

Welding consumables — Test methods and quality requirements —

Part 2: Supplementary methods and conformity assessment of consumables for steel, nickel and nickel alloys

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee WEE/39, Welding consumables, which has the responsibility to:

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**Welding consumables - Test methods and quality requirements -
Part 2: Supplementary 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 2: Méthodes
complémentaires et évaluation de la conformité des
produits consommables pour l'acier, le nickel et les alliages
de nickel

Schweißzusätze - Prüfverfahren und
Qualitätsanforderungen - Teil 2: Ergänzende Prüfungen
und Konformitätsbewertung von Schweißzusätzen für
Stahl, Nickel und Nickellegierungen

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Foreword

This document (EN 14532-2:2004) 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of an identical text or by endorsement, at the latest by May 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.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.*

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Introduction

Responsibility for identifying the extent of qualification lies with the manufacturer/supplier on the basis of his assessment of market requirements.

A product that has been qualified in accordance with the primary methods e.g. in EN 14532-1 may need evaluation through one or more supplementary tests for some fields of application.

1 Scope

This document applies to welding consumables for which supplementary qualification is required. It contains the technical requirements to be fulfilled.

These supplementary tests apply for welding consumables, where the primary qualification is available in accordance with EN 14532-1. The supplementary tests can be carried out at any time without the need to repeat the primary tests.

This document describes the testing methods, the amount of testing and the requirements for supplementary qualification of welding consumables.

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

EN 1597-1:1997, *Welding consumables — Test methods — Part 1: Test piece for all-weld metal test specimens in steel, nickel and nickel alloys.*

EN 10002-1, *Metallic materials — Tensile testing — Part 1: Methods of test at ambient temperature.*

EN 10002-5, *Metallic materials — Tensile testing — Part 5: method of testing at elevated temperature.*

EN 10291, *Metallic materials — Uniaxial creep testing in tension — Method of test.*

EN 14532-1:2004, *Welding consumables — Test methods and quality requirements — Part 1: Primary methods and conformity assessment of consumables for steel, nickel and nickel alloys.*

prEN 14700, *Welding consumables — Welding consumables for hard-facing.*

EN ISO 3690, *Welding and allied processes — Determination of hydrogen content in ferritic arc weld metal (ISO 3690:2000).*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions of EN 14532-1:2004 apply.

4 Supplementary tests

4.1 General

An overview of supplementary tests is listed in Annex A.

4.2 All-weld metal

All-weld metal test pieces and test specimens shall be prepared in accordance with 6.1.2 of EN 14532-1:2004, and with test piece type 1.3 of EN 1597-1:1997 or Figure D.1 for oxyacetylene welding. Welding shall be carried out in the flat position, except where the consumable is designed exclusively for other position(s). One type of test piece with one consumable size and batch may be selected by the manufacturer, in accordance with the consumables used for primary qualification testing to EN 14532-1.

4.2.1 Post weld heat treatment

4.2.1.1 General

Post weld heat treatment of the all-weld metal - if required by the manufacturer for the particular range of application - shall be applied to the test assembly. If the entire test assembly is too large for the furnace, it may be divided into suitable parts but not into individual test specimens.

Post weld heat treatment conditions shall be stated in the report.

4.2.1.2 Stress relief

For welding consumables for non-alloy, fine grain high strength and creep resisting steels the holding time shall be at least 3 h at the highest stress relief temperature (+0/-20) °C for the parent material groups (see Annex B) given in the required range of application for the qualification. When qualification is applied for wall thickness over 75 mm the holding time shall be at least 3 h + 1 h/25 mm wall thickness exceeding 75 mm.

NOTE 1 Users may consider longer times to allow for the possibility of repair and multiple heat treatment.

The test assembly shall be cooled in the furnace to a temperature 300 °C or lower. Subsequent cooling may be carried out in still air.

For stress relief or tempering, heating/cooling rates above 300 °C shall not exceed 100 °C/h.

NOTE 2 Welding consumables for austenitic and austenitic-ferritic stainless steels and austenitic welding consumables used for dissimilar welds and overlays are not normally subject to stress relief.

4.2.1.3 Normalising

When qualification is specifically required for a weld metal that will be normalised, the holding time shall be ½ h at the highest normalising temperature (+0/-30) °C for the parent material groups (see Annex B) mentioned in the required range of application for the qualification. The test assembly shall be cooled within 3 h to a temperature of 300 °C (+0/-20)°C. Subsequent cooling may be carried out in still air. If tempering is to be applied, it shall be as described in 4.2.1.5.

4.2.1.4 Quenching

When qualification is specifically required for a weld metal that will be quenched and tempered, quenching of the test assembly shall be carried out as required for the parent material groups (see Annex B) mentioned in the required range of qualification.

4.2.1.5 Tempering

When tempering is applied after either normalising or quenching, the holding time shall be 1 h/25 mm wall thickness at the highest tempering temperature (+0/-20) °C for the parent material groups (see Annex B) mentioned in the required range of application for the qualification. The test assembly shall be cooled in the furnace to a temperature of 300 °C or lower. Subsequent cooling may be carried out in still air.