



SLOVENSKI STANDARD SIST EN ISO 14172:2023

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Nadomešča:
SIST EN ISO 14172:2015

Dodajni in pomožni materiali za varjenje - Oplaščene elektrode za ročno obločno varjenje niklja in njegovih zlitin - Razvrstitev (ISO 14172:2023)

Welding consumables - Covered electrodes for manual metal arc welding of nickel and nickel alloys - Classification (ISO 14172:2023)

Schweißzusätze - Umhüllte Stabelektroden zum Lichtbogenhandschweißen von Nickel und Nickellegierungen - Einteilung (ISO 14172:2023)

Produits consommables pour le soudage - Électrodes enrobées pour le soudage manuel à l'arc du nickel et des alliages de nickel - Classification (ISO 14172:2023)

Ta slovenski standard je istoveten z: EN ISO 14172:2023

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Welding consumables - Covered electrodes for manual metal arc welding of nickel and nickel alloys - Classification (ISO 14172:2023)

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN ISO 14172:2023) 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of an identical text or by endorsement, at the latest by February 2024, and conflicting national standards shall be withdrawn at the latest by February 2024.

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INTERNATIONAL
STANDARD

ISO
14172

Fourth edition
2023-07

**Welding consumables — Covered
electrodes for manual metal arc
welding of nickel and nickel alloys —
Classification**

*Produits consommables pour le soudage — Électrodes enrobées
pour le soudage manuel à l'arc du nickel et des alliages de nickel —
Classification*

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ISO 14172:2023(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 document 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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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).

This fourth edition cancels and replaces the third edition (ISO 14172:2015), which has been technically revised.

The main changes are as follows:

- updated to latest style including foreword;
- aligned with ISO 18274 where possible;
- updated references;
- rounding procedure is now [Clause 8](#);
- revised the chemical compositions for a number of chemical compositions in [Table 1](#);
- added new alloys in [Table 1](#);
- updated corresponding entries in other parts of the document;
- new Example 2 added;
- added Chinese alloys to [Table C.1](#)

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.

Welding consumables — Covered electrodes for manual metal arc welding of nickel and nickel alloys — Classification

1 Scope

This document prescribes requirements for the classification of nickel and nickel-alloy covered electrodes for manual metal arc welding and overlaying. The classification of the covered electrodes is based on the chemical composition of their deposited all-weld metal. It includes those compositions in which the nickel content exceeds that of any other element.

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

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 80000-1:2022, *Quantities and units — Part 1: General*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 Classification

A covered electrode shall be classified in accordance with the chemical composition of the all-weld metal as given in [Table 1](#). The required mechanical properties for the classification's all-weld metal are listed in [Table 2](#).

The symbol for the classification is divided into two parts:

- a) the first part gives a symbol indicating the product or process to be used;
- b) the second part gives a symbol indicating the chemical composition of the all-weld metal.

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5 Symbols and requirements

5.1 Symbol for the product or process

The symbol for covered electrodes used for manual metal arc welding shall be the letter “E”.

NOTE Corresponding national classifications are shown in [Annex C](#).

5.2 Symbol for the chemical composition of the all-weld metal

The symbol for the chemical composition of the all-weld metal shall comprise “Ni” plus four digits, as shown in [Table 1](#). The first digit is an indicator of the class of alloy deposited, where:

- 1 indicates significant molybdenum addition without significant chromium addition (nickel-molybdenum alloys);
- 2 indicates no significant alloy addition;
- 4 indicates significant copper addition (nickel-copper alloys);
- 6 indicates significant chromium addition, with iron less than 25 % (nickel-chromium-iron and nickel-chromium-molybdenum alloys);
- 8 indicates significant chromium addition, with iron more than 25 % (nickel-iron-chromium alloys).

The remaining digits indicate the particular alloy deposited. The basis of the system of designation is described in [Annex A](#).

NOTE In addition, the chemical symbol can be used.

6 Chemical analysis

Chemical analysis shall be performed on any suitable all-weld metal test specimen. In case of dispute, the test specimen specified in ISO 6847 shall be used. The test results shall meet the requirements of [Table 1](#) for the classification under test. Any analytical technique can be used; however, in case of dispute, reference shall be made to established published methods.

7 Mechanical properties of the all-weld metal

Mechanical properties are not part of the designation, but they are required for classification. The mechanical properties of the all-weld metal, deposited using covered electrodes in accordance with [Table 1](#), shall be determined using a test assembly type 1,3 in accordance with ISO 15792-1:2020, with 4,0 mm electrodes. The minimum tensile properties shall be in accordance with [Table 2](#).

8 Rounding procedure

Actual test values obtained shall be subject to ISO 80000-1:2022, B.3, Rule A. If the measured values are obtained by equipment calibrated in units other than those of this document, the measured values shall be converted to the units of this document before rounding. If an average value is to be compared to the requirements of this document, rounding shall be done only after calculating the average. The rounded results shall fulfil the requirements of the appropriate table for the classification under test.