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**Qualification test of welders — Fusion
welding —**

**Part 2:
Aluminium and aluminium alloys**

*Épreuve de qualification des soudeurs — Soudage par fusion —
Partie 2: Aluminium et alliages d'aluminium*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 9606-2 was prepared by the European Committee for Standardization (CEN) in collaboration with Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 11, *Qualification requirements for welding and allied processes personnel*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Throughout the text of this document, read "...this European Standard..." to mean "...this International Standard..." .

This second edition cancels and replaces the first edition (ISO 9606-2:1994) which has been technically revised. It also incorporates ISO 9606-2:1994/Amd.1:1998.

ISO 9606 consists of the following parts, under the general title *Qualification test of welders — Fusion welding:*

- *Part 1: Steels*
- *Part 2: Aluminium and aluminium alloys*
- *Part 3: Copper and copper alloys*
- *Part 4: Nickel and nickel alloys*
- *Part 5: Titanium and titanium alloys, zirconium and zirconium alloys*

Annex ZA provides a list of corresponding International and European Standards for which equivalents are not given in the text.

For the purposes of this part of ISO 9606, the CEN annex regarding fulfilment of European Council Directives has been removed.

Contents

	page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Symbols and abbreviated terms	2
4.1 General	2
4.2 Reference numbers of welding processes	2
4.3 Abbreviations	3
5 Essential variables and range of qualification	3
5.1 General	3
5.2 Welding processes	4
5.3 Product type	5
5.4 Type of weld	6
5.5 Material groups	6
5.6 Welding consumables	7
5.7 Dimensions	7
5.8 Welding positions	8
5.9 Weld details	9
6 Examination and testing	10
6.1 Supervision	10
6.2 Shapes, dimensions and numbers of test pieces	10
6.3 Welding conditions	14
6.4 Test methods	15
6.5 Test piece and test specimen	15
6.6 Test record	20
7 Acceptance requirements for test pieces	20
8 Re-tests	21
9 Period of validity	21
9.1 Initial qualification	21
9.2 Confirmation of the validity	21
9.3 Prolongation of qualification	21
10 Certificate	21
11 Designation	22
Annex A (informative) Welder's qualification test certificate	23
Annex B (informative) Designation examples	24
Annex C (informative) Job knowledge	28
Annex D (informative) Variables to be confirmed and traceable for prolongation	31
Annex ZA (normative) Normative references to International publications with their corresponding European publications	32
Bibliography	33

Foreword

This document (EN ISO 9606-2:2004) has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DIN, in collaboration with Technical Committee ISO/TC 44 "Welding and allied processes".

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 June 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

This document supersedes EN 287-2:1992.

This series of standards consists of the following parts, under the general title *Qualification test of welders — Fusion welding*:

- EN 287-1: Steels
- EN ISO 9606-2: Aluminium and aluminium alloys
- EN ISO 9606-3: Copper and copper alloys¹⁾
- EN ISO 9606-4: Nickel and nickel alloys¹⁾
- EN ISO 9606-5: Titanium and titanium alloys, zirconium and zirconium alloys¹⁾

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.

¹⁾ The general title of these documents is *Approval testing of welders - Fusion welding*

Introduction

The ability of a welder to follow verbal or written instructions and verification of a welder's skills are important factors in ensuring the quality of the welded product.

The testing of a welder's skill in accordance with this document depends on welding techniques and conditions used in which uniform rules are complied with, and standard test pieces are used.

The principle of this document is that a qualification test qualifies the welder not only for the conditions used in the test, but also for all joints which are considered to weld easier on the presumption that the welder has received a particular training and/or has industrial practice within the range of qualification.

The qualification test can be used to qualify a welding procedure and a welder provided that all the relevant requirements, e.g. test piece dimensions, are satisfied (see EN ISO 15614-2).

Qualifications in accordance with EN 287-2 or ISO 9606-2 existing at the date of publication of this document are, at the end of their period of validity, to be interpreted in accordance with the requirements of this standard.

Requests for official interpretations of any aspect of this standard should be directed to the Secretariat of ISO/TC 44/SC 11 via your national standards body, a complete listing which can be found at www.iso.org.

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1 Scope

This document specifies the requirements for qualification of welders for fusion welding of aluminium and aluminium alloys.

This document provides a set of technical rules for systematic qualification of welders which are independent of product type, location and examiner/examining body.

When qualifying welders, the emphasis is placed on the welder's ability to manually manipulate the welding torch and thereby produce a weld of acceptable quality.

The welding processes referred to in this document include those fusion welding processes which are designated as manual or partly mechanized welding. It does not qualify fully mechanized and automated welding processes (see EN 1418 or ISO 14732).

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

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

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 1418:1997, *Welding personnel — Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding of metallic materials*.

EN 1435, *Non-destructive examination of welds — Radiographic examination of welded joints*.

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

EN ISO 4063, *Welding and allied processes — Nomenclature of processes and reference numbers (ISO 4063:1998)*.

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

EN ISO 15607:2003, *Specification and qualification of welding procedures for metallic materials — General rules (ISO 15607:2003)*.

EN ISO 15609-1:2004, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 1: Arc welding (ISO 15609-1:2004)*.

EN ISO 15614-2, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 2: Arc welding of aluminium and its alloys (ISO 15614-2:2004)*.

ISO 857-1, *Welding and allied processes — Vocabulary — Part 1: Metal welding processes*.

NOTE A list of ISO Standards conforming to these EN Standards is given in Annex ZB.