
**Welding consumables — Rods, wires
and deposits for tungsten inert gas
welding of non-alloy and fine-grain
steels — Classification**

*Produits consommables pour le soudage — Baguettes et fils pour
dépôts par soudage TIG des aciers non alliés et des aciers à grains fins
— Classification*

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Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Classification	2
4.1 General.....	2
5 Symbols and requirements	2
5.1 Symbol for the product/process.....	2
5.2 Symbol for strength and elongation of all-weld metal.....	3
5.3 Symbol for impact properties of all-weld metal.....	4
5.4 Symbol for the chemical composition of rods or wires.....	4
6 Mechanical tests	9
6.1 Preheating and interpass temperatures.....	9
6.2 Welding conditions and pass sequence.....	10
6.3 PWHT condition.....	10
7 Chemical analysis	10
8 Rounding procedure	11
9 Retesting	11
10 Technical delivery conditions	11
11 Examples of designation	11
Bibliography	13

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 44, *Welding and allied processes*, Subcommittee SC 3, *Welding consumables*.

This fifth edition cancels and replaces the fourth edition (ISO 636:2015), of which it constitutes a minor revision with the following changes:

- updates to the latest ISO style (including mandatory [Clause 3](#) and subsequent renumbering of clauses and subclauses);
- in [Table 3B](#), the limits for Ti in the last column have been correctly assigned against NCCT1, NCCT2 and N1M2T and not against N9, NCC and NCC1 as in the 2015 edition;
- the newly agreed wording for [Clause 8](#), "Rounding procedure", has been introduced.

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

Introduction

This document provides a classification for the designation of rods and wires 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 parent metal. 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 material. Where the application requires matching tensile strengths, selection of consumables is made by reference to column 3 of Table 1A or Table 1B.

Of note is that the mechanical properties of all-weld metal test specimens used to classify the rods and wires vary from those obtained in production joints because of differences in welding procedure such as diameter, width of weave, welding position, and material composition.

The classification according to system A is mainly based on EN 1668:1997^[1]. The classification according to system B is mainly based upon standards used around the Pacific Rim.

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Welding consumables — Rods, wires and deposits for tungsten inert gas welding of non-alloy and fine-grain steels — Classification

1 Scope

This document specifies requirements for classification of rods and wires in the as-welded condition and in the post-weld heat-treated condition for tungsten inert gas welding of non-alloy and fine-grain steels with a minimum yield strength of up to 500 MPa or a minimum tensile strength of up to 570 MPa.

This document is a combined specification providing 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.

- a) Paragraphs and tables which carry the suffix letter “A” are applicable only to rods and wires classified to the system based upon the yield strength and the average impact energy of 47 J of all-weld metal in accordance with this document.
- b) Paragraphs and tables which carry the suffix letter “B” are applicable only to rods and wires classified to the system based upon the tensile strength and the average impact energy of 27 J of all-weld metal in accordance with this document.
- c) Paragraphs and tables which have neither the suffix letter “A” nor the suffix letter “B” are applicable to all rods and wires classified in accordance with this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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, *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*. Amended by ISO 15792-1:2000/Amd 1:2011.

ISO 80000-1:2009, *Quantities and units — Part 1: General*. Corrected by ISO 80000-1:2009/Cor. 1:2011.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>