Implants for surgery - Metallic materials - Part 3: Wrought titanium 6-aluminium 4-vanadium alloy (ISO 5832-3:1996)

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NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 5832-3:2012 sisaldab Euroopa standardi EN ISO 5832-3:2012 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 5832-3:2012 consists of the English text of the European standard EN ISO 5832-3:2012.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 23.05.2012.	Date of Availability of the European standard is 23.05.2012.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 11.040.40

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 5832-3

May 2012

ICS 11.040.40

English Version

Implants for surgery - Metallic materials - Part 3: Wrought titanium 6-aluminium 4-vanadium alloy (ISO 5832-3:1996)

Implants chirurgicaux - Produits à base de métaux - Partie 3: Alliage à forger à base de titane, d'aluminium 6 et de vanadium 4 (ISO 5832-3:1996)

Chirurgische Implantate - Metallische Werkstoffe - Teil 3: Titan 6-Aluminium 4-Vanadium Knetlegierungen (ISO 5832-3:1996)

This European Standard was approved by CEN on 28 April 2012.

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

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Ref. No. EN ISO 5832-3:2012: E

Foreword

The text of ISO 5832-3:1996 has been prepared by Technical Committee ISO/TC 150 “Implants for surgery” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 5832-3:2012 by Technical Committee CEN/TC 55 “Dentistry” the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by November 2012, and conflicting national standards shall be withdrawn at the latest by November 2012.

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.

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Endorsement notice

The text of ISO 5832-3:1996 has been approved by CEN as a EN ISO 5832-3:2012 without any modification.

Introduction

No known surgical implant material has ever been shown to cause absolutely no adverse reactions in the human body. However, long-term clinical experience of the use of the material referred to in this part of ISO 5832 has shown that an acceptable level of biological response can be expected, when the material is used in appropriate applications.

Implants for surgery — Metallic materials —

Part 3:
Wrought titanium 6-aluminium 4-vanadium alloy

1 Scope

This part of ISO 5832 specifies the characteristics of, and corresponding test methods for, the wrought titanium alloy known as titanium 6-aluminium 4-vanadium alloy (Ti 6-Al 4-V alloy) for use in the manufacture of surgical implants.

NOTE 1 The mechanical properties of a sample obtained from a finished product made of this alloy may not necessarily comply with the specifications given in this part of ISO 5832.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 5832. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 5832 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 6892:1984, *Metallic materials — Tensile testing.*

ISO 7438:1985, *Metallic materials — Bend test.*

ETTC[1] Publication 2, 1979, *Microstructural standards for $\alpha + \beta$ titanium alloy bars*[2].

3 Chemical composition

The heat/ingot analysis of a representative sample of the alloy when determined in accordance with clause 6 shall comply with the chemical composition specified in table 1.

NOTE 2 Ingot analysis may be used for determining all chemical requirements except hydrogen.

The analysis of hydrogen shall be carried out after the final heat treatment and final surface treatment.

Requirements for the major and minor elemental constituents for titanium 6-aluminium 4-vanadium alloy are listed in table 1.

Table 1 — Chemical composition

Element	Compositional limits % (*m/m*)
Aluminium	5,5 to 6,75
Vanadium	3,5 to 4,5
Iron	0,3 max.
Oxygen	0,2 max.
Carbon	0,08 max.
Nitrogen	0,05 max.
Hydrogen	0,015 max.[1]
Titanium	Balance

1) Except for billets, for which the maximum hydrogen content shall be 0,010 % (*m/m*).

1) European Titanium Producers' Technical Committee (ETTC).

2) Available commercially from: Deutsche Titan GmbH, Essen, Germany and IMI-Titanium Ltd., Birmingham, UK. This information is given for the convenience of users of this part of ISO 5832, and does not constitute an endorsement by ISO of these products.