

Australian/New Zealand Standard™

**Welding consumables—Covered
electrodes for manual metal arc welding
of non-alloy and fine grain steels—
Classification**



AS/NZS 4855:2007

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 2 January 2007 and on behalf of the Council of Standards New Zealand on 19 January 2007.

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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
Welding Technology Institute of Australia

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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 1553.1:1995, *Covered electrodes for welding, Part 1: Low carbon steel electrodes for manual metal-arc welding of carbon steels and carbon-manganese steels*.

The objective of this Standard is to specify requirements for classification of covered electrodes and deposited metal in the as-welded condition and in the post-weld heat-treated condition for manual metal arc welding of non-alloy and fine grain steels.

This Standard is identical with, and has been reproduced from ISO 2560:2002, *Welding consumables—Covered electrodes for manual metal arc welding of non-alloy and fine grain 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 2560 should read AS/NZS 4855.
- (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:

<i>Reference to International Standard</i>		<i>Australian/New Zealand Standard Standard</i>	
ISO		AS	
31	Quantities and units	2900	Quantities and units
31-0	Part 0: General principles	2900.0	Part 0: General principles
6947	Welds—Working positions— Definitions of angles of slope and rotation	3545	Welding positions
		AS/NZS	
544	Welding consumables—Technical delivery conditions for welding filler metals—Type of product, dimensions, tolerances and marking	544	Welding consumables— Technical delivery conditions for welding filler metals—Type of product, dimensions, tolerances and marking
3690	Welding and allied processes— Determination of hydrogen content in ferritic steel arc weld metal	3752	Welding and allied processes— Determination of hydrogen content in ferritic steel arc weld metal
		AS ISO	
13916	Welding—Guidance on the measurement of preheating temperature, interpass temperature and preheat maintenance temperature	13916	Welding—Guidance on the measurement of preheating temperature, interpass temperature and preheat maintenance temperature

AS/NZS ISO

14344 Welding and allied processes—
Flux and gas shielded electrical
welding processes—Procurement
guidelines for consumables

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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 recognizes that there are two somewhat different approaches in the global market to classifying a given electrode, and allows for either or both to be used, to suit a particular market need. Application of either type of classification designation (or of both where suitable) identifies a product as classified according to this International Standard. The classification according to system A is mainly based on EN 499. The classification according to system B is mainly based upon standards used around the Pacific Rim.

This International Standard provides a classification in order to designate covered electrodes in terms of the yield strength, tensile strength and elongation of the all-weld metal. The ratio of yield to tensile strength of weld metal is generally higher than that of parent metal. Users should note that matching weld metal yield strength to parent metal yield strength will not necessarily ensure that the weld metal tensile strength matches that of the parent metal. Therefore, where the application requires matching tensile strength, selection of the consumable should be made by reference to column 3 of Table 1A or to Table 1B and Table 8B.

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 size, width of weave, welding position and parent metal composition.

Requests for official interpretation of any aspect of this International Standard should be directed to the Secretariat of ISO/TC 44/SC 3 via the member body in the user's country, a complete listing of which can be found at www.iso.org.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard Standard**Welding consumables—Covered electrodes for manual metal arc welding
of non-alloy and fine grain steels—Classification**

1 Scope

This International Standard specifies requirements for classification of covered electrodes and deposited metal in the as-welded condition and in the post-weld heat-treated condition for manual metal arc welding of non-alloy and fine grain steels with a minimum yield strength of up to 500 N/mm² or a minimum tensile strength of up to 570 N/mm².

This International Standard is a combined specification providing for classification utilizing a system based upon 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 average impact energy of 27 J of all-weld metal.

- 1) Paragraphs and tables which carry the suffix letter "A" are applicable only to covered electrodes classified to the system based upon the yield strength and the average impact energy of 47 J of all-weld metal in this International Standard.
- 2) Paragraphs and tables which carry the suffix letter "B" are applicable only to covered electrodes classified to the system based upon the tensile strength and the average impact energy of 27 J of all-weld metal in 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 in this International Standard.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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

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

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*

ISO 6947, *Welds — Working positions — Definitions of angles of slope and rotation*

ISO 13916, *Welding — Guidance on the measurement of preheating temperature, interpass temperature and preheat maintenance temperature*

ISO 14344, *Welding and allied processes — Flux and gas shielded electrical welding processes — Procurement guidelines for consumables*