AS/NZS 21952:2012

Australian/New Zealand Standard™

Welding consumables—Wire electrodes, wires, rods and deposits for gas shielded arc welding of creep-resisting steels—Classification (ISO 21952:2012, MOD)

STANDARDS Australia

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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 24 October 2012 and on behalf of the Council of Standards New Zealand on 15 September 2012.
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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
New Zealand Heavy Engineering Research Association
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 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 and rods for gas-shielded metal arc welding and tungsten inert-gas welding of creep-resisting steels, and for their deposits in the as-welded or post-weld heat-treated condition.

This Standard is an adoption with national modifications and has been reproduced from ISO 21952:2012, *Welding consumables—Wire electrodes, wires, rods and deposits for gas shielded arc welding of creep-resisting 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 maintenance temperature	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.

CONTENTS

INTRODUCTION

This International Standard was prepared in collaboration with the International Institute of Welding. It 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 12070:1999[1]. The classification in accordance with system B is mainly based upon standards used around the Pacific Rim.

This International Standard proposes a classification system for wire electrodes, wires and rods in terms of their chemical composition and, where required, in terms of the yield strength, tensile strength and elongation of the all-weld metal deposit. 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 does not necessarily ensure that the weld metal tensile strength matches that of the parent material. Where the application requires matching tensile strength, therefore, selection of the consumable should be made by reference to column 4 of Table 2.

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

AUSTRALIAN/NEW ZEALAND STANDARD

Welding consumables—Wire electrodes, wires, rods and deposits for gas shielded arc welding of creep-resisting steels—Classification (ISO 21952:2012, MOD)

1 Scope

This International Standard specifies requirements for classification of wire electrodes, wires and rods for gas shielded metal arc welding and tungsten inert-gas welding of creep-resisting steels, and for their deposits in the as-welded or post-weld heat-treated condition. 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 chemical composition of wire electrodes, wires and rods with requirements for yield strength and average impact energy of 47 J of all-weld metal, or utilizing a system based upon the tensile strength of the all-weld metal deposits and the chemical composition of wire electrodes, wires and rods.

a) Clauses, subclauses and tables which carry the suffix letter "A" are applicable only to wire electrodes, wires, rods and deposits classified in accordance with the system based upon the chemical composition with requirements for yield strength and the average impact energy of 47 J of all-weld metal deposits under this International Standard.

b) Clauses, subclauses and tables which carry the suffix letter "B" are applicable only to wire electrodes, wires, rods and deposits classified in accordance with the system based upon the tensile strength of all-weld metal deposits and the chemical composition of wire electrodes, wires and rods under this International Standard.

c) 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, *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*