SLOVENSKI STANDARD
SIST EN 14532-3:2005

01-marec-2005

Dodajni materiali za varjenje - Preskusne metode in zahteve po kakovosti - 3. del: Ocenjevanje skladnosti žičnih elektrod, žic in palic za varjenje aluminijevih zlitin

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

Schweißzusätze - Prüfverfahren und Qualitätsanforderungen - Teil 3: Konformitätsbewertung von Drahtelektoden, Drähte und Stäbe zum Schweißen von Aluminiumlegierungen

Produits consommables pour le soudage - Méthodes d'essai et exigences de qualité - Partie 3: Evaluation de la conformité des fils électrodes, fils et baguettes pour le soudage des alliages d'aluminium

Ta slovenski standard je istoveten z: **EN 14532-3:2004**

ICS:

25.160.20	Potrošni material pri varjenju	Welding consumables
77.120.10	Aluminij in aluminijeve zlitine	Aluminium and aluminium alloys

SIST EN 14532-3:2005 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14532-3

November 2004

ICS 25.160.20

English version

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

Produits consommables pour le soudage - Méthodes d'essai et exigences de qualité - Partie 3: Evaluation de la conformité des fils électrodes, fils et baguettes pour le soudage des alliages d'aluminium

Schweißzusätze - Prüfverfahren und Qualitätsanforderungen - Teil 3: Konformitätsbewertung von Drahtelektoden, Drähte und Stäbe zum Schweißen von Aluminiumlegierungen

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

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

Foreword

This document (EN 14532-3:2004) 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 for aluminium. 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 wire electrodes, wires and rods for welding of aluminium.

NOTE Additional information is given in Annex I.

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 515, *Aluminium and aluminium alloys — Wrought products — Temper designations*

EN 573-3, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 3: Chemical composition*

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

EN 1011-4:2000, *Welding — Recommendations for welding of metallic materials — Part 4: Arc welding of aluminium and aluminium alloys*

EN 1320, *Destructive tests on welds in metallic materials — Fracture test*

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 10204, *Metallic products — Type of inspection documents*

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*

EN 30042, *Arc-welded joints in aluminium and its weldable alloys — Guidance on quality levels for imperfections (ISO 10042:1992)*

EN ISO 544, *Welding consumables — Technical delivery conditions for welding filler metals —Type of product, dimensions, tolerances and markings (ISO 544:2003)*

EN ISO 6520-1, *Welding and allied processes — Classification of geometric imperfections in metallic materials — Part 1: Fusion welding (ISO 6520-1:1998)*

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

EN ISO 18273, *Welding consumables — Wire electrodes, wires and rods for welding of aluminium and aluminium alloys — Classification (ISO 18273:2004)*

CR ISO 15608, *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 given in EN 14532-1:2004 and the following apply.

3.1
bead on plate
single run made with a filler metal on the surface of a parent material

3.2
deposited metal
filler metal that has been added during welding

4 Applicable procedures for conformity assessment

The procedures for conformity assessment are described below. Tests and evaluation for the qualification of welding consumables are given in Clauses 5 to 9 and they are carried out under the manufacturer's or supplier's trade designation.

The manufacturer or supplier shall declare the conformity of the product on the label.

NOTE Additional information is given in Annex I.

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 deposited metal (see 6.1);

— testing of welded joints (see 6.2).

5.2 Necessary information

The following product information shall be documented:

— scope of qualification;

— brand and product name;

— European Standard designation;

— manufacturer's limits of chemical composition of the product; these shall not exceed the values given in EN ISO 18273.

5.3 Testing of the product

5.3.1 Testing to demonstrate applicability

The manufacturer shall define the range of testing to demonstrate applicability. The range of qualification shall be subdivided with relevant information as follows:

— materials (parent metals);

— heat treatment (if requested);

— shielding gas.

5.3.2 Sampling for verification of product physical characteristics

The sizes and dimensions of welding consumables involved in the qualification test shall be examined in accordance with EN ISO 544.

The roughness shall be examined in accordance with Annex B.

5.3.3 Chemical composition of the product

The manufacturer shall document that the chemical composition of the solid wire welding consumable meets the requirements of the product specification and the limits given in EN ISO 18273.

For the purpose of qualifying a welding consumable it is sufficient to identify the shielding gas in accordance with EN 439.

5.3.4 Marking of products

The marking of the product and the packaging shall be in accordance with EN ISO 544. When other markings replacing the product name are used, such markings shall be unique and unambiguous and are entered into the qualification certificate.

6 Testing

6.1 Testing of deposited metal

6.1.1 General

This test applies on wires and is achieved by MIG process whatever is the final process, for rods TIG process may be used.

6.1.2 Parent metals

One test piece shall be prepared with a plate of wrought parent metal selected from Table C.1.

Test plate material shall have a certification, e.g. in accordance with EN 10204.

6.1.3 Type and dimensions of the test piece

The actual length shall be sufficient to allow the welding process to stabilise.

The test piece(s) shall be at least 300 mm x 150 mm x 5 mm. The test piece edges may be bevelled and a backing piece may be attached.

6.1.4 Welding conditions

6.1.4.1 General

On carrying out the deposited metal test, the following welding conditions shall be observed.

6.1.4.2 Welding position

Multiple runs shall be deposited in flat position (PA) according to EN ISO 6947.

Alternatively a bead on plate in flat position (PA) according to EN ISO 6947 shall be used for the test.

6.1.4.3 Welding parameters

The deposit shall be carried out with welding parameters as recommended by the manufacturer.

6.1.4.4 Interpass temperature

The interpass temperature shall be in accordance with EN 1011-4:2000, Clause 18, Table 1.

6.1.4.5 Consumable diameters

Each diameter to be qualified shall be tested.

6.1.4.6 Shielding gases

For welding the test piece any gas of group I of EN 439 may be used.

6.1.4.7 Non-destructive test

The test piece shall be subjected to a radiographic examination in accordance with EN 1435 class B. Alternatively the test piece shall be subjected to a fracture test in accordance with EN 1320.

Where backing material is used it shall be removed prior to radiography (or fracture test).

The central portion of weld (minimum 100 mm) should be considered for the test.

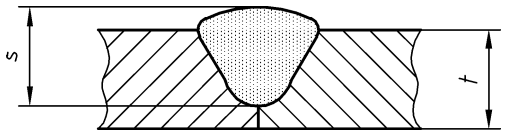
Assessment shall be limited to all forms of the following:

— cracks (100 in accordance with EN ISO 6520-1). Crater cracks (104 in accordance with EN ISO 6520-1) shall be disregarded;

— porosity (2011 to 2016 in accordance with EN ISO 6520-1);

— inclusions (303, 304 in accordance with EN ISO 6520-1). Tungsten inclusions shall be disregarded.

Acceptance criteria for radiography (or fracture test) shall be in accordance with EN 30042 level B. In the case of a bead on plate the *s* value (see Figure 1) shall be determined by a macrographic examination in accordance with EN 1321.



NOTE The *s* value includes the deposited metal and the fused parent material.

Figure 1 — Test piece

If the results of the NDT are not acceptable a new test piece shall be subjected to NDT. Should these results be unacceptable the product shall be subject to reconsideration.

6.2 Testing of welded joints

6.2.1 Parent metals

Test pieces shall be prepared with a parent metal selected from Table C.1. For materials not mentioned in this table guidance is given in EN 1011-4.

Test plate material shall have a certification, e.g. in accordance with EN 10204.

6.2.2 Type and dimensions of the test pieces

The actual length shall be sufficient to allow the welding process to stabilise and the specimens required and any retest specimens, see Figure 2.

The width of the welded test pieces shall be sufficient to permit the necessary test specimens to be prepared.

Joint edges may be bevelled.