AS/NZS 4856:2006
ISO 3580:2004
Reconfirmed 2017

AS/NZS 4856:2006

Australian/New Zealand Standard™

Welding consumables—Covered electrodes for manual metal arc welding of creep-resisting steels—Classification

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee WD-002, Welding Consumables. It was approved on behalf of the Council of Standards Australia on 10 October 2006 and on behalf of the Council of Standards New Zealand on 20 October 2006.
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The following are represented on Committee WD-002:

Australian Chamber of Commerce and Industry
Bureau of Steel Manufacturers of Australia
Business New Zealand
CSIRO Manufacturing & Infrastructure Technology
Standards New Zealand
Welding Technology Institute of Australia

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Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR 06360.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

RECONFIRMATION

OF

AS/NZS 4856:2006

Welding consumables—Covered electrodes for manual metal arc welding of creep-resisting steels—Classification

RECONFIRMATION NOTICE

Technical Committee WD-002 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

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Australian Chamber of Commerce and Industry
Bureau of Steel Manufacturers of Australia
New Zealand Heavy Engineering Research Association
Welding Technology Institute of Australia

NOTES

Australian/New Zealand Standard™

Welding consumables—Covered electrodes for manual metal arc welding of creep-resisting steels—Classification

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee WD-002, Welding Consumables to supersede AS/NZS 1553.2:1999 (in part).

The objective of this Standard is to specify requirements for classification of covered electrodes, based on the all-weld metal in the heat-treated condition, for manual metal arc welding of ferritic and martensitic creep-resisting and low alloy elevated temperature steels.

This Standard is identical with, and has been reproduced from ISO 3580:2004, *Welding consumables—Covered electrodes for manual metal arc welding of creep-resisting steels—Classification*.

An informative Annex ZA, has been included to provide guidance on health and safety in welding.

As this Standard is reproduced from an international standard, the following applies:

(a) Its number appears on the cover and title page while the international standard number appears only on the cover

(b) In the source text 'ISO 3580' should read 'AS/NZS 4856'.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian/New Zealand Standard*	
ISO		AS	
6947	Welds—Working positions—Definitions of angles of slope and rotation	3545	Welding positions
544	Welding consumables—Technical delivery conditions for welding filler metals—Type of product, dimensions, tolerances and markings	AS/NZS ISO 544	Welding consumables—Technical delivery conditions for welding filler metals—Type of product, dimensions, tolerances and markings
3690	Welding and allied processes—Determination of hydrogen content in ferritic steel arc weld metal	AS/NZS 3752	Welding and allied processes—Determination of hydrogen content in ferritic steel arc weld metal
13916	Welding—Guidance on the measurement of preheating temperature, interpass temperature and preheat maintenance temperature	AS ISO 13916	Welding—Guide on the measurement of preheating temperature, interpass temperature and preheat maintenance temperature
14344	Welding and allied processes—Flux and gas shielded electrical welding processes—Procurement guidelines for consumables	AS/NZS ISO 14344	Welding and allied processes—Flux and gas shielded electrical welding processes—Procurement guidelines for consumables

The term 'informative' has been used in this Standard to define the application of the annex to which it applies. An 'informative' annex is only for information and guidance.

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INTRODUCTION

This International Standard proposes a classification aimed at designating covered electrodes, primarily in terms of the chemical composition of the all-weld metal.

It should be noted that the mechanical properties of all-weld metal test specimens used to classify the electrodes will vary from those obtained in production joints because of differences in welding procedure such as electrode diameter, width of weave, welding position and material composition.

The classification according to system A is mainly based on EN 1599. The classification according to system B is mainly based upon standards used around the Pacific Rim.

Requests for official interpretations of any aspect of this standard should be directed to the Secretariat of ISO/TC 44/SC 3 via your national standards body, a complete listing of which can be found at www.iso.org

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard

Welding consumables—Covered electrodes for manual metal arc welding of creep-resisting steels—Classification

1 Scope

This International Standard specifies requirements for classification of covered electrodes, based on the all-weld metal in the heat-treated condition, for manual metal arc welding of ferritic and martensitic creep-resisting and low alloy elevated temperature steels.

This document is a combined specification for classification utilizing a system based upon the chemical composition of the all-weld metal, with requirements for the yield strength and the average impact energy of 47 J of all-weld metal, or utilizing a system based upon the tensile strength and the chemical composition of all-weld metal.

1) Paragraphs and tables which carry the suffix letter “A” are applicable only to electrodes classified to the system based upon chemical composition, with requirements for the yield strength and the average impact energy of 47 J of all-weld metal under this International Standard.

2) Paragraphs and tables which carry the suffix letter “B” are applicable only to electrodes classified to the system based upon the tensile strength and the chemical composition of all-weld metal under this International Standard.

3) Paragraphs and tables which do not have either the suffix letter “A” or the suffix letter “B” are applicable to all covered electrodes classified under this International Standard.

For comparison purposes, some tables include requirements for electrodes classified according to both systems, placing individual electrodes from the two systems, which are similar in composition and properties, on adjacent lines in the particular table. In a particular line of the table that is mandatory in one system, the symbol for the similar electrode from the other system is indicated in parentheses. By appropriate restriction of the formulation of a particular electrode, it is often, but not always, possible to produce an electrode that can be classified in both systems, in which case the electrode, and/or its packaging, may be marked with the classification in either or both systems.

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.

ISO 31-0:1992, *Quantities and units — Part 0: General principles*

ISO 544, *Welding consumables — Technical delivery conditions for welding filler materials — Type of product, dimensions, tolerances and markings*

ISO 2401, *Covered electrodes — Determination of the efficiency, metal recovery and deposition coefficient*

ISO 3690, *Welding and allied processes — Determination of hydrogen content in ferritic steel arc weld metal*

ISO 6847, *Welding consumables — Deposition of a weld metal pad for chemical analysis*