

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

Aerospace series - Test methods - Titanium alloy  
wrought products - Determination of  $\beta$  transus  
temperature - Metallographic method

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

|                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                         |
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| <p>Käesolev Eesti standard EVS-EN 3684:2007 sisaldab Euroopa standardi EN 3684:2007 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 31.05.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p> | <p>This Estonian standard EVS-EN 3684:2007 consists of the English text of the European standard EN 3684:2007.</p> <p>This document is endorsed on 31.05.2007 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p> |
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| <p><b>Käsitlusala:</b><br/>This standard specifies the metallographic method for the determination of the <math>\beta</math> transus temperature of titanium alloy wrought products for aerospace applications.</p> | <p><b>Scope:</b><br/>This standard specifies the metallographic method for the determination of the <math>\beta</math> transus temperature of titanium alloy wrought products for aerospace applications.</p> |
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ICS 49.025.30

Võtmesõnad:

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English Version

Aerospace series - Test methods - Titanium alloy wrought  
products - Determination of  $\beta$  transus temperature -  
Metallographic method

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

Luft- und Raumfahrt - Prüfverfahren - Knetzeugnisse aus  
Titanlegierungen - Bestimmung der  $\beta$ -Transus-Temperatur  
- Metallographisches Verfahren

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

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| 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    |

## 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.

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## 1 Scope

This standard specifies the metallographic method for the determination of the  $\beta$  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  $\alpha$  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

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

The  $\beta$  transus temperature lies between the heat treatment temperature of the test sample where the primary  $\alpha$  content is 0 % and the next lower heat treatment temperature of the sample where the primary  $\alpha$  content is > 0 %.

## 5 Procedure

### 5.1 Sampling

Sample material shall be as homogeneous as possible and with a fine grain distribution of  $\alpha$  and  $\beta$  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  $\beta$  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.