb-ca8f-4a60-aaed-c0b9ca655a59/sist-en-3684-2009)

<https://standards.iteh.ai/catalog/standards/sist/0954bdcb-ca8f-4a60-aaed-c0b9ca655a59/sist-en-3684-2009>

EN 3684:2007 (E)

1 Scope

This standard specifies the metallographic method for the determination of the β transus temperature of titanium alloy wrought products for aerospace applications.

2 Normative references

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.

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

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

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in EN 3114-001 apply.

4 Principle

iTeh STANDARD PREVIEW
(standards.iteh.ai)

The determination of β transus temperature is carried out by assessment of primary α content of several test samples heat treated at different temperatures around the assumed β transus temperature.

The β transus temperature lies between the heat treatment temperature of the test sample where the primary α content is 0 % and the next lower heat treatment temperature of the sample where the primary α content is > 0 %.

5 Procedure

5.1 Sampling

Sample material shall be as homogeneous as possible and with a fine grain distribution of α and β phases. If necessary, the sample material can be given additional deformation, e.g. by upsetting using normal forging temperatures in the ($\alpha + \beta$) range.

5.2 Test pieces

Individual test pieces are preferably cylindrical with dimensions of 10 mm in diameter and 10 mm in length or a 10 mm cube. The area to be examined shall preferably represent a transverse section.

Their number shall be commensurate to the selected test temperatures (see 5.3).

5.3 Heat treatment

The temperatures shall be selected around the assumed β transus temperature.

NOTE For routine determination, three temperatures at 10 °C intervals are normally sufficient. A more precise determination may be possible by using smaller intervals.

Each test piece shall be heated at the specified temperature ± 5 °C and maintained at this temperature between 15 min to 30 min.

They shall then be immediately quenched in water. To improve microstructural contrast in $\alpha + \beta$ alloys during metallographic inspection, it is recommended that the test pieces be subsequently annealed.

5.4 Metallographic examination

The test pieces shall be cut in half and the sections shall be prepared and examined according to EN 3683.

5.5 Expression of results

Record the temperature at which the primary α content is 0 % and the next lower temperature at which the primary α content is > 0 %.

Express the β transus temperature as a range limited by the above temperatures e.g. (1010/1020) °C.

NOTE The β transus temperature may also be expressed by a single value extrapolated from the diagram primary α content versus temperature.

6 Test report

The test report shall refer to this standard and shall include:

- complete identification of the tested product, including the manufacturer's name, designation and batch number;
- location of test sample;
- number and dimensions of test pieces;
- heat treatment temperatures;
- indication of any annealing;
- test results according to EN 3683;
- equipment used;
- date of test and traceability to individuals performing the test work;
- test results (see 5.5);
- any factor which may have affected the results and any deviation from the test method.