
Resistance welding — Testing of welds — Peel and chisel testing of resistance spot and projection welds

Soudage par résistance — Essais des soudures — Essais de pelage et de déboutonnage au burin appliqués aux soudures par résistance par points et par bossages

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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).

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 (see 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: Foreword — Supplementary information.

The committee responsible for this document is I1W, *International Institute of Welding*, Commission III.

This third edition cancels and replaces the second edition (ISO 10447:2006), which has been technically revised.

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Introduction

This edition of ISO 10447 includes figures showing failure types and fracture modes of resistance spot and embossed projection welds in accordance with ISO 14329:2003.

The previous edition of ISO 10447 was revised to align it with ISO 17677-1.

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Resistance welding — Testing of welds — Peel and chisel testing of resistance spot and projection welds

1 Scope

This International Standard specifies the procedures and recommended tooling to be used for peel and chisel testing of resistance spot and projection welds. This International Standard applies to welds made in two or more sheets in the thickness range of 0,5 mm to 3,0 mm.

The aim of these tests is to determine

- weld size and failure type when welds are destructively tested, and
- verification of welds by non-destructive chisel tests.

NOTE The preferred method of peel testing seam welds (mechanized peel testing) is covered in ISO 14270.

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 14270, *Specimen dimensions and procedure for mechanized peel testing resistance spot, seam and embossed projection welds*

ISO 10447:2015

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

chisel test

destructive test with a chisel in which welds are tested by applying a predominantly tensile force that results in stresses primarily normal to the surface of the joint interface

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

3.2

peel test

destructive test in which welds are tested by applying a peel force that results in stresses primarily normal to the surface of the joint interface

Note 1 to entry: See [Figure 2a](#) and [Figure 2b](#).

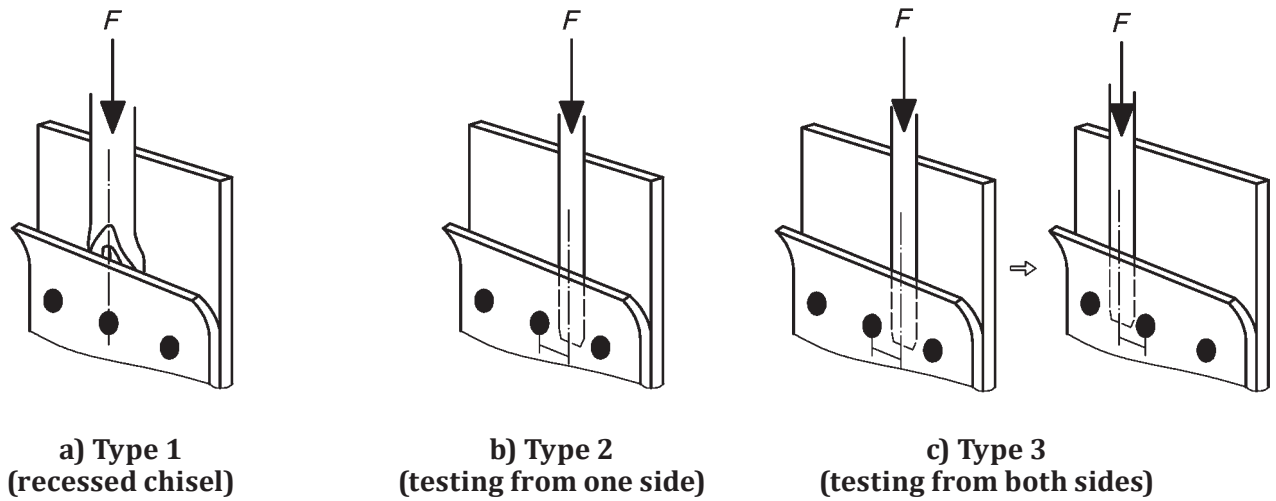


Figure 1 — Chisel testing of resistance spot and projection welded joints

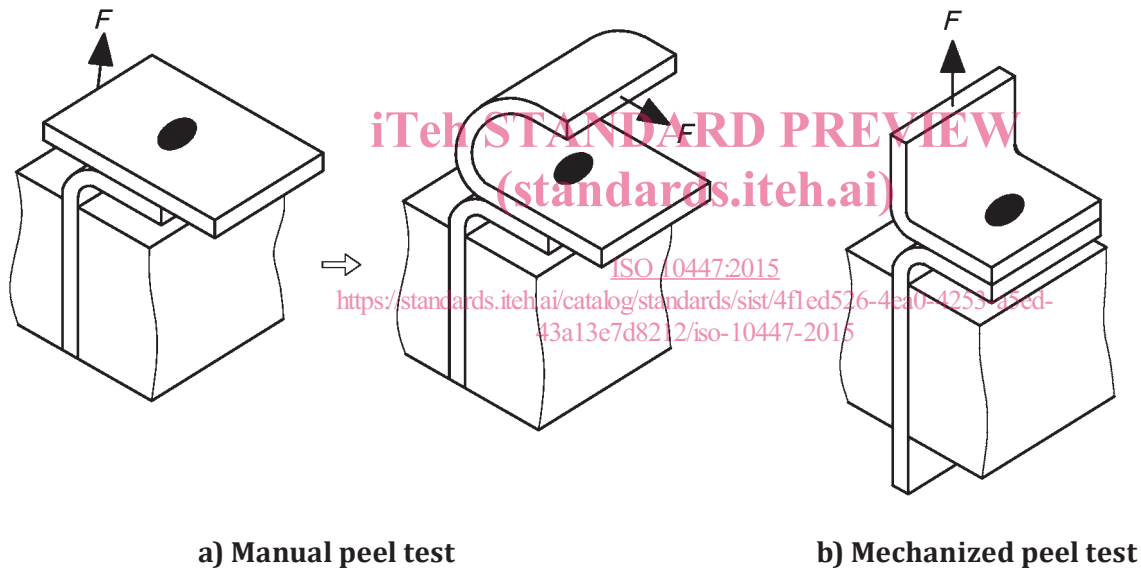


Figure 2 — Peel testing of resistance spot and projection welded joints

4 Test specimens

When used for quality control in production, tests shall be conducted on actual components or specimens taken from actual components.

When used for setting welding parameters, where it is not practical to use actual components, separate welded test pieces may be used. The test pieces shall be produced from the same material used for the component, and welded under conditions adapted to simulate and produce the same required weld quality. The effects of different shunt or impedance conditions should be taken into account when producing the test pieces by inserting sufficient material in the throat of the machine to approximate the magnetic effect of the workpiece under production conditions.

5 Test procedure

5.1 Chisel test

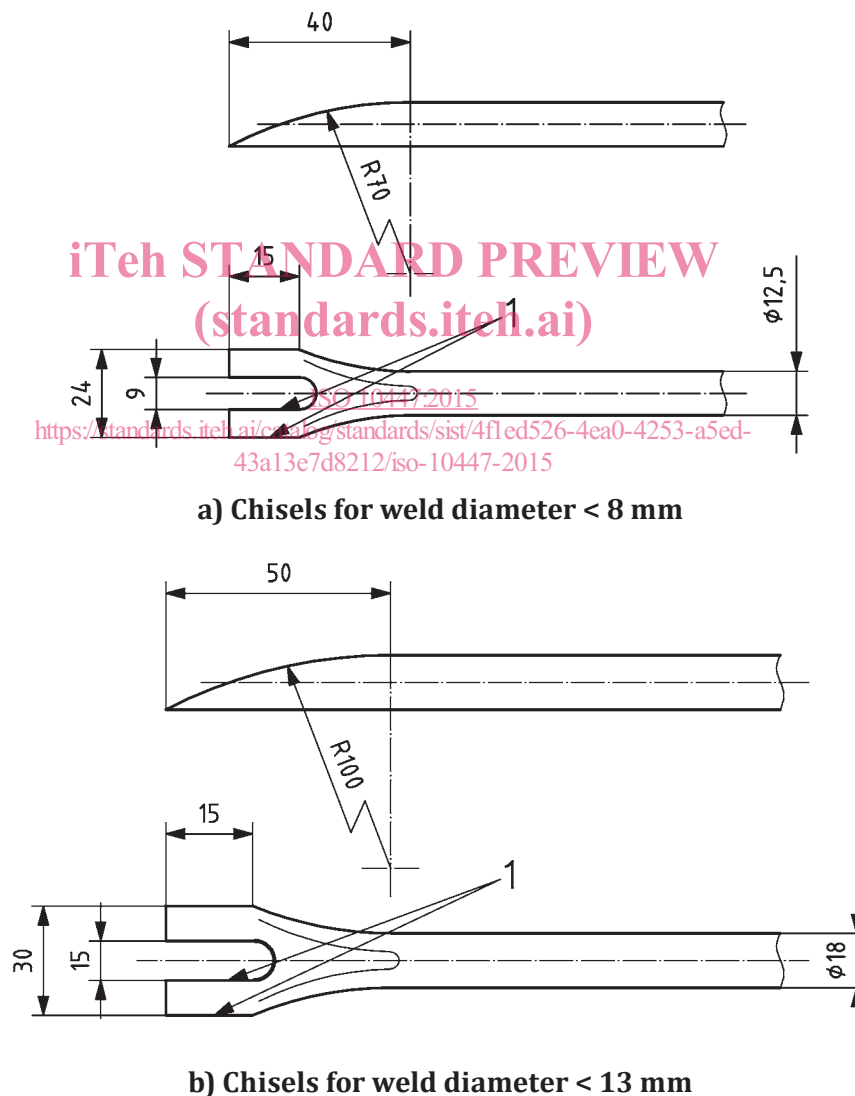
A chisel shall be used to separate the sheets adjacent to the weld under test.

Typical chisel designs are shown in [Figure 3](#) and [Figure 4](#). The chisel geometry should be chosen based on the workpiece thickness and geometry, weld diameter, distance between welds, and whether the weld is to be destructively or non-destructively tested (see [Table 1](#)).

The slot in the chisel shown in [Figure 3](#) is only necessary if the axis of the chisel is placed at the centre of the weld.

The chisel should be driven between the sheets manually by a hammer or tool with e.g. pneumatic, electric or hydraulic drive.

Dimensions in millimetres



Key

1 burr to be removed from all corners

Figure 3 — Typical dimensions of chisels