
**Specification and qualification of welding
procedures for metallic materials —
Welding procedure specification —**

**Part 4:
Laser beam welding**

*Descriptif et qualification d'un mode opératoire de soudage pour les
matériaux métalliques — Descriptif d'un mode opératoire de
soudage —*

Partie 4: Soudage par faisceau laser



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Foreword

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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 15609-4 was prepared by the European Committee for Standardization (CEN) in collaboration with Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, *Unification of requirements in the field of metal welding*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition of ISO 15609-4 cancels and replaces ISO 9956-11:1996, which has been technically revised.

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

ISO 15609 consists of the following parts, under the general title *Specification and qualification of welding procedures for metallic materials — Welding procedure specification*:

- *Part 1: Arc welding*
- *Part 2: Gas welding*
- *Part 3: Electron beam welding*
- *Part 4: Laser beam welding*
- *Part 5: Resistance welding*

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

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Foreword

This document (EN ISO 15609-4:2004) has been prepared by Technical Committee CEN /TC 121, "Welding", the secretariat of which is held by DS, in collaboration with 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 February 2005, and conflicting national standards shall be withdrawn at the latest by February 2005.

This document supersedes EN ISO 9956-11:1996.

Annex A is informative. Normative references to International Standards are listed in annex ZA.

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.

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1 Scope

This standard specifies requirements for the content of welding procedure specifications for laser beam welding processes.

This standard is part of a series of standards, details of this series are given in EN ISO 15607:2003, annex A.

Variables listed in this standard are those influencing the quality and properties of the welded joint.

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 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 11145:2001, *Optics and optical instruments — Lasers and laser-related equipment — Vocabulary and symbols (ISO 11145:2001)*.

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

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN ISO 15607:2003 and in EN ISO 11145:2001 and the following apply.

3.1

slope up

controlled increase of the beam power at the beginning of welding