

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

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 14532-1:2005 sisaldab Euroopa standardi EN 14532-1:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 25.01.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 14532-1:2005 consists of the English text of the European standard EN 14532-1:2004.</p> <p>This document is endorsed on 25.01.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This document describes the basic verification tests, the testing 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 can be carried out at any time without the need to repeat the primary tests.</p>	<p>Scope:</p> <p>This document describes the basic verification tests, the testing 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 can be carried out at any time without the need to repeat the primary tests.</p>
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English version

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

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

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

This European Standard was approved by CEN on 14 October 2004.

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Foreword

This document (EN 14532-1:2004) has been prepared 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 May 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

This document consists of the following parts:

EN 14532-1, *Welding consumables — Test methods and quality requirements — Part 1: Primary methods and conformity assessment of consumables for steel, nickel and nickel alloys.*

EN 14532-2, *Welding consumables — Test methods and quality requirements — Part 2: Supplementary methods and conformity assessment of consumables for steel, nickel and nickel alloys.*

EN 14532-3, *Welding consumables — Test methods and quality requirements — Part 3: Conformity assessment of wire electrodes, wires and rods for welding of aluminium alloys.*

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.

Introduction

This document proposes harmonised verification test conditions for the qualification of welding consumables. The responsibility to identify the extent of the tests to be carried out lies with the manufacturer/supplier on the basis of his assessment of the 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.

1 Scope

This document describes the basic verification tests, the testing 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 can be carried out at any time without the need to repeat the primary tests.

NOTE Additional information is given in Annex O.

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.

EN 439, *Welding consumables — Shielding gases for arc welding and cutting.*

EN 440, *Welding consumables — Wire electrodes and deposits for gas shielded metal arc welding of non alloy and fine grain steels — Classification.*

EN 499, *Welding consumables — Covered electrodes for manual metal arc welding of non alloy and fine grain steels — Classification.*

EN 756, *Welding consumables - Solid wires, solid wire-flux and tubular cored electrode-flux combinations for submerged arc welding of non alloy and fine grain steels – Classification.*

EN 757, *Welding consumables — Covered electrodes for manual metal arc welding of high strength steels — Classification.*

EN 758, *Welding consumables — Tubular cored electrodes for metal arc welding with and without a gas shield of non alloy and fine grain steels — Classification.*

EN 760, *Welding consumables — Fluxes for submerged arc welding — Classification.*

EN 875, *Destructive tests on welds in metallic materials — Impact tests — Test specimen location, notch orientation and examination.*

EN 876, *Destructive tests on welds in metallic materials — Longitudinal tensile test on weld metal in fusion welded joints.*

EN 895, *Destructive tests on welds in metallic materials — Transverse tensile test.*

EN 910, *Destructive tests on welds in metallic materials — Bend test.*

EN 970, *Non destructive examination of fusion welds — Visual examination.*

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

EN 1043-1, *Destructive test on welds in metallic materials — Hardness testing — Part 1: Hardness test on arc welded joint.*

EN 1321, *Destructive tests on welds in metallic materials — Macroscopic and microscopic examination of welds.*

- EN 1435, *Non-destructive examination of welds — Radiographic examination of welded joints.*
- EN 1597-1, *Welding consumables — Test methods — Part 1: Test piece for all-weld metal test specimens in steel, nickel and nickel alloys.*
- EN 1597-2, *Welding consumables — Test methods — Part 2: Preparation of test piece for single-run and two-run technique test specimens in steel.*
- EN 1597-3, *Welding consumables — Test methods — Part 3: Testing of positional capability of welding consumables in a fillet weld.*
- EN 1599, *Welding consumables — Covered electrodes for manual metal arc welding of creep-resisting steels — Classification.*
- EN 1600, *Welding consumables — Covered electrodes for manual metal arc welding of stainless and heat resisting steels — Classification.*
- EN 1668, *Welding consumables — Rods, wires and deposits for tungsten inert gas welding of non alloy and fine grain steels — Classification.*
- EN 10002-1, *Metallic materials - Tensile testing - Part 1: Method of test at ambient temperature.*
- EN 10045-1, *Metallic materials — Charpy impact test— Part 1: Test method.*
- EN 10204, *Metallic products — Types of inspection documents.*
- EN 12070, *Welding consumables — Wire electrodes, wires and rods for arc welding of creep-resisting steels — Classification.*
- EN 12071, *Welding consumables — Tubular cored electrodes for gas shielded metal arc welding of creep-resisting steels — Classification.*
- EN 12072, *Welding consumables — Wire electrodes, wires and rods for arc welding of stainless and heat-resisting steels — Classification.*
- EN 12073, *Welding consumables — Tubular cored electrodes for metal arc welding with or without a gas shield of stainless and heat-resisting steels — Classification.*
- EN 12517, *Non-destructive examination of welds — Radiographic examination of welded joints — Acceptance levels.*
- EN 14532-2, *Welding consumables — Test methods and quality requirements — Part 2: Supplementary methods and conformity assessment of consumables for steel, nickel and nickel alloys.*
- EN 12534, *Welding consumables — Wire electrodes, wires, rods and deposits for gas shielded metal arc welding of high strength steels — Classification.*
- EN 12535, *Welding consumables — Tubular cored electrodes for gas shielded metal arc welding of high strength steels — Classification.*
- EN 12536, *Welding consumables — Rods for gas welding of non alloy and creep-resisting steels — Classification.*
- EN ISO 544, *Welding consumables — Technical delivery conditions for welding filler materials — Type of product, dimensions, tolerances and markings (ISO 544:2003).*
- EN ISO 3690, *Welding and allied processes — Determination of hydrogen content in ferritic arc weld metal (ISO 3690:2000).*
- EN ISO 4063, *Welding and allied processes — Nomenclature of processes and reference numbers (ISO 4063:1998).*

EN ISO 5817, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections (ISO 5817:2003).*

EN ISO 6847, *Welding consumables — Deposition of a weld metal pad for chemical analysis (ISO 6847:2000).*

EN ISO 6947, *Welds — Working positions — Definitions of angles of slope and rotation (ISO 6947:1993).*

EN ISO 8249, *Welding — Determination of Ferrite Number (FN) in austenitic and duplex ferritic-austenitic Cr-Ni stainless steel weld metals (ISO 8249:2000).*¹

EN ISO 14172, *Welding consumables — Covered electrodes for manual metal arc welding of nickel and nickel alloys — Classification (ISO 14172:2003).*

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 17641-2:2004).*

EN ISO 18274, *Welding consumables — Wire and strip electrodes, wires and rods for arc welding of nickel and nickel alloys — Classification (ISO 18274:2004).*

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

CR ISO 15608:2000, *Welding — Guidelines for a metallic material grouping system (ISO/TR 15608:2000).*

CR ISO 17663, *Welding — Guidelines for quality requirements for heat treatment in connection with welding and allied processes (ISO/TR 17663:2001).*

3 Terms and definitions

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

3.1

auxiliary materials

materials, which are not designed to influence the chemical composition and the mechanical properties of the weld and are not incorporated in the weld, e.g. temporary backing strips

3.2

classification

process where the manufacturer carries out tests on the product to verify the designation according to the appropriate consumable standard

¹ In this document "austenitic-ferritic" is used instead of "ferritic-austenitic".