AS/NZS 16834:2013

Australian/New Zealand Standard™

Welding consumables—Wire electrodes, wires, rods and deposits for gas shielded arc welding of high strength steels—Classification (ISO 16834:2012, MOD)

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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 25 January 2013 and on behalf of the Council of Standards New Zealand on 25 January 2013.
This Standard was published on 20 February 2013.

The following are represented on Committee WD-002:

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

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This Standard was issued in draft form for comment as DR2 AS/NZS 16834.

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Originally in Australia as part of AS 2717.1—1984.
First joint edition, part of AS/NZS 2717.1:1996.
Jointly revised in part and redesignated as AS/NZS 16834:2013.

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ISBN 978 1 74342 349 3

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee WD-002, Welding Consumables to supersede part of AS/NZS 2717.1:1996, *Welding—Electrodes—Gas metal arc,* Part 1: *Ferritic steel electrodes*.

The objective of this Standard is to specify requirements for manufacturers and users on the classification of wire electrodes, wires, rods and weld deposits in the as-welded condition and in the post-weld heat-treated (PWHT) condition for gas shielded metal arc welding and tungsten inert-gas welding of high strength steels with a minimum yield strength greater than 500 MPa, or a minimum tensile strength greater than 570 MPa.

This Standard is an adoption with national modifications and has been reproduced from ISO 16834:2012, *Welding consumables—Wire electrodies, wires, rods and deposits for gas shielded arc welding of high strength steels—Classification*, and has been varied as indicated to take account of Australian/New Zealand conditions. The modifications are specified in Appendix ZZ. The information in Appendix ZA is intended to give users more details regarding the use and selection of Gas Metal Arc Welding (GMAW) wire electrodes.

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

(a) In the source text 'this International Standard' should read 'this Australian/New Zealand Standard'.

(b) 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 13916	Welding—Guidance on the measurement of preheating temperature, interpass temperature, and preheat temperature maintenance	AS ISO 13916	Welding—Guide on the measurement of preheating temperature, interpass temperature and preheat maintenance temperature

Only international references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix 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 wire electrode, wire, rod or deposit, 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 in accordance with this International Standard. The classification in accordance with system A is mainly based on EN 12534:1999[1]. The classification in accordance with system B is mainly based upon standards used around the Pacific Rim. Future revisions will aim to merge the two systems into a single classification system.

This International Standard provides a classification for the designation of wire electrodes, wires, rods and deposits in terms of their chemical composition and, where required, 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 the parent metal. Users should note that matching weld metal yield strength to parent metal yield strength does not necessarily ensure that the weld metal tensile strength matches that of the parent material. Thus, where the application requires matching tensile strength, selection of the consumable should be made by reference to column 3 of Table 1A or 1B, as appropriate.

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AUSTRALIAN/NEW ZEALAND STANDARD

Welding consumables—Wire electrodes, wires, rods and deposits for gas shielded arc welding of high strength steels—Classification (ISO 16834:2012, MOD)

1 Scope

This International Standard specifies requirements for classification of wire electrodes, wires, rods and all-weld metal deposits in the as-welded condition and in the post-weld heat-treated (PWHT) condition for gas shielded metal arc welding and tungsten inert-gas welding of high-strength steels with a minimum yield strength greater than 500 MPa, or a minimum tensile strength greater than 570 MPa. One wire electrode can be tested and classified with different shielding gases.

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.

e) Clauses, subclauses and tables which carry the suffix letter “A” are applicable only to wire electrodes, wires, rods and deposits classified according to the system based upon the yield strength and the average impact energy of 47 J of all-weld metal under this International Standard.

f) Clauses, subclauses and tables which carry the suffix letter “B” are applicable only to wire electrodes, wires, rods and deposits classified according to the system based upon the tensile strength and the average impact energy of 27 J of all-weld metal under this International Standard.

g) Clauses, subclauses and tables which do not have either the suffix letter “A” or the suffix letter “B” are applicable to all wire electrodes, wires, rods and deposits classified under this International Standard.

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

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

ISO 14175:2008, *Welding consumables — Gases and gas mixtures for fusion welding and allied processes*

ISO 14344, *Welding consumables — Procurement of filler materials and fluxes*

ISO 15792-1:2000, *Welding consumables — Test methods — Part 1: Test methods for all-weld metal test specimens in steel, nickel and nickel alloys*

ISO 80000-1:2009, *Quantities and units — Part 1: General*

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