

---

---

**Resistance spot welding and projection  
welds — Destructive testing of welds —  
Specimen dimensions and procedure for  
impact shear test and cross-tension  
testing**

**iTeh STANDARD PREVIEW**  
**(standard.itih.ai)**  
*Soudage par résistance par points et par bossages — Essais  
destructifs des soudures — Dimensions des éprouvettes et procédure  
d'essai de cisaillement par choc et d'essai de traction par choc sur  
éprouvettes en croix*

[ISO 14323:2006](#)

<https://standards.itih.ai/catalog/standards/sist/1d1a9734-a3da-4490-8cda-7421063b755e/iso-14323-2006>



**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 14323:2006

<https://standards.iteh.ai/catalog/standards/sist/1d1a9734-a3da-4490-8cda-7421063b755e/iso-14323-2006>

© ISO 2006

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

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](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

**Contents**

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Test specimen</b> .....	<b>4</b>
<b>5 Test equipment and testing procedure</b> .....	<b>6</b>
<b>5.1 General</b> .....	<b>6</b>
<b>5.2 Modified pendulum machine</b> .....	<b>6</b>
<b>5.3 Drop-weight machine</b> .....	<b>8</b>
<b>6 Test report</b> .....	<b>12</b>
<b>Annex A (informative) Determination of absorbed energy</b> .....	<b>13</b>
<b>Bibliography</b> .....	<b>18</b>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 14323:2006

<https://standards.iteh.ai/catalog/standards/sist/1d1a9734-a3da-4490-8cda-7421063b755e/iso-14323-2006>

## 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.

ISO 14323 was prepared by the International Institute of Welding, recognized as an international standardizing body in the field of welding in accordance with Council Resolution 42/1999.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 14323:2006](https://standards.iteh.ai/catalog/standards/sist/1d1a9734-a3da-4490-8cda-7421063b755e/iso-14323-2006)

<https://standards.iteh.ai/catalog/standards/sist/1d1a9734-a3da-4490-8cda-7421063b755e/iso-14323-2006>

## Introduction

Requests for official interpretations of provisions in this standard should be made in writing and sent to the ISO Central Secretariat who will forward them to the IIW Secretariat for an official response.

# iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO 14323:2006

<https://standards.iteh.ai/catalog/standards/sist/1d1a9734-a3da-4490-8cda-7421063b755e/iso-14323-2006>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 14323:2006

<https://standards.iteh.ai/catalog/standards/sist/1d1a9734-a3da-4490-8cda-7421063b755e/iso-14323-2006>

# Resistance spot welding and projection welds — Destructive testing of welds — Specimen dimensions and procedure for impact shear test and cross-tension testing

## 1 Scope

This International Standard covers destructive testing of welds.

This International Standard specifies specimen dimensions and testing procedures for impact shear and cross-tension testing of resistance spot and embossed projection welds in overlapping sheets, in any metallic material of thickness 0,5 mm to 4 mm.

## 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 14323:2006

ISO 14272, *Specimen dimensions and procedure for cross-tension testing resistance spot and embossed projection welds*  
7421063b755e/iso-14323-2006

ISO 14329, *Resistance welding — Destructive tests of welds — Failure types and geometric measurements for resistance spot, seam and projection welds*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 669 and ISO 14329 and the following apply.

### 3.1

#### **corona bond**

area of the weld at the faying surfaces in which solid-phase bonding has occurred

### 3.2

#### **impact cross-tension failure energy**

failure energy measured in the impact cross-tension test

### 3.3

#### **impact cross-tension force**

maximum force measured in the impact cross-tension test

### 3.4

#### **impact shear failure energy**

failure energy measured in the impact shear test

**3.5**

**impact shear force**

maximum force measured in the impact shear test

**3.6**

**interface failure**

fracture through the weld (nugget) between the sheets at the plane of the interface

See Figure 1 b).

**3.7**

**nominal weld diameter**

diameter of the plug (slug/button) measured at the base of the nugget

See Figure 1 a).

**3.8**

**plug failure**

**slug/button failure**

fracture in the base metal, the heat-affected zone, or in the nugget leaving a plug

See Figure 1 a).

**3.9**

**weld diameter**

*d*

⟨interface failure⟩ diameter of the fused zone measured at the interface, omitting the corona bond area

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

See Figure 1 b).

[ISO 14323:2006](https://standards.iteh.ai/catalog/standards/sist/1d1a9734-a3da-4490-8cda-7421063b755e/iso-14323-2006)

**3.10**

**weld diameter**

*d*

⟨partial plug failure⟩ mean diameter of the fused zone measured at the interface, omitting the corona bond area and the maximum diameter of the plug component of the failure

<https://standards.iteh.ai/catalog/standards/sist/1d1a9734-a3da-4490-8cda-7421063b755e/iso-14323-2006>

NOTE The minimum diameter of the plug component should be quoted separately [see Figure 1 a) and b)].

**3.11**

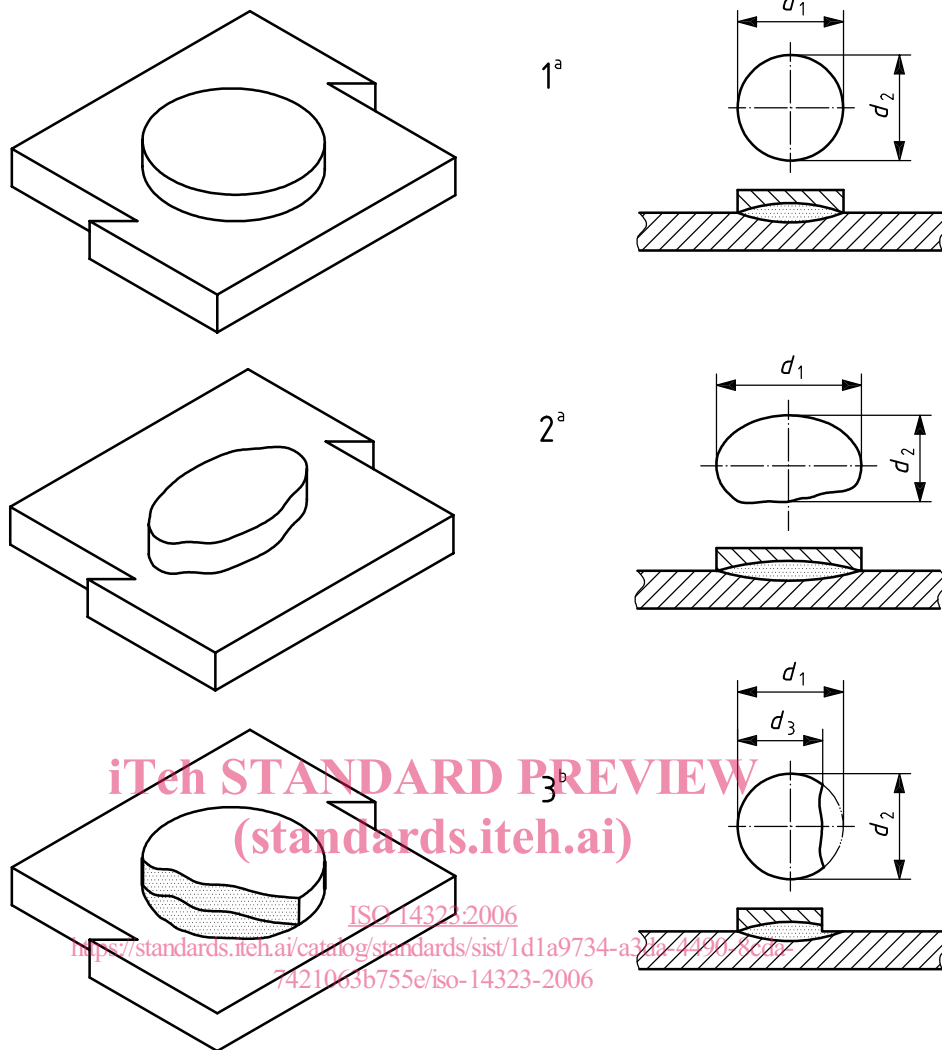
**weld diameter**

*d*

⟨plug failure⟩ average diameter of the plug

See Figure 1 a).





**Key**

- 1 symmetrical
- 2 asymmetrical
- 3 partial

<sup>a</sup>  $d = d_p = (d_1 + d_2)/2$

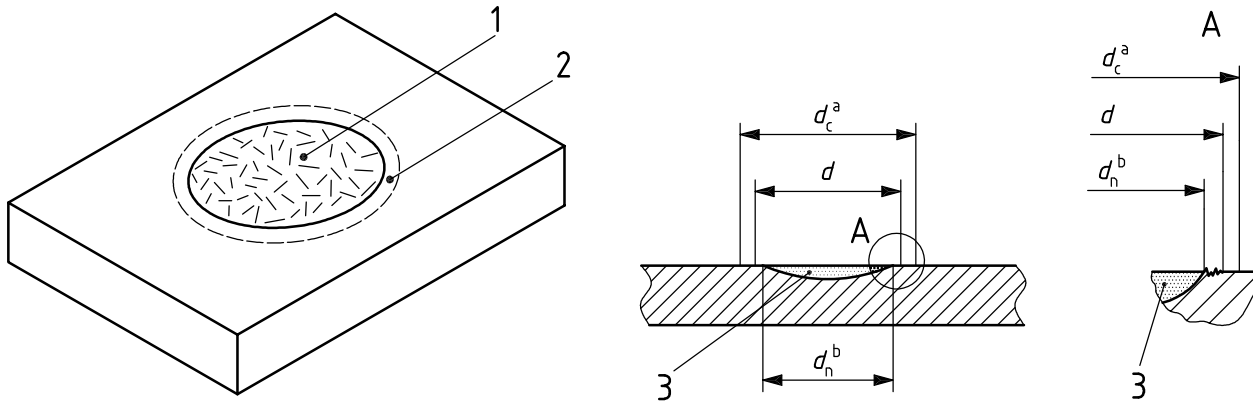
<sup>b</sup>  $d = (d_1 + d_2)/2$  and  
 $d_p = (d_2 + d_3)/2$

where

- $d_p$  is the mean plug diameter;
- $d_1$  is the maximum weld diameter;
- $d_2$  is the minimum weld diameter;
- $d_3$  is the minimum width of plug.

**a) Weld with plug (slug) failure**

**Figure 1 — Measuring weld diameter**



**Key**

- 1 sheared nugget
- 2 corona bond zone
- 3 nugget

a Diameter of the corona.

b Diameter of the nugget.

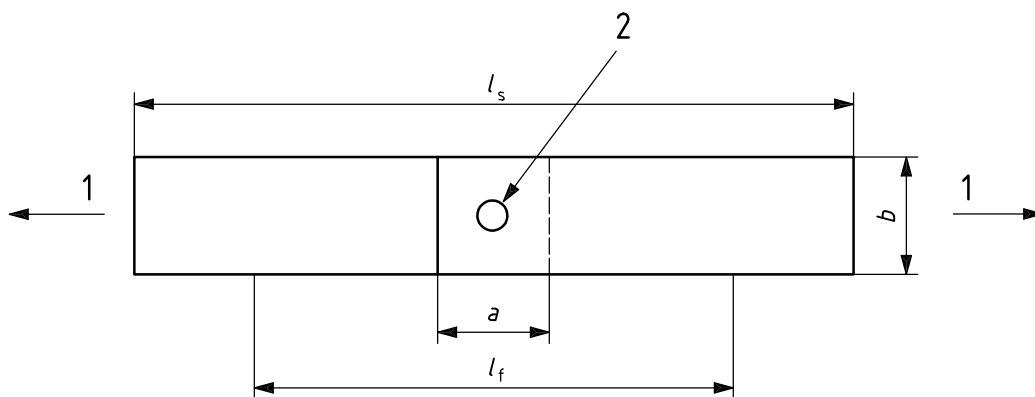
b) Weld with interface failure,  $d < d_c$

iTeh STANDARD PREVIEW  
 Figure 1 (continued)  
 (standards.iteh.ai)

**4 Test specimen**

ISO 14323:2006

Dimensions and form of the impact shear test specimen are shown in Figure 2 and Table 1. Dimensions and form of the impact cross-tension specimen are shown in Figure 3 (see ISO 14272). An example of a jig for welding the cross-tension specimen is shown in Figure 4. Two punched strips are placed at right angles to each other, held in the jig, and welded together.



**Key**

- 1 direction of test load
- 2 weld

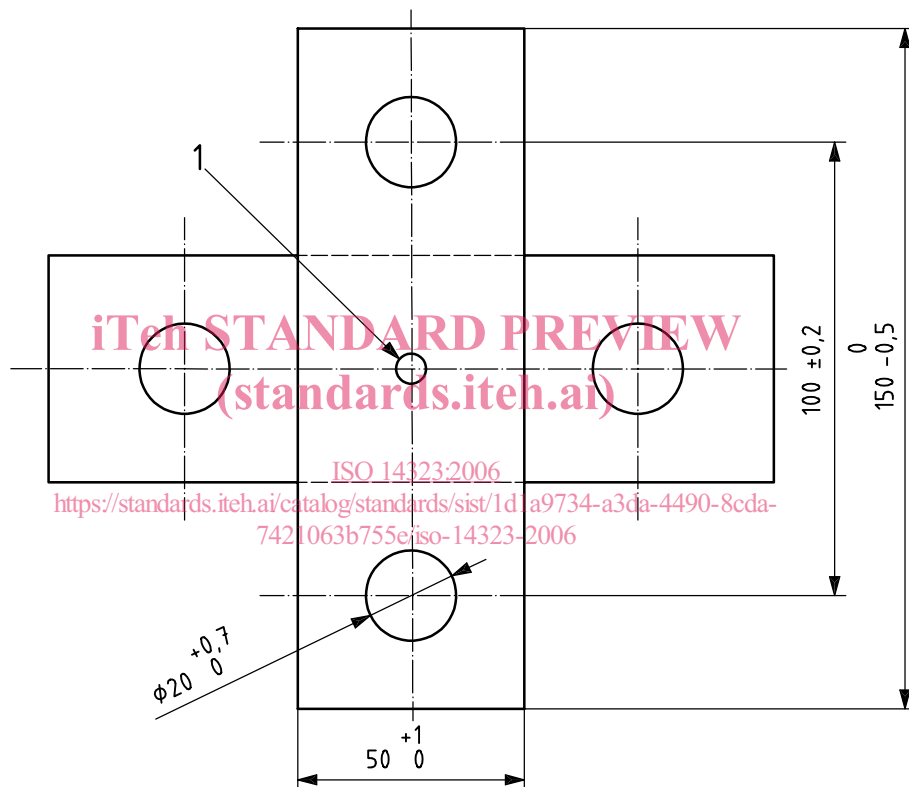
**Figure 2 — Form of impact shear test specimen**

Table 1 — Dimensions of impact shear test specimens

Dimensions in millimetres

Sheet thickness $t$	Overlap $a$	Width $b$	Length $l$	Overall length $l_s$	Unclamped length $l_f$
$0,5 \leq t \leq 1,5$	35	45	105	175	95
$1,5 < t \leq 3,0$	45	60	138	230	105
$3,0 < t \leq 4,0$	60	90	160	260	120

Dimensions in millimetres



**Key**

1 weld is centred

Figure 3 — Form of impact cross-tension test specimen