

Australian/New Zealand Standard™

**Welding consumables—Tubular cored
electrodes for gas shielded metal arc
welding of creep-resisting steels—
Classification (ISO 17634:2004, MOD)**



AS/NZS ISO 17634:2006

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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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This Standard was issued in draft form for comment as DR 06414.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

RECONFIRMATION

OF

AS/NZS ISO 17634:2006

**Welding consumables—Tubular cored electrodes for gas shielded metal arc
welding of creep-resisting steels—Classification (ISO 17634:2004, MOD)**

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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.

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New Zealand Heavy Engineering Research Association
Welding Technology Institute of Australia

NOTES

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee WD-002, Welding Consumables, to supersede, in part, AS 2203.1:1990, *Covered electrodes for arc-welding, Part 1: Ferritic steel electrodes*.

The objective of this Standard is to provide requirements for classification of tubular cored electrodes with gas shield for metal arc welding of creep-resisting steels.

This Standard is an adoption with national modifications and has been reproduced from ISO 17634:2004, *Welding consumables—Tubular cored electrodes for gas shielded metal arc welding of creep-resisting steels—Classification*, and has been varied as indicated to take account of Australian/New Zealand conditions.

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

- (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 ‘ISO number’ should read ‘AS or AS/NZS number’.
- (c) A full point should be substituted for a comma when referring to a decimal marker.
- (d) Any French text on figures should be ignored.

The terms ‘normative’ and ‘informative’ are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

For the purpose of this standard, the ISO text is modified as set out in Annex ZA.

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 or Australian/New Zealand</i>	
ISO		AS	
31-0	Quantities and units— Part 0: General principles	2900.0	Quantities and units—General principles
		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	
6947	Welds—Working positions— Definitions of angles of slope and rotation	3545	Welding positions

ISO		AS/NZS	
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	
14175	Welding Consumables — Shielding gases for arc welding and cutting	4882	Shielding gases for welding
		AS/NZS	
14344	Welding and allied processes—Flux and gas shielded electrical welding processes—Procurement guidelines for consumables	14344	Welding and allied processes—Flux and gas shielded electrical welding processes—Procurement guidelines for consumables

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INTRODUCTION

This International Standard provides a classification system for tubular cored electrodes in terms of chemical composition of the all-weld metal, type of electrode core, type of shielding gas and welding position, or in terms of the tensile properties, chemical composition of the all-weld metal, usability characteristics of the electrodes, shielding gas and welding position. The ratio of proof to tensile strength of weld metal is generally higher than that of parent metal. Users should note that matching weld metal proof strength to parent metal proof strength will not necessarily ensure that the weld metal tensile strength matches that of the parent metal. 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 specimens used to classify the tubular cored 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.

The classification according to system A is mainly based on EN 12071:1999, *Welding consumables — Tubular cored electrodes for gas shielded metal arc welding of creep-resisting steels — Classification*. 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 International 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.

NOTES

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Welding consumables—Tubular cored electrodes for gas shielded metal arc welding of creep-resisting steels—Classification (ISO 17634:2004, MOD)**1 Scope**

This International Standard specifies requirements for classification of tubular cored electrodes used in the post-weld heat-treated condition for gas shielded metal arc welding of creep-resisting and low alloy elevated temperature steels. One tubular cored 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 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 tubular cored 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 in accordance with this International Standard.
- 2) Paragraphs and tables which carry the suffix letter "B" are applicable only to tubular cored electrodes classified to the system based upon the tensile strength and chemical composition of all-weld metal in accordance with this International Standard.
- 3) Paragraphs and tables which have neither the suffix letter "A" nor the suffix letter "B" are applicable to all tubular cored electrodes classified in accordance with this International Standard.

It is recognized that the operating characteristics of tubular cored electrodes can be modified by the use of pulsed current, but for the purposes of this International Standard, pulsed current is not used for determining the electrode classification.

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 marking*

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 6947:1990, *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*