

SVENSK STANDARD

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Specifikation för och kvalificering av svetsprocedurer för metalliska material – Svetsdatablad –

Del 5: Motståndssvetsning

(ISO 15609-5:2011)

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

Part 5: Resistance welding

(ISO 15609-5:2011)

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Europastandarden EN ISO 15609-5:2011 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN ISO 15609-5:2011.

Denna standard ersätter SS-EN ISO 15609-5:2004, utgåva 1.

The European Standard EN ISO 15609-5:2011 has the status of a Swedish Standard. This document contains the official version of EN ISO 15609-5:2011.

This standard supersedes the Swedish Standard SS-EN ISO 15609-5:2004, edition 1.

In this corrected version the following correction is made:

ISO 15609-5:2011 is replaced by ISO 15609-5:2011/Corrected version 2011-12-01.

**Förhållandet till övriga delar under samma huvudtitel - Utdrag ur Förord i ISO 15609-5:2011/
Relations to other parts under the same general title - Extract from the Foreword of
ISO 15609-5:2011**

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
- Part 6: Laser-arc hybrid welding

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Denna standard är framtagen av kommittén för Motståndssvetsning, SIS/TK 134/AGS 450.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

EUROPEAN STANDARD

EN ISO 15609-5

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2011

ICS 25.160.10

Supersedes EN ISO 15609-5:2004

English Version

Specification and qualification of welding procedures for metallic materials - Welding procedure specification - Part 5: Resistance welding (ISO 15609-5:2011, Corrected version 2011-12-01)

Descriptif et qualification d'un mode opératoire de soudage pour les matériaux métalliques - Descriptif d'un mode opératoire de soudage - Partie 5: Soudage par résistance (ISO 15609-5:2011, Version corrigée 2011-12-01)

Anforderung und Qualifizierung von Schweißverfahren für metallische Werkstoffe - Schweißanweisung - Teil 5: Widerstandsschweißen (ISO 15609-5:2011, korrigierte Fassung 2011-12-01)

This European Standard was approved by CEN on 30 September 2011.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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Foreword

This document (EN ISO 15609-5:2011) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with 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 April 2012, and conflicting national standards shall be withdrawn at the latest by April 2012.

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

This document supersedes EN ISO 15609-5:2004.

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Endorsement notice

The text of ISO 15609-5:2011 has been approved by CEN as a EN ISO 15609-5:2011 without any modification.

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

Part 5: Resistance welding

1 Scope

This part of ISO 15609 specifies requirements for the content of welding procedure specifications for resistance spot, seam, butt and projection welding processes. It is necessary to establish the acceptability of applying the principles of this part of ISO 15609 to other resistance and related welding processes before any qualification is undertaken.

NOTE Details of ISO 15609 (all parts — for titles, see Foreword) are given in ISO 15607:2003, Annex A.

Variables listed in this part of ISO 15609 are those influencing either weld dimensions (quality), weld nugget dimension, weld pattern positioning, mechanical properties or geometry 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.

ISO 669, *Resistance welding — Resistance welding equipment — Mechanical and electrical requirements*

ISO 4063, *Welding and allied processes — Nomenclature of processes and reference numbers*

ISO 5183 (all parts), *Resistance welding equipment — Electrode adaptors, male taper 1:10*

ISO 5184, *Straight resistance spot welding electrodes*

ISO 5821, *Resistance welding — Spot welding electrode caps*

ISO 5827, *Spot welding — Electrode back-ups and clamps*

ISO 8205-1, *Water-cooled secondary connection cables for resistance welding — Part 1: Dimensions and requirements for double-conductor connection cables*

ISO 8205-2, *Water-cooled secondary connection cables for resistance welding — Part 2: Dimensions and requirements for single-conductor connection cables*

ISO 8430 (all parts), *Resistance spot welding — Electrode holders*

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

ISO 15614-12, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 12: Spot, seam and projection welding*

ISO 15614-13, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 13: Resistance butt and flash welding*

ISO 17677-1, *Resistance welding — Vocabulary — Part 1: Spot, projection and seam welding*

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO 15607, ISO 17677-1 and ISO 669 apply.

4 Technical contents of welding procedure specification

4.1 General

The welding procedure specification (WPS) shall provide all information required to make a weld. The minimum information required in a WPS for resistance welding processes is listed in 4.2 to 4.4.

For some applications, it is necessary to supplement the list. All relevant information shall be specified in the WPS.

Tolerance ranges shall be specified.

Examples of the WPS format are shown in Annexes A, B and C; these forms should be modified according to actual practice.

4.2 Product manufacturer

- Identification of the product manufacturer.
- Identification of the WPS.
- Reference to the welding procedure qualification record (WPQR — see ISO 15614-12 and ISO 15614-13).

4.3 Parent materials

4.3.1 Composition

- Designation and type(s) of the material(s) and referenced standard(s).
- In case of coating(s), type, thickness, single or double sided.

4.3.2 Dimensions

- Thickness of material(s).
- Dimensions of cross-section of pipe or section (butt welding).

4.4 Common to all welding procedures

4.4.1 Welding process

- Welding process(es) specified shall be designated as listed in ISO 4063:

a) Spot welding (21):

- manual,
- multi,
 - direct
 - indirect
 - push-pull
- series,
- mechanized,
- automated,
- robotic,
- weld bonding;

b) Seam welding (22) (roll spot welding):

- manual/mechanized/automatic/robotic;

c) Projection welding (23):

- single/multiple,
- embossed/solid;

d) Flash welding (24):

- flashing/upsetting,
- with/without preheating;

e) Upset welding (Resistance butt welding) (25).

4.4.2 Machine specification

Type of machine used and appropriate identification.

4.4.3 Joint design

The overlap, edge distance, pitch, sequence and pattern, spot or projection dimensions, shall be specified and shall comply with the appropriate standards, as applicable.

NOTE A sketch can be used to show the joint design/configuration.

4.4.4 Surface and edge preparation

- Degreasing, wire brushing, chemical etching, etc.
- For butt welding, any mechanical edge/joint-face preparation (e.g. facing, finishing).
- For spot, seam and projection welding any removal of edge burrs to avoid shunting.