SLOVENSKI STANDARD
oSIST prEN 14532-1:2026

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Dodajni in pomožni materiali za varjenje - Preskusne metode in zahteve po kakovosti - 1. del: Glavne metode in ocenjevanje skladnosti dodajnih materialov za jeklo, nikelj in nikljeve zlitine

Welding consumables - Test methods and quality requirements - Part 1: Primary methods and assessment of consumables for steel, nickel and nickel alloys

Schweißzusätze - Prüfverfahren und Qualitätsanforderungen - Teil 1: Grundprüfungen und Bewertung von Schweißzusätzen für Stahl, Nickel und Nickellegierungen

Produits consommables de soudage - Méthodes d'essai et exigences de qualité - Partie 1: Méthodes primaires et évaluation des produits consommables pour l'acier, le nickel et les alliages de nickel

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77.080.20	Jekla	Steels
77.120.40	Nikelj, krom in njune zlitine	Nickel, chromium and their alloys

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Welding consumables - Test methods and quality requirements - Part 1: Primary methods and assessment of consumables for steel, nickel and nickel alloys

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 121.

If this draft becomes a European Standard, 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.

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

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European foreword

This document (prEN 14532-1:2026) has been prepared by Technical Committee CEN/TC 121 “Welding and allied processes”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 14532-1:2004.

Introduction

This document proposes harmonized verification test conditions for the qualification of welding consumables.

The extent of the tests to be carried out is determined by the competent entity in accordance with market requirements.

It should be noted that tests in accordance with this document are made in a way which is not necessarily representative of a real welded structure.

The requirements for the qualification of welding consumable manufacturers, suppliers and distributors are given in EN 12074.

NOTE A competent entity can include a manufacturer or supplier.

1 Scope

This document specifies the type qualification tests, test methods, the amount of testing and the requirements for the qualification of welding consumables for steel, nickel and nickel alloys intended for all fields of application.

This document describes a wide range of tests, which are appropriate for the majority of applications. When supplementary tests are required (see EN 14532-2), these are carried out at any time without the need to repeat the type qualification tests.

NOTE Additional information is given in Annex O.

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.

EN 1011-1, *Welding - Recommendations for welding of metallic materials - Part 1: General guidance for arc welding*

EN 10204, *Metallic products - Types of inspection documents*

EN ISO 14175, *Welding consumables - Gases and gas mixtures for fusion welding and allied processes (ISO 14175)*

EN ISO 14341, *Welding consumables - Wire electrodes and weld deposits for gas shielded metal arc welding of non alloy and fine grain steels - Classification (ISO 14341)*

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

EN ISO 14171, *Welding consumables - Solid wire electrodes, tubular cored electrodes and electrode/flux combinations for submerged arc welding of non alloy and fine grain steels - Classification (ISO 14171)*

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

EN ISO 17632, *Welding consumables - Tubular cored electrodes for gas shielded and non-gas shielded metal arc welding of non-alloy and fine grain steels - Classification (ISO 17632)*

EN ISO 14174, *Welding consumables - Fluxes for submerged arc welding and electroslag welding - Classification (ISO 14174)*

EN ISO 9016, *Destructive tests on welds in metallic materials - Impact tests - Test specimen location, notch orientation and examination (ISO 9016)*

EN ISO 5178, *Destructive tests on welds in metallic materials - Longitudinal tensile test on weld metal in fusion welded joints (ISO 5178)*

EN ISO 4136, *Destructive tests on welds in metallic materials - Transverse tensile test (ISO 4136)*

EN ISO 5173, *Destructive tests on welds in metallic materials - Bend tests (ISO 5173)*

EN ISO 17637, *Non-destructive testing of welds - Visual testing of fusion-welded joints (ISO 17637)*

EN ISO 9015-1, *Destructive tests on welds in metallic materials - Hardness testing - Part 1: Hardness test on arc welded joints (ISO 9015-1)*

EN ISO 17639, *Destructive tests on welds in metallic materials - Macroscopic and microscopic examination of welds (ISO 17639)*

EN ISO 17636-1, *Non-destructive testing of welds - Radiographic testing - Part 1: X- and gamma-ray techniques with film (ISO 17636-1)*

EN ISO 17636-2, *Non-destructive testing of welds - Radiographic testing - Part 2: X- and gamma-ray techniques with digital detectors (ISO 17636-2)*

EN ISO 15792-1, *Welding consumables - Test methods - Part 1: Preparation of all-weld metal test pieces and specimens in steel, nickel and nickel alloys (ISO 15792-1)*

EN ISO 15792-2, *Welding consumables - Test methods - Part 2: Preparation of single-run and two-run technique test pieces and specimens in steel (ISO 15792-2)*

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

EN ISO 3580, *Welding consumables - Covered electrodes for manual metal arc welding of creep-resisting steels - Classification (ISO 3580)*

EN ISO 3581, *Welding consumables - Covered electrodes for manual metal arc welding of stainless and heat-resisting steels - Classification (ISO 3581)*

EN ISO 636, *Welding consumables - Rods, wires and deposits for tungsten inert gas welding of non-alloy and fine-grain steels - Classification (ISO 636)*

EN ISO 148-1, *Metallic materials - Charpy pendulum impact test - Part 1: Test method (ISO 148-1)*

EN ISO 21952, *Welding consumables - Wire electrodes, wires, rods and deposits for gas shielded arc welding of creep-resisting steels - Classification (ISO 21952)*

EN ISO 17634, *Welding consumables - Tubular cored electrodes for gas shielded metal arc welding of creep-resisting steels - Classification (ISO 17634)*

EN ISO 14343, *Welding consumables - Wire electrodes, strip electrodes, wires and rods for arc welding of stainless and heat resisting steels - Classification (ISO 14343)*

EN ISO 17633, *Welding consumables - Tubular cored electrodes and rods for gas shielded and non-gas shielded metal arc welding of stainless and heat-resisting steels - Classification (ISO 17633)*

EN ISO 10675-1, *Non-destructive testing of welds - Acceptance levels for radiographic testing - Part 1: Steel, nickel, titanium and their alloys (ISO 10675-1)*

EN ISO 16834, *Welding consumables - Wire electrodes, wires, rods and deposits for gas shielded arc welding of high strength steels - Classification (ISO 16834)*

EN ISO 18276, *Welding consumables - Tubular cored electrodes for gas-shielded and non-gas-shielded metal arc welding of high strength steels - Classification (ISO 18276)*

EN ISO 20378, *Welding consumables - Rods for gas welding of non-alloy and creep-resisting steels - Classification (ISO 20378)*

EN ISO 544, *Welding consumables - Technical delivery conditions for filler materials and fluxes - Type of product, dimensions, tolerances and markings (ISO 544)*

EN ISO 3690, *Welding and allied processes - Determination of hydrogen content in arc weld metal (ISO 3690)*

EN ISO 4063, *Welding, brazing, soldering and cutting - Nomenclature of processes and reference numbers (ISO 4063)*

EN ISO 5817, *Welding - Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) - Quality levels for imperfections (ISO 5817)*

EN ISO 6947, *Welding and allied processes - Welding positions (ISO 6947)*

EN ISO 8249, *Welding - Determination of Ferrite Number (FN) in austenitic and duplex ferritic-austenitic Cr-Ni stainless steel weld metals (ISO 8249)*[1]

EN ISO 14172, *Welding consumables - Covered electrodes for manual metal arc welding of nickel and nickel alloys - Classification (ISO 14172)*

EN ISO 17641-2, *Destructive tests on welds in metallic materials - Hot cracking tests for weldments - Arc welding processes - Part 2: Self-restraint tests (ISO 17641-2)*

EN ISO 17663, *Welding - Quality requirements for heat treatment in connection with welding and allied processes (ISO 17663)*

EN ISO 18274, *Welding consumables - Solid wire electrodes, solid strip electrodes, solid wires and solid rods for fusion welding of nickel and nickel alloys - Classification (ISO 18274)*

EN ISO 15608:2025, *Welding - Grouping system for metallic materials (ISO 15608:2025)*

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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/

3.1
auxiliary material
material, which is not designed to influence the chemical composition and the mechanical properties of the weld and is not incorporated in the weld, e.g. temporary backing strips

[1] In this document “austenitic-ferritic” is used instead of “ferritic-austenitic”.

3.2
classification
process that is carried out on the product to verify the designation according to the appropriate consumable standard

3.3
qualified welding consumable
welding consumable complying with the requirements of this document

Note 1 to entry: Additional information is given in Annex O.

3.4
manufacturer
organization that produces and packages welding consumables

EXAMPLE 1 A manufacturer purchases a semi-finished product with his own specification. For example: a wire rod with a diameter of 5,5 mm and reduces it in several processing steps to a final diameter of 1,2 mm.

EXAMPLE 2 A manufacturer creates a recipe for the production of a rod electrode. He buys the core wire ready-drawn from another manufacturer, coats the core wire, manufactures and assembles the electrodes.

EXAMPLE 3 A manufacturer purchases a welding filler metal with its own specification in the final diameter and rewinds it or straighten and identifies it (for TIG rods).

3.5
supplier
organization supplying welding consumables under their own brand name and obtained them from a manufacturer that fulfils the requirements of this document

Note 1 to entry: Both, the manufacturer and the supplier, have to take full responsibility for the quality of the product.

3.6
lot
quantity of welding consumables defined as the manufacturer's standard lot in his quality assurance manual or as defined in ISO 14344

3.7
applicant
type of organisation defined in this document manufacturing or suppling welding consumable

4 Applicable procedures for assessment

The procedures for assessment are described below. Tests and evaluation for the qualification of welding consumables are given in Clauses 5 to 9.

The product testing as well as all welding and testing of the test pieces shall be witnessed by an examiner or an examining body.

The product label shall provide an indication that the product has successfully passed the required tests.

NOTE Additional information is given in Annex O.

5 Type qualification test

5.1 General

The compliance of a welding consumable with this document shall be demonstrated by a type qualification test and ongoing control to ensure consistent quality.

The type qualification test (see Annex A) shall consist of:

— testing of the product (see 5.3);

— testing of all-weld metal (see 6.1);

— testing of welded joints (see 6.2).

5.2 Documentation

The following product information shall be documented:

— scope of qualification;

— whether qualification is for butt welds and fillet welds or only for fillet welds;

— brand and product name;

— European Standard designation;

— manufacturer's limits of chemical composition of the product or the all-weld metal; these shall not exceed the values given in Annexes B and C, respectively;

— description of the covering, flux or filling material in terms of those major constituents which define the characteristics of the consumable (e.g. oxides, carbonates, fluorides and metals);

— limits of mechanical properties of the all-weld metal in the as welded condition and/or, if applicable, in post weld heat treated conditions;

— ferrite content (if requested);

— hydrogen content (if requested).

5.3 Testing of the product

5.3.1 Testing to demonstrate applicability

The range of testing shall be defined to demonstrate applicability in such a way that the mechanical properties of the all-weld metal are in accordance with the minimum requirements of this document.

The range of qualification shall be subdivided with relevant information as follows:

— parent metals;

— heat treatment;

— any restriction on material thickness;

— highest and lowest test temperature;