
**Quality requirements for welding —
Resistance welding of metallic
materials —**

**Part 2:
Elementary quality requirements**

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*Exigences de qualité en soudage — Soudage par résistance des
matériaux métalliques —
Partie 2: Exigences de qualité élémentaire*

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. www.iso.org/patents

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: http://www.iso.org/iso/home/standards_development/resources-for-technical-work/foreword.htm

The committee responsible for this document is ISO/TC 44, *Welding and allied processes*, Subcommittee SC 6, *Resistance welding and allied mechanical joining*.

This second edition cancels and replaces the first edition (ISO 14554-2:2000), of which it constitutes a minor revision.

ISO 14554 consists of the following parts, under the general title *Quality requirements for welding — Resistance welding of metallic materials*:

- *Part 1: Comprehensive quality requirements*
- *Part 2: Elementary quality requirements*

Requests for official interpretations of any aspect of this part of ISO 14554 should be directed to the Secretariat of ISO/TC 44/SC 6 via your national standards body. A complete listing of these bodies can be found at www.iso.org.

Quality requirements for welding — Resistance welding of metallic materials —

Part 2: Elementary quality requirements

1 Scope

This part of ISO 14554 specifies requirements for the demonstration of the capability of a manufacturer or a sub-contractor to produce welded constructions, fulfilling specified quality requirements, in one or more of the following:

- a contract between involved parties;
- an application standard;
- a regulatory requirement.

The requirements contained within this part of ISO 14554 can be adopted in full or can be selectively deleted by the manufacturer if not applicable to the construction concerned. They provide a flexible framework for the control of welding by providing specific requirements for:

- Case 1 — resistance welding in contracts which require the manufacturer or sub-contractor to have a quality system other than ISO 9001^[1] and where the documented welding control has a minor importance to the overall integrity of the final construction;
- Case 2 — resistance welding as guidance to a manufacturer or sub-contractor developing a quality system;
- Case 3 — references in application standards which use resistance welding as part of their requirements or in a contract between relevant parties.

This part of ISO 14554:

- is independent of the type of welded construction to be manufactured;
- defines quality requirements for welding both in production plants and on site;
- provides guidance for describing the capability of a manufacturer to produce welded constructions to meet specified requirements;
- can also be used as a basis for assessing the manufacturer in respect to his welding capability.

For general guidelines for selection and use, see ISO 3834-1, while being aware that only comprehensive and elementary requirements are specified for resistance welding. [Annex A](#) gives a summary comparison of specific quality requirements for resistance welding in this part of ISO 14554 and ISO 14554-1.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3834-1, *Quality requirements for fusion welding of metallic materials — Part 1: Criteria for the selection of the appropriate level of quality requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3834-1 apply.

4 Contract and design review

The manufacturer shall review the contractual requirements and the design data provided by the purchaser or in-house data for construction designed by the manufacturer. This is to ensure that all information necessary to carry out the fabrication operations is available prior to the commencement of the work. The manufacturer shall affirm his capability to meet all welding contract requirements and ensure adequate planning of all quality-related activities.

5 Sub-contracting

Any sub-contractor shall work as instructed by, and be responsible to, the manufacturer and shall fully comply with all relevant requirements of this part of ISO 14554.

6 Welding personnel

6.1 General

The manufacturer shall have at his disposal sufficient and competent personnel for the planning, performance, and supervision of the welding production according to specified requirements.

6.2 Operators

All operators of resistance welding equipment shall be given introduction courses and task-oriented training.

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6.3 Resistance weld setter

The resistance welder (weld setter and programmer) is the person who is competent for setting up resistance welding equipment according to specified welding procedures. This person has the required knowledge and skill for carrying out the work for quality assurance in the field of resistance welding.

The required competence may be demonstrated by sufficient experience, in-house training or a certificate of successful participation in a course for resistance welders (weld setter or programmer).

7 Equipment

The welding equipment shall be maintained in proper working order.

8 Welding activities

Welding shall be performed in accordance with an appropriate welding procedure.

9 Welding electrodes and auxiliaries

The manufacturer shall ensure that appropriate welding electrodes and auxiliaries are used.

10 Weld-related inspection and testing

10.1 General

The manufacturer shall carry out any inspection and testing as specified in the contract.

10.2 Personnel inspection and testing

The manufacturer shall have at its disposal sufficient and competent personnel for planning and performing any inspection and testing, where appropriate.

11 Storage of parent material

Storage shall be such that the material is not adversely affected. Marking shall be maintained during storage.

12 Non-conformance and corrective action

Measures shall be implemented to control items which do not conform to specified requirements in order to prevent their inadvertent use. When repair and/or rectification is undertaken by the manufacturer, appropriate procedures shall be available at all workstations where repair or rectification is performed. When repair or rectification is carried out, the items shall be re-inspected, tested, and examined in accordance with the original requirements, where appropriate.

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13 Quality records

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Any quality records specified in a contract shall be retained for a minimum period of 5 years unless otherwise specified.

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Annex A (informative)

Summary comparison of welding quality requirements in this part of ISO 14554 and ISO 14554-1

Table A.1 — Summary comparison

Elements	ISO 14554-1 (comprehensive quality requirements)	This part of ISO 14554 (elementary quality requirements)
Contract review	full documented review	establish that capability and information is available
Design review	design for welding to be confirmed	
Sub-contractor	treat like a main manufacturer	shall comply to standard
Resistance weld setter	proved by sufficient experience, in-house training record or according to an appropriate standard	proved by sufficient experience or in-house training record
Welding coordination	welding coordination personnel with appropriate technical knowledge according to ISO 14731, ^[2] or persons with similar knowledge	see 6.1
Inspection personnel	sufficient and competent personnel to be available	sufficient and competent personnel at disposal
Production equipment	required to prepare, cut, weld, transport, to lift, together with safety equipment and protective clothes	
Equipment maintenance	shall be carried out, maintenance plan necessary	shall be adequate
Production plan	necessary	shall be adequate
Welding procedure specification (WPS)	instructions to be available to welder	shall be adequate
Welding procedure approval	to ISO 15614, ^[4] approved as application standards or contract demands	shall be adequate
Work instructions	WPS or dedicated instructions to be available	shall be adequate
Documentation	necessary	as required
Batch testing of welding electrodes and auxiliaries	if specified	not mandatory
Storage of parent materials	protection required from influence by the environment	
Heat treatment	specification necessary	
Inspection before, during, after welding	as required for specified operations	responsibilities as specified in contract
Non-conformances	procedures shall be available	
Calibration	procedures shall be in operation	necessary, if quality records are specified
Identification and traceability	required	as required by contract
Quality records	shall be available to meet the rules for product liability	as required by contract
	retained for 5 years minimum	

Bibliography

- [1] ISO 9001, *Quality management systems — Requirements*
- [2] ISO 14731:2006, *Welding coordination — Tasks and responsibilities*
- [3] ISO 14732, *Welding personnel — Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials*
- [4] ISO 15614 (all parts), *Specification and qualification of welding procedures for metallic materials — Welding procedure test*

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