KEEVITUSMATERJALID. KATTEGA ELEKTROODID LEGEERIMATA JA PEENTERATERASTE KÄSIKAARKEEVITUSEKS. LIIGITAMINE

Welding consumables - Covered electrodes for manual metal arc welding of non-alloy and fine grain steels - Classification (ISO 2560:2020)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 2560:2021 sisaldab Euroopa standardi EN ISO 2560:2020 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 2560:2021 consists of the English text of the European standard EN ISO 2560:2020.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 16.09.2020.	Date of Availability of the European standard is 16.09.2020.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 2560

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English Version

Welding consumables - Covered electrodes for manual metal arc welding of non-alloy and fine grain steels - Classification (ISO 2560:2020)

Produits consommables pour le soudage - Électrodes enrobées pour le soudage manuel à l'arc des aciers non alliés et des aciers à grains fins - Classification (ISO 2560:2020)

Schweißzusätze - Umhüllte Stabelektroden zum Lichtbogenhandschweißen von unlegierten Stählen und Feinkornstählen - Einteilung (ISO 2560:2020)

This European Standard was approved by CEN on 16 July 2020.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN ISO 2560:2020 E

European foreword

This document (EN ISO 2560:2020) 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 2021, and conflicting national standards shall be withdrawn at the latest by March 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 2560:2009.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 2560:2020 has been approved by CEN as EN ISO 2560:2020 without any modification.

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

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*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding and allied processes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Official interpretations of ISO/TC 44 documents, where they exist, are available from this page: https://committee.iso.org/sites/tc44/home/interpretation.html.

This fourth edition cancels and replaces the third edition (ISO 2560:2009), which has been technically revised.

The main changes compared to the previous edition are as follows:

— all the references have been updated;

— throughout the document, "nominal electrode efficiency" now reads "electrode efficiency";

— in 4B, "strength" has been clarified by changing to "tensile strength;

— in Table 3B, the "Nominal level" for Mn shown in the 1st row of the table for "No symbol, -1, -P1, or –P2" was changed to 1,3;

— in Table 3B, a new footnote has been added regarding G classifications (similar to Table 3A);

— in Table 4B, a new footnote d to symbol "45" was added "Not including PF (vertical up)";

— in Table 8B, the heading of the last column has been revised to read " Impact test temperature";

— in Table 8B, NS (not specified) has been changed to NR (not required) and a new footnote c regarding testing at lower temperatures has been added;

— in Table 10B, E4918, E4918-1, E5516-3M3, E5516-N3 and E5516-N7 have been updated to match values in AWS standards;

— in Clause 8, *b* has been changed to *w* for width in accordance with ISO 15792-1;

— in Clause 9, Rounding procedure has been updated to match current agreed wording;

— in Clause 12B, Example 1B, the %Mn was changed to 0,90 to better match the designation given in the example;

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 is mainly based on EN 499:1994. The classification in accordance with system B is mainly based on standards used around the Pacific Rim.

This document provides a classification in order to designate covered electrodes in terms of the yield strength, tensile strength and elongation of the all-weld metal. 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 to Table 1B and Table 8B.

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

Welding consumables — Covered electrodes for manual metal arc welding of non-alloy and fine grain steels — Classification

1 Scope

This document specifies requirements for the 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 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 for classification utilizing a system based on the yield strength and the average impact energy of 47 J of all-weld metal, or utilizing a system based on the tensile strength and the average impact energy of 27 J of all-weld metal.

a) Clauses, subclauses and tables which carry the suffix letter "A" are applicable only to covered electrodes classified to the system based on the yield strength and the average impact energy of 47 J of all weld metal in this document.

b) Clauses, subclauses and tables which carry the suffix letter "B" are applicable only to covered electrodes classified to the system based on the tensile strength and the average impact energy of 27 J of all weld metal in this document.

c) Clauses, subclauses and tables which do not have either the suffix letter "A" or the suffix letter "B" are applicable to all covered electrodes classified in 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 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 6947:2019, *Welding and allied processes — Welding positions*

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

ISO 15792-1:2020, *Welding consumables — Test methods — Part 1: Test methods for all-weld metal test specimens in steel, nickel and nickel alloys*

ISO 15792-3:2011, *Welding consumables — Test methods — Part 3: Classification testing of positional capacity and root penetration of welding consumables in a fillet weld*

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