



SLOVENSKI STANDARD
oSIST prEN ISO 10447:2022

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Uporovno varjenje - Preskušanje zvarnih spojev - Preskus luščenja in dletenja uporovnih točkovnih in bradavičnih zvarov (ISO/DIS 10447:2021)

Resistance welding - Testing of welds - Peel and chisel testing of resistance spot and projection welds (ISO/DIS 10447:2021)

Widerstandsschweißen - Prüfung von Schweißverbindungen - Schäl- und Meißelprüfung von Widerstandspunkt- und Buckelschweißverbindungen (ISO/DIS 10447:2021)

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ICS:

25.160.40 Varjeni spoji in vari Welded joints and welds

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en,fr,de

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

ICS: 25.160.40

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Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Test specimens.....	1
5 Test procedure.....	2
5.1 Chisel test.....	2
5.2 Peel test.....	4
5.3 Measurement of weld size and recording failure types.....	6
6 Test report.....	7

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ISO/DIS 10447:2021(E)

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 of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 44, Welding and allied processes, Subcommittee SC 6, Resistance welding and allied mechanical joining.

This fourth edition cancels and replaces the third edition (ISO 10447:2015) which has been technically revised.

The main changes compared to the previous edition are as follows:

- The terms and definition including drawings to define the failure types are referred to ISO 17677-1.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document specifies the testing procedures of peel and chisel tests of resistance spot and embossed projection welded joints.

This edition of ISO 10447 was revised to align it with ISO 17677-1 regarding the terminology.

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

1 Scope

This document specifies the procedures and recommended tooling to be used for peel and chisel testing of resistance spot and embossed projection welds. This document 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 are referred to in the text in such a way that some or all of their content constitutes requirements 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 14270, *Resistance welding — Destructive testing of welds — Specimen dimensions and procedure for mechanized peel testing resistance spot, seam and embossed projection welds*

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 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

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.

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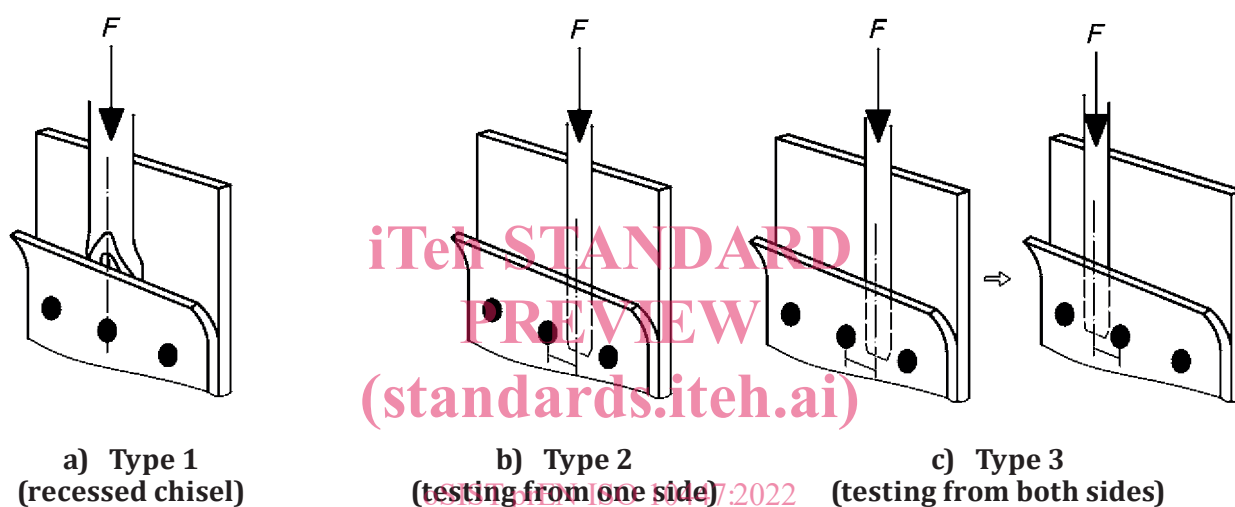
5 Test procedure

5.1 Chisel test

A chisel shall be used to separate the sheets adjacent to the weld under test. There are two types of chisel test.

The destructive type of the chisel test shall conduct to apply a predominantly tensile force that results in stresses primarily normal to the joint interface as shown in [Figure 1a](#). This type of chisel test can be measured the weld size after testing.

The non-destructive type of chisel test is used to verify the weld quality/soundness without measurements of weld size. The chisel shall not strike the weld portion. The striking locations and procedure in the chisel testing shall be according to [Figure 1b](#) or [Figure 1c](#).



Key

F force

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Figure 1 — Testing of resistance spot and protection welded joints

Typical chisel designs are shown in [Figure 2](#) and [Figure 3](#). 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 2](#) 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.

Table 1 — Selection of recommended chisels for chisel testing

Chisel design	Test types (Destructive or non-destructive)	For testing	
		Weld diameter, d_w mm	Plate thickness, t mm
Figure 2a	Both	< 8	-
Figure 2b	Both	< 13	-
Figure 3a	Non destructive	-	≤ 2,0
Figure 3b	Non destructive	-	> 2,0