



# DRAFT INTERNATIONAL STANDARD ISO/DIS 14273

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

## Specimen dimensions and procedure for shear testing resistance spot, seam and embossed projection welds

*Dimensions des éprouvettes et mode opératoire pour l'essai de cisaillement des soudures par résistance par points, à la molette et par bossages*

[Revision of first edition (ISO 14273:2000)]

ICS 25.160.40

### ISO/CEN PARALLEL PROCESSING

This 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.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five-month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

Member bodies are requested to consult relevant national interests in ISO/TC 44 before returning their ballot to the ISO Central Secretariat.

**This draft International Standard is submitted to all ISO member bodies for voting, as a standard prepared by an international standardizing body in accordance with Council Resolution 42/1999. The proposer, the International Institute of Welding (IIW), has been recognized by the ISO Council as an international standardizing body for the purpose of Council Resolution 42/1999.**

**To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.**

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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.

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.

International Standard ISO 14273 was prepared in collaboration with the International Institute of Welding, which has been approved by the ISO Council as an international standardizing body in the field of welding.

This second edition cancels and replaces the first edition (ISO 14273:2000).

**D R A F T**

**PREVIEW**

**STANDARD**

**(standarditem)**

**Full standard/catalog/standards/sub/14273-2006**

**https://standards.iteh.ai/catalog/standards/sub/14273-2006/7141-411d-8006-8d15-7beba8bb/iso-14273-2006**

## Introduction

The previous edition of ISO 14273 included figures showing failure types and modes for resistance spot, seam and embossed projection welds in accordance with ISO 14329:2003.

This second edition of ISO 14273 was revised to align it with ISO 17677-1.

**D R A F T**

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# Resistance welding — Destructive testing of welds — Specimen dimensions and procedure for tensile shear testing resistance spot, seam and embossed projection welds

## 1 Scope

This International Standard specifies specimen dimensions and a testing procedure for tensile shear testing of spot, seam and embossed projection welds, in overlapping sheets, in any metallic material of thickness 0,5 mm to 10 mm, where the welds have a maximum diameter of  $7\sqrt{t}$  (where  $t$  is the sheet thickness in mm). With welds of diameter between  $5\sqrt{t}$  and  $7\sqrt{t}$ , the value of tensile shear strength (TSS) can be underestimated when using the recommended test specimen dimensions.

The object of tensile shear testing is to determine the maximum tensile shear force that the test specimen can sustain.

## 2 Normative reference

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

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*

## 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

**tensile shear strength (tensile shear force)(TSS)**

maximum force obtained from this test

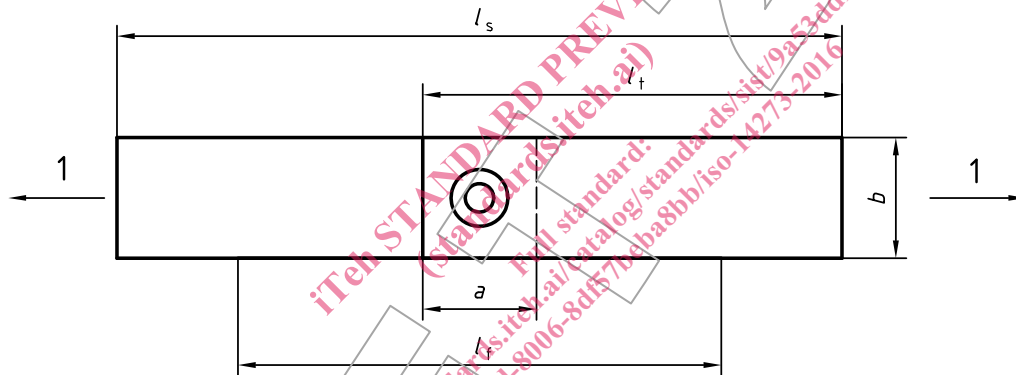
## 4 Test pieces and specimens

The test specimen dimensions and configuration are given in Table 1 and Figure 1.

Table 1 — Dimensions of tensile shear test specimen

Thickness $t$	Overlap $a$	Specimen width <sup>a</sup> $b$	Specimen length $l_s$	Free length between clamps $l_f$	Length of individual test coupons $l_t$
$0,5 \leq t \leq 1,5$	35	45 (30)	175	95	105
$1,5 < t \leq 3$	46	60 (30)	230	105	138
$3 < t \leq 5$	60	90 (55)	260	120	160
$5 < t \leq 7,5$	80	120 (80)	300	140	190
$7,5 < t \leq 10$	100	150 (100)	320	160	210

<sup>a</sup> Figures in parentheses will give approximately 10 % reduction in strength and these widths may be used only by agreement between the manufacturer and the purchaser.



Key

- 1 Direction of test loading

Figure 1 — Tensile shear test specimen

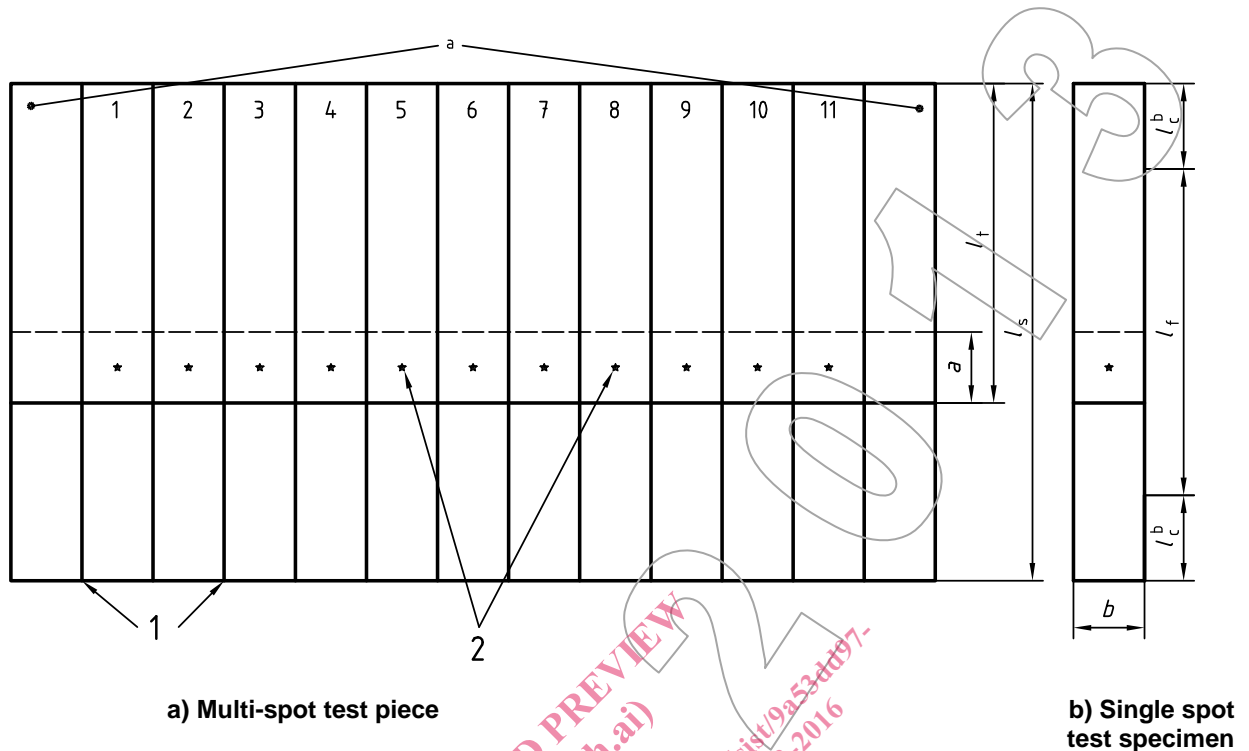
The test specimen can be produced, either by making a certain number of individual spot welds joining two test sheets as shown in Figure 2 a), and then cutting them, or by welding each specimen separately as shown in Figure 2 b). In the case of different sheet thicknesses the dimensions shall be based on the thinner sheet.

In the case of multi-spot welding equipment, each electrode shall weld one multispot test piece as shown in Figure 2 a) or its own individual test specimen as shown in Figure 2 b). Since shunting occurs during welding of a multi-spot test piece, the welding current used shall be higher than that for welding the single spot test specimen.

For projection welds, all welds shall be tested except for multi-spot welding when the first and last welds on the test piece shall be discarded as shown in Figure 2 a).

The properties of the welded joints in the test piece shall not be affected by the cutting process used to separate the individual test specimens. For spot and projection welding the minimum number of test specimens shall be eleven.



**Key**

- 1 Cuts
- 2 Resistance spot welds
- a Discarded.
- b Clamping length.

**Figure 2 — Test specimen dimensions and sampling position for multi- and single spot welded test pieces**

## 5 Test equipment and testing procedure

The specimen is clamped in a tensile testing machine which satisfies the requirements of ISO 7500-1.

For sheet thickness < 3 mm or where the ratio of the thicknesses of the two sheets is > 1,4, shim plates shall be used for clamping the test specimen in the grips of the tensile testing machine. The shim plate shall be as thick as the sheet of the test specimen as shown in Figure 3.

Testing is carried out at room temperature.