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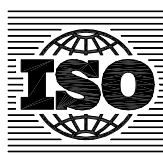
Resistance welding — Destructive testing of welds — Specimen dimensions and procedure for mechanized peel testing resistance spot, seam and embossed projection welds

Soudage par résistance — Essais destructifs des soudures — Dimensions des éprouvettes et mode opératoire pour l'essai par déboutonnage mécanisé des soudures par résistance par points, à la molette et par bossages

Please see the administrative notes on page iii

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Reference number
ISO/FDIS 14270:2015(E)

ISO/CEN PARALLEL PROCESSING

This final draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement. The final draft was established on the basis of comments received during a parallel enquiry on the draft.

This final draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel two-month approval vote in ISO and formal vote in CEN.

Positive votes shall not be accompanied by comments.

Negative votes shall be accompanied by the relevant technical reasons.

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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 (see www.iso.org/directives).

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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: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/IIW, *International Institute of Welding*.

This second edition cancels and replaces the first edition (ISO 14270:2000), which has been technically revised.

Requests for official interpretations of any aspect of this International Standard should be directed to the ISO Central Secretariat, who will forward them to the IIW Secretariat for an official response.

Introduction

This edition of ISO 14270 no longer includes figures showing failure types and modes for tensile shear and cross tension testing in accordance with ISO 14329.

This edition of ISO 14270 was revised to align it with ISO 17677-1. This edition of ISO 14270 is now applicable to testing of welds made in high strength materials including ultra-high strength materials as well as ordinary strength materials. Some of the figures related to the failure types and modes have been revised in accordance with ISO 17677-1.

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Resistance welding — Destructive testing of welds — Specimen dimensions and procedure for mechanized peel testing resistance spot, seam and embossed projection welds

1 Scope

This International Standard specifies specimen dimensions and a testing procedure for mechanized peel testing of single spot, seam and embossed projection welds, in overlapping sheets, in any metallic material of thickness 0,5 mm to 3 mm, where the welds have a maximum diameter of $7\sqrt{t}$ (where t is the sheet thickness in mm).

For welds of diameter between $5\sqrt{t}$ and $7\sqrt{t}$, the peel strength values obtained may be lower than expected when using the recommended test specimen dimensions because the test specimen width is designed for welds of diameter of $5\sqrt{t}$ or less.

The object of mechanized peel testing is to determine the peel strength that the test specimen can sustain.

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 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 17677-1 and the following apply.

3.1

mechanized peel strength

MPS

maximum peel force obtained from this test

3.2

peel force

applied on test specimen during mechanized peel testing

3.3

minimum seam weld width

W_{\min}

minimum width of the seam weld measured at the faying surface

Note 1 to entry: See [Figure A.1](#).

Note 2 to entry: For interface failures, the seam weld width is measured in the plane of the interface in a transverse direction to the longitudinal axis of the linear seam weld.

4 Test pieces and specimens

Table 1 gives test specimen dimensions for mechanized peel tests. The positional accuracy of the weld on the test specimen shall be ± 1 mm or less in every direction.

Table 1 — Test specimen dimensions and weld position

Thickness	Flange length	Specimen width	Specimen length	Free length between clamps	Edge distance
t mm	a mm	b mm	l_s mm	l_f mm	e mm
$0,5 < t \leq 3,0$	50	50	≥ 160	105	25

NOTE See Annex B for an explanation of the influence of weld position on mechanized peel test results of spot welds.

Spot welded test specimens can be produced by

- welding each one separately in accordance with Figure 1 a), or
- making a number of individual welds joining two test plates as a multiple weld test piece, and then cutting them in accordance with Figure 2.

Embossed projection weld test specimens shall only be produced by welding a single weld specimen as shown in Figure 1 a).

In order to obtain statistically significant average results, it is recommended that several specimens are tested.

In the case of unequal sheet thicknesses, the test specimen dimensions shall be based on those of the thinner sheet. Mechanized peel test specimens in accordance with Figure 1 c) shall be produced in accordance with Clause 5 or Clause 6.

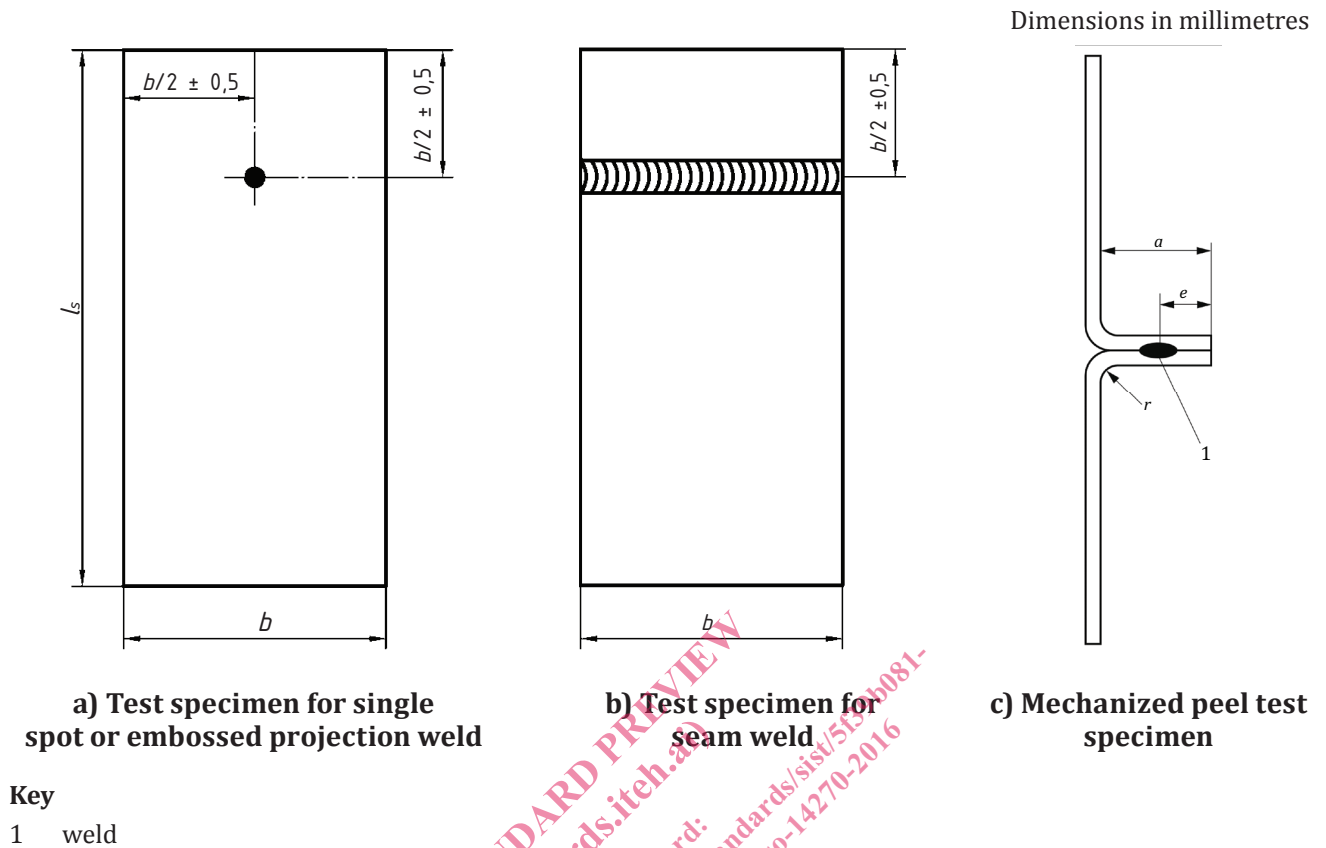
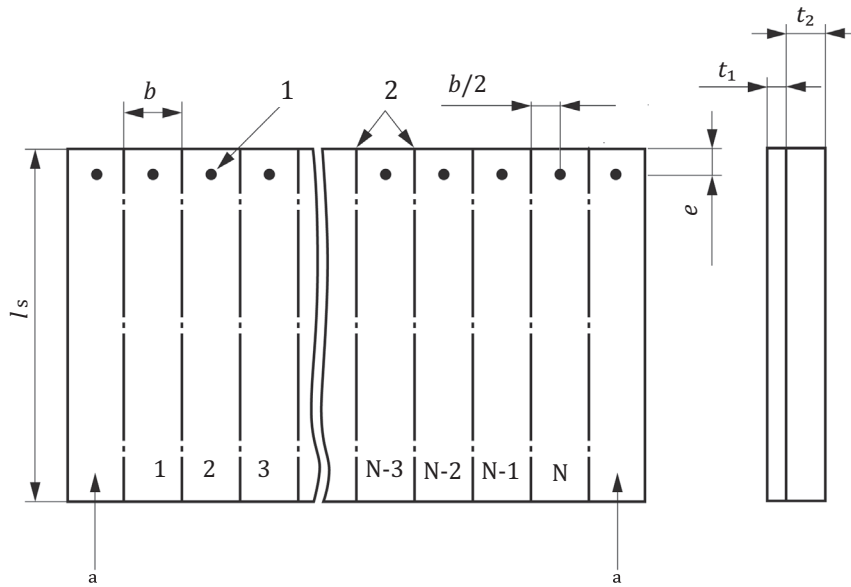


Figure 1 — Form of test specimen with weld position for single weld

When using multi-spot welding equipment, each electrode shall weld an individual test specimen as shown in [Figure 1 a](#)).

For multiple weld test pieces in large sheets, welding starts from an end location to the other end as shown in [Figure 2](#). Since shunting occurs during welding of multiple weld test pieces, the welding current used shall be higher than that for welding for a single weld test specimen. For multiple weld pieces, the first and last welds shall be discarded as shown in [Figure 2](#).

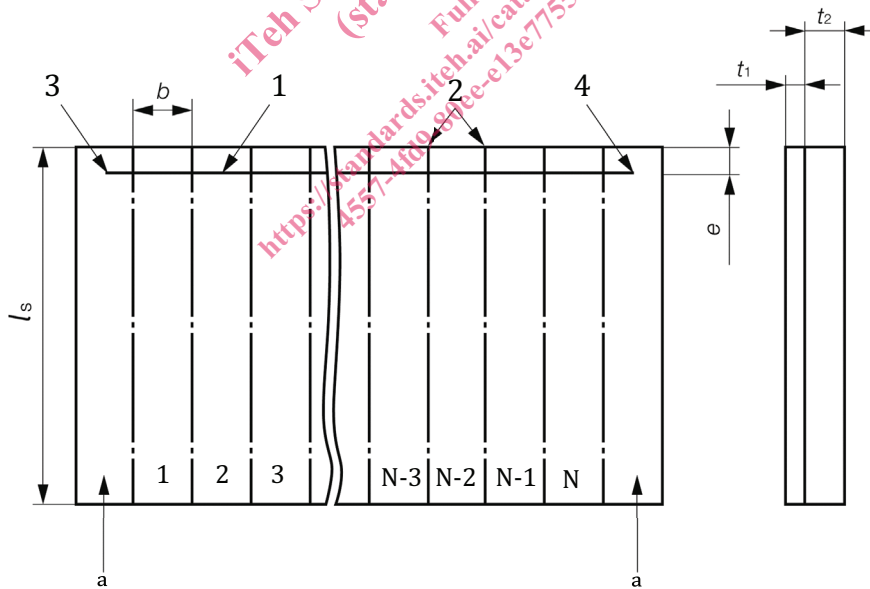


Key

- | | | | |
|---|-----------------------------------|---|--------------------------|
| 1 | spot or embossed projection welds | N | number of test specimens |
| 2 | cuts | a | Discarded. |

NOTE For other symbols, see [Table 1](#).

Figure 2 — Example for preparation of multiple weld test pieces



Key

- | | | | |
|---|------------------|---|--------------------------|
| 1 | seam weld | 4 | stop position of welding |
| 2 | cuts | N | number of test specimens |
| 3 | start of welding | a | Discarded. |

Figure 3 — Example for preparation of seam welded test pieces

For seam welds, a continuous weld is made as shown in [Figure 3](#). Test specimens shall be made as shown in [Figure 1 b](#)). Both end parts of the seam weld shall be discarded.