

STN	Zváracie materiály Obalené elektródy na ručné oblúkové zvaranie vysokopevných ocelí Klasifikácia (ISO 18275: 2018)	STN EN ISO 18275 05 5002
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Welding consumables - Covered electrodes for manual metal arc welding of high-strength steels - Classification (ISO 18275:2018)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 02/19

Obsahuje: EN ISO 18275:2018, ISO 18275:2018

Oznámením tejto normy sa ruší
STN EN ISO 18275 (05 5002) z novembra 2012

128148

EUROPEAN STANDARD

EN ISO 18275

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2018

ICS 25.160.20

Supersedes EN ISO 18275:2012

English Version

Welding consumables - Covered electrodes for manual metal arc welding of high-strength steels - Classification (ISO 18275:2018)

Produits consommables pour le soudage - Électrodes enrobées pour le soudage manuel à l'arc des aciers à haute résistance - Classification (ISO 18275:2018)

Schweißzusätze - Umhüllte Stabelektroden zum Lichtbogenhandschweißen von hochfesten Stählen - Einteilung (ISO 18275:2018)

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EN ISO 18275:2018 (E)

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European foreword

This document (EN ISO 18275:2018) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding and allied processes" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2019, and conflicting national standards shall be withdrawn at the latest by March 2019.

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The text of ISO 18275:2018 has been approved by CEN as EN ISO 18275:2018 without any modification.

INTERNATIONAL STANDARD

ISO
18275

Third edition
2018-08

Welding consumables — Covered electrodes for manual metal arc welding of high-strength steels — Classification

*Produits consommables pour le soudage — Électrodes enrobées
pour le soudage manuel à l'arc des aciers à haute résistance —
Classification*



Reference number
ISO 18275:2018(E)

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Published in Switzerland

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ISO 18275:2018(E)

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).

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For an explanation of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 3, *Welding consumables*.

Any feedback, question or request for official interpretation related to 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/members.html. Official interpretations, where they exist, are available from this page: <https://committee.iso.org/sites/tc44/home/interpretation.html>.

This third edition cancels and replaces the second edition (ISO 18275:2011), which has been technically revised. The main changes compared to the previous edition are as follows:

- fillet weld testing has been removed from the document;
- requirements for diffusible hydrogen removal treatment have been revised;
- new classifications have been added: NiCrCu, E6218-N4M2 P;
- post-weld heat treatment details have been clarified on the B-side;
- [Clauses 7, 8](#) and [9](#) have been updated to reflect agreed text for all ISO/TC 44/SC 3 standards.

Introduction

This document 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 in accordance with this document. The classification in accordance with system A was originally based on EN 757:1997. The classification in accordance with system B is mainly based on standards used around the Pacific Rim.

This document provides a classification system for covered electrodes for high-strength steels in terms of the tensile properties, impact properties and chemical composition of the all-weld metal, as well as the type of electrode covering. The ratio of yield strength 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 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 column 2 of [Table 8B](#).

It should be noted that the mechanical properties of all-weld metal test specimens used to classify covered electrodes can 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.

Welding consumables — Covered electrodes for manual metal arc welding of high-strength steels — Classification

1 Scope

This document 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 high-strength steels with a minimum yield strength greater than 500 MPa or a minimum tensile strength greater than 570 MPa.

This document is a combined specification providing a classification utilizing a system based on the yield strength and an average impact energy of 47 J of the all-weld metal, or utilizing a system based on the tensile strength and an average impact energy of 27 J of the all-weld metal.

- a) Subclauses and tables which carry the suffix letter “A” are applicable only to covered electrodes classified under the system based on the yield strength and an average impact energy of 47 J of the all-weld metal given in this document.
- b) Subclauses and tables which carry the suffix letter “B” are applicable only to covered electrodes classified under the system based on the tensile strength and an average impact energy of 27 J of the all-weld metal given in this document.
- c) Subclauses and tables which do not have either the suffix letter “A” or the suffix letter “B” are applicable to all covered electrodes classified under 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 2401, *Covered electrodes — Determination of the efficiency, metal recovery and deposition coefficient*

ISO 2560:2009, *Welding consumables — Covered electrodes for manual metal arc welding of non-alloy and fine grain steels — Classification*

ISO 3690, *Welding and allied processes — Determination of hydrogen content in arc weld metal*

ISO 6847, *Welding consumables — Deposition of a weld metal pad for chemical analysis*

ISO 6947, *Welding and allied processes — Welding positions*

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*

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