
**Destructive tests on welds in metallic
materials — Resistance welding —
Pressure test on resistance seam welds**

*Essais destructifs des soudures sur matériaux métalliques — Soudage par
résistance — Essai de pression des soudures par résistance à la molette*

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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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 17654 was prepared by the European Committee for Standardization (CEN) in collaboration with Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 5, *Testing and inspection of welds*, 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...".

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Foreword

This document (EN ISO 17654:2003) 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of an identical text or by endorsement, at the latest by September 2003, and conflicting national standards shall be withdrawn at the latest by September 2003.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This European Standard specifies the pressure test method to be applied to resistance seam welded specimens of different types of material, e.g. uncoated and coated ferritic steels and uncoated austenitic steel sheet with single sheet thicknesses ranging from 0,3 mm to 3,2 mm.

The purpose of this pressure test is to determine the suitability of the material, welding equipment, welding parameters and of other factors on a tank, a vessel or a container for liquids or gases, which are manufactured by resistance seam welding.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

prEN ISO 14329:1999, *Welding — Destructive testing of welds — Failure types and geometric measurements for resistance spot, seam, and projection welds (ISO/DIS 14329:1999)*

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3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in prEN ISO 14329:1999 apply.

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4 Purpose of test

The pressure test can be performed as a type test.

5 Test specimens

5.1 Requirements

The following shall apply to the preparation of all specimens.

- Materials, thickness, heat treatment and conditions of the sheets used for the test specimen shall be those used for welding the actual component;
- for a given welding process the welding equipment used to produce the test specimen shall have comparable parameters to that used for welding the actual component.

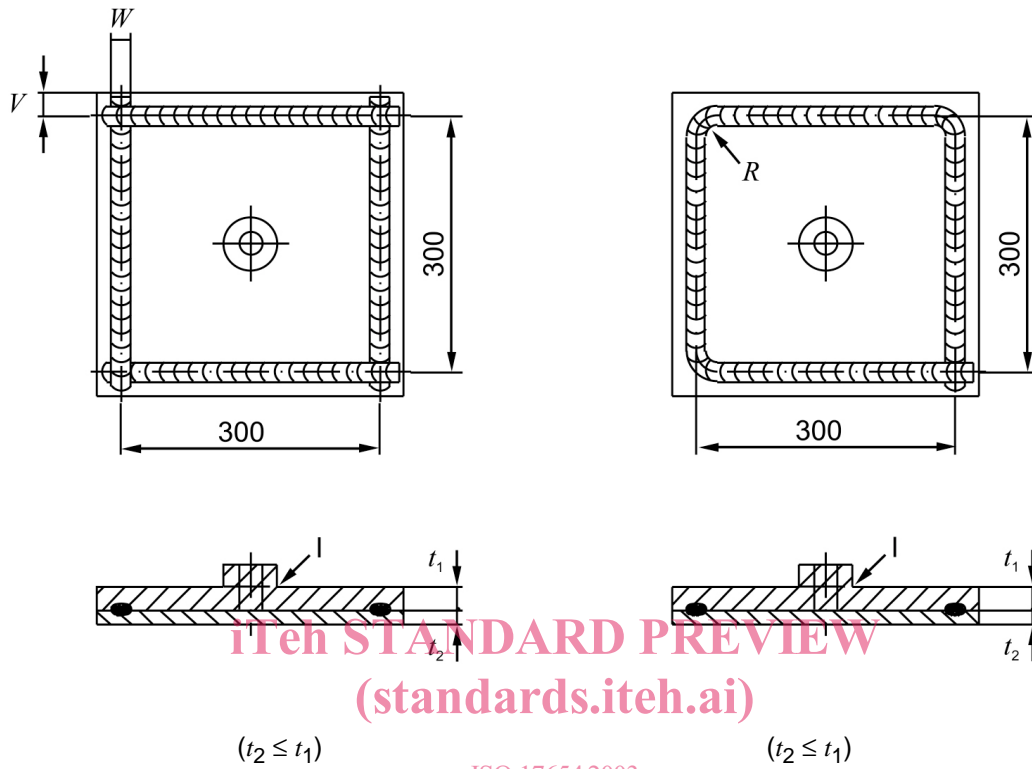
NOTE In special cases, e.g. transfer of welding parameters into production lines, the same parameters should be used.

- it has to be ensured, that electrodes used to weld specimens shall be of the same material, shape and dimensions as the ones used for welding the actual component.

5.2 Dimensions

Dimensions of the test specimens type A and type B are indicated in Figure 1 for resistance seam welding.

Dimensions in millimeters



a) Type A — Specimen with four seams b) Type B — Specimen with one seam

Key

- R* radius determined for the product
- t*₁ sheet thickness of top sheet
- t*₂ sheet thickness of bottom sheet
- V* 1,25 × *W*
- W* width of weld seam
- I* leak tight weld

Figure 1 — Dimensions of test specimens

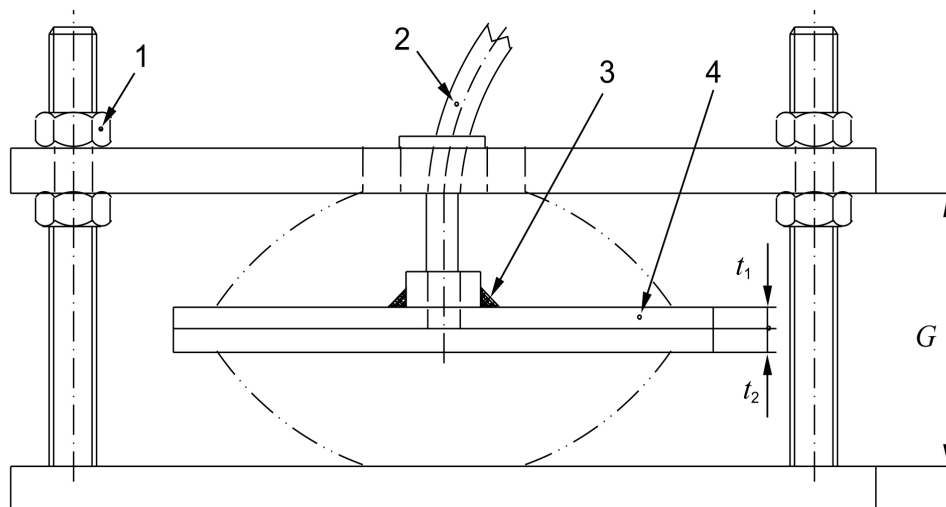
5.3 Number of test specimens

Numbers of the test specimens shall be at least 3.

6 Test equipment and test procedure

The test shall be carried out with the specimen shown in Figure 1 assembled in a restraining fixture as shown in Figure 2. The purpose of the restraining fixture is to restrict expansion of the specimen within *G* indicated in Figure 2.

The test specimen shall be connected to a supply of compressed air at the specified pressure and immersed in a water bath. No leaks (in the form of bubbles) escaping from any of the seam welds shall be observed after a specified time, are permitted.



$$t_2 \leq t_1$$

Key

- G $t_1 + t_2 + 20$ mm (restricted expansion)
 t_1 sheet thickness of top sheet
 t_2 sheet thickness of bottom sheet
 1 nuts to adjust G
 2 compressed air
 3 leak tight joint
 4 test specimen

Figure 2 — Restraining fixture

When the test pressure is not specified, the test specimen shall be checked for leakage either at a pressure sufficient to deform the sample 20 mm or at 0,15 MPa, whichever is the lower pressure.

When a test pressure greater than 0,15 MPa is specified, the test should be conducted in air using internal water pressure. No leakage of water from any of the seam welds is permitted after a specified time.

NOTE This clause requires precise specification of the time for which the test pressure is maintained which is a function of material, process, conditions.

7 Test report

The test report shall refer to this standard and include at least the following information:

- the test materials and sheet thickness;
- chemical composition and mechanical properties of the test materials;
- the shape and dimensions of the test specimens;
- welding method (seam welding);
- the welding equipment and welding parameters;
- weld dimensions;
- test results, test pressure and time at pressure and pressure medium;
- any deviation from this standard.