



SLOVENSKI STANDARD
SIST EN ISO 2560:2006

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SIST EN 499:1995

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Welding consumables - Covered electrodes for manual metal arc welding of non-alloy and fine grain steels - Classification (ISO 2560:2002)

Schweißzusätze - Umhüllte Stabelektroden zum Lichtbogenhandschweißen von unlegierten Stählen und Feinkornstählen - Einteilung (ISO 2560:2002)

Produits consommables pour le soudage - Electrodes enrobées pour le soudage manuel a l'arc des aciers non alliés et des aciers a grains fins - Classification (ISO 2560:2002)

Ta slovenski standard je istoveten z: EN ISO 2560:2005

ICS:

25.160.20 Potrošni material pri varjenju Welding consumables

SIST EN ISO 2560:2006

en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 2560

December 2005

ICS 25.160.20

Supersedes EN 499:1994

English Version

**Welding consumables - Covered electrodes for manual metal
arc welding of non-alloy and fine grain steels - Classification
(ISO 2560:2002)**

Produits consommables pour le soudage - Electrodes
enrobées pour le soudage manuel à l'arc des aciers non
alliés et des aciers à grains fins - Classification (ISO
2560:2002)

Schweißzusätze - Umhüllte Stabelektroden zum
Lichtbogenhandschweißen von unlegierten Stählen und
Feinkornstählen - Einteilung (ISO 2560:2002)

This European Standard was approved by CEN on 24 November 2005.

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 Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

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EN ISO 2560:2005 (E)**Foreword**

The text of ISO 2560:2002 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 2560:2005 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 June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

This document supersedes EN 499:1994.

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

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The text of ISO 2560:2002 has been approved by CEN as EN ISO 2560:2005 without any modifications.

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INTERNATIONAL STANDARD

ISO 2560

Second edition
2002-11-01

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

*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*

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Contents

Page

Foreword	iv
Introduction.....	v
1 Scope	1
2 Normative references.....	1
3 Classification	2
4 Symbols and requirements	3
4.1 Symbol for the product/process.....	3
4.2 Symbol for strength and elongation of all-weld metal	3
4.3 Symbol for impact properties of all-weld metal	4
4.4 Symbol for the chemical composition of all-weld metal	4
4.5 Symbol for type of electrode covering.....	5
4.6 Symbol for condition of post-weld heat-treatment of all-weld metal.....	6
4.7 Symbol for nominal electrode efficiency and type of current	7
4.8 Symbol for welding position	7
4.9 Symbol for hydrogen content of deposited metal	8
5 Mechanical tests.....	8
5.1 Preheating and interpass temperatures.....	8
5.2 Pass sequence	11
6 Chemical analysis	12
7 Fillet weld test.....	14
8 Retest.....	17
9 Technical delivery conditions	17
10 Examples of designation	18
Annex A (informative) Classification systems.....	19
Annex B (informative) Description of types of electrode covering — Classification by yield strength and 47 J impact energy.....	22
Annex C (informative) Description of types of electrode covering — Classification by tensile strength and 27 J impact energy.....	24
Annex D (informative) Notes on diffusible hydrogen.....	27
Bibliography.....	28

ISO 2560:2002(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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 2560 was prepared in collaboration with the International Institute of Welding which has been approved by the ISO Council as an international standardizing body in the field of welding.

This second edition cancels and replaces the first edition (ISO 2560:1973), which has been technically revised.

Annexes A to D of this International Standard are for information only.

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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 according to this International Standard. The classification according to system A is mainly based on EN 499. The classification according to system B is mainly based upon standards used around the Pacific Rim.

This International Standard 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 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 will 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 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.

Requests for official interpretation of any aspect of this International Standard should be directed to the Secretariat of ISO/TC 44/SC 3 via the member body in the user's country, a complete listing of which can be found at www.iso.org.

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Welding consumables — Covered electrodes for manual metal arc welding of non-alloy and fine grain 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 non-alloy and fine grain steels with a minimum yield strength of up to 500 N/mm² or a minimum tensile strength of up to 570 N/mm².

This International Standard is a combined specification providing for 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.

- 1) Paragraphs and tables which carry the suffix letter "A" are applicable only to covered electrodes classified to the system based upon the yield strength and the average impact energy of 47 J of all-weld metal in this International Standard.
- 2) Paragraphs and tables which carry the suffix letter "B" are applicable only to covered electrodes classified to the system based upon the tensile strength and the average impact energy of 27 J of all-weld metal in this International Standard.
- 3) Paragraphs 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 International Standard.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 31-0:1992, *Quantities and units — Part 0: General principles*

ISO 544, *Welding consumables — Technical delivery conditions for welding filler metals — Type of product, dimensions, tolerances and marking*

ISO 2401, *Covered electrodes — Determination of the efficiency, metal recovery and deposition coefficient*

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, *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*

ISO 14344, *Welding and allied processes — Flux and gas shielded electrical welding processes — Procurement guidelines for consumables*

ISO 2560:2002(E)

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

ISO 15792-3:2000, *Welding consumables — Test methods — Part 3: Classification testing of positional capacity and root penetration of welding consumables in a fillet weld*

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 sections. 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 includes all-weld metal properties obtained with a covered electrode as given below. The classification is based on the electrode size 4 mm with the exception of the symbol for welding position which is based on ISO 15792-3.

3A Classification by yield strength and 47 J impact energy

The classification is divided into eight 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 all-weld metal (see Table 1A);
- 3) the third part gives a symbol indicating the impact properties of all-weld metal (see Table 2A);
- 4) the fourth part gives a symbol indicating the chemical composition of 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 the nominal electrode efficiency and type of current (see Table 5A);
- 7) the seventh part gives a symbol indicating the welding position (see Table 6A);
- 8) the eighth part gives a symbol indicating the hydrogen content of deposited metal (see Table 7).

In order to promote the use of this International Standard, the classification is split into two sections:

a) Compulsory section

This section includes the symbols for the type of product, the strength and elongation, the impact properties, the chemical composition and the type of covering, i.e. the symbols defined in 4.1, 4.2A, 4.3A, 4.4A and 4.5A.

3B 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 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 all-weld metal (see Table 3B);
- 5) the fifth part gives a symbol indicating the condition of postweld 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 hydrogen content of deposited metal (see Table 7).

In order to promote the use of this International Standard, the classification is split into two sections:

a) Compulsory section

This section includes the symbols for the type of product, the strength, the type of covering, the type of current, the welding position, the chemical composition and the condition of heat treatment, i.e., the symbols defined in 4.1, 4.2B, 4.4B, 4.5B and 4.6B.