

**Welding consumables - Covered electrodes for manual
metal arc welding of high-strength steels - Classification
(ISO 18275:2011)**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 18275:2012 sisaldab Euroopa standardi EN ISO 18275:2012 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 18275:2012 consists of the English text of the European standard EN ISO 18275:2012.
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English Version

**Welding consumables - Covered electrodes for manual metal
arc welding of high-strength steels - Classification (ISO
18275:2011)**

Produits consommables pour le soudage - Électrodes
enrobées pour le soudage manuel à l'arc des aciers à
haute résistance - Classification (ISO 18275:2011)

Schweißzusätze - Umhüllte Stabelektroden zum
Lichtbogenhandschweißen von hochfesten Stählen -
Einteilung (ISO 18275:2011)

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Foreword

The text of ISO 18275:2011 has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 18275:2012 by Technical Committee CEN/TC 121 "Welding" 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of an identical text or by endorsement, at the latest by November 2012, and conflicting national standards shall be withdrawn at the latest by November 2012.

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Endorsement notice

The text of ISO 18275:2011 has been approved by CEN as a EN ISO 18275:2012 without any modification.

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Introduction

This International Standard 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 International Standard. The classification in accordance with system A is mainly based on EN 757:1997^[1]. The classification in accordance with system B is mainly based upon standards used around the Pacific Rim.

This International Standard 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 International Standard 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 International Standard is a combined specification providing a classification utilizing a system based upon the yield strength and an average impact energy of 47 J of the all-weld metal, or utilizing a system based upon 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 upon the yield strength and an average impact energy of 47 J of the all-weld metal given in this International Standard.
- b) Subclauses and tables which carry the suffix letter “B” are applicable only to covered electrodes classified under the system based upon the tensile strength and an average impact energy of 27 J of the all-weld metal given in this International Standard.
- 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 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 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*¹⁾

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

ISO 6947:2011, *Welding and allied processes — Welding positions*

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

1) To be published. (Revision of ISO 3690:2000)

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

ISO 15792-3, *Welding consumables — Test methods — Part 3: Classification testing of positional capacity and root penetration of welding consumables in a fillet weld²⁾*

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

3 Classification

Classification designations are based upon two approaches to indicate the tensile properties and the impact properties of the all-weld metal obtained with a given electrode. The two designation approaches include additional designators for some other classification requirements, but not all, as will be clear from the following subclauses. In most cases, a given commercial product can be classified in both systems. Then either or both classification designations can be used for the product.

The classification is based on an electrode diameter of 4,0 mm, with the exception of the symbol for welding position, which is based on ISO 15792-3.

3.1A Classification by yield strength and 47 J impact energy

The classification is divided into nine parts:

- 1) the first part gives a symbol indicating the product/process to be identified;
- 2) the second part gives a symbol indicating the strength and elongation of the all-weld metal (see Table 1A);
- 3) the third part gives a symbol indicating the impact properties of the all-weld metal (see Table 2A);
- 4) the fourth part gives a symbol indicating the chemical composition of the all-weld metal (see Table 3A);
- 5) the fifth part gives a symbol indicating the type of electrode covering (see 4.5A);
- 6) the sixth part gives a symbol indicating post-weld heat treatment if this is applied (see 4.6A);
- 7) the seventh part gives a symbol indicating the nominal electrode efficiency and type of current (see Table 5A);
- 8) the eighth part gives a symbol indicating the welding position (see Table 6A);
- 9) the ninth part gives a symbol indicating the diffusible hydrogen content of the deposited metal (see Table 7).

3.1B Classification by tensile strength and 27 J impact energy

The classification is divided into seven parts:

- 1) the first part gives a symbol indicating the product/process to be identified;
- 2) the second part gives a symbol indicating the strength of the all-weld metal (see Table 1B);
- 3) the third part gives a symbol indicating the type of electrode covering, the type of current, and the welding position (see Table 4B);
- 4) the fourth part gives a symbol indicating the chemical composition of the all-weld metal (see Table 3B);
- 5) the fifth part gives a symbol indicating the condition of the post-weld heat treatment under which the all-weld metal test was conducted (see 4.6B);
- 6) the sixth part gives a symbol indicating that the electrode has satisfied a requirement for 47 J impact energy at the temperature normally used for the 27 J requirement;
- 7) the seventh part gives a symbol indicating the diffusible hydrogen content of the deposited metal (see Table 7).

2) To be published. (Revision of ISO 15792-3:2000)