

Australian Standard™

**Implants for surgery—Metallic materials**

**Part 5: Wrought cobalt-chromium-  
tungsten-nickel alloy**

This Australian Standard was prepared by Committee HE-012, Surgical Implants. It was approved on behalf of the Council of Standards Australia on 14 October 2003 and published on 8 December 2003.

---

The following are represented on Committee HE-012:

Australian College of Operating Room Nurses  
Australian Dental Association  
Australian Industry Group  
Australian Orthopaedic Association  
Australian Society for Biomaterials  
Commonwealth Department of Health and Ageing  
Department of Defence (Australia)  
Medical Industry Association of Australia  
Neurosurgical Society of Australasia  
Royal Australasian College of Surgeons  
Royal Perth Hospital  
The University of New South Wales  
The University of Sydney

---

#### **Keeping Standards up-to-date**

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Australia website at [www.standards.com.au](http://www.standards.com.au) and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Global Standard*, has a full listing of revisions and amendments published each month.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at [mail@standards.com.au](mailto:mail@standards.com.au), or write to the Chief Executive, Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001.

---

Australian Standard™

**Implants for surgery—Metallic materials**

**Part 5: Wrought cobalt-chromium-tungsten-nickel alloy**

Originated as part of AS T35—1966.  
Previous edition AS 2320.5—1979.  
Second edition 2003.

**COPYRIGHT**

© Standards Australia International

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia International Ltd  
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 5586 0

## PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee HE-012, Surgical Implants, to supersede AS 2320.5—1979, *Metals for the manufacture of surgical implants, Part 5: Wrought cobalt-chromium-tungsten-nickel alloy*. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

This Standard has been reproduced from, and is identical with, ISO 5832-5:1993, *Implants for surgery—Metallic materials, Part 5: Wrought cobalt-chromium-tungsten-nickel alloy*.

As this Standard is reproduced from an International Standard, the following modifications apply.

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text ‘this part of ISO 5832’ should read ‘this Australian Standard’.
- (c) A full point should be substituted for a comma when referring to a decimal number.

References to International Standards should be replaced by references to the following Australian Standard:

<i>Reference to International Standard*</i>	<i>Australian Standard</i>
ISO	AS
643 Steels—Micrographic determination of the ferritic or austenitic grain size	1733 Methods for the determination of grain size in metals

---

\* Any international Standards not listed do not have an Australian equivalent.

## INTRODUCTION

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

Currently in preview, click buy full vers.

Currently in preview, click buy full version

## AUSTRALIAN STANDARD

**Implants for surgery—Metallic materials****Part 5:****Wrought cobalt-chromium-tungsten-nickel alloy****1 Scope**

This part of ISO 5832 specifies the characteristics of, and corresponding test methods for, wrought cobalt-chromium-tungsten-nickel 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 those specified 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 643:1983, *Steels — Micrographic determination of the ferritic or austenitic grain size.*

ISO 4967:1979, *Steel — Determination of content of non-metallic inclusions — Micrographic method using standard diagrams.*

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

**3 Chemical composition**

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

**Table 1 — Chemical composition**

Element	Compositional limits, % (m/m)
Chromium	19 to 21
Tungsten	14 to 16
Nickel	9 to 11
Iron	3 max.
Carbon	0,15 max.
Silicon	1 max.
Manganese	2 max.
Cobalt	Balance

**4 Microstructure****4.1 Grain size**

Samples shall be prepared and etched for examination by any recognized technique. The grain size measured in accordance with ISO 643 shall be No. 5 or finer.<sup>1)</sup>

1) ISO 643 is given as a reference even though the material dealt with in this part of ISO 5832 is not iron-based.