International Standard

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Resistance welding — Procedure for spot welding of uncoated and coated low-carbon steels

Soudage par résistance — Mode opératoire pour le soudage par points des aciers à bas carbone revêtus et non revêtus

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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 document 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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This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 6, *Resistance welding and allied mechanical joining*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding and allied processes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 14373:2015), which has been technically revised.

The main changes are as follows:

— figures showing failure types and modes for tensile shear and cross tension testing removed;

— new coating types added;

— cross-tension strength (CTS) values added;

— tensile shear strength (TSS) formula removed;

— tolerance for distortions reduced.

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. Official interpretations of ISO/TC 44 documents, where they exist, are available from this page: https://committee.iso.org/sites/tc44/home/interpretation.html.

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Introduction

Information on appropriate welding equipment is given in Annex A and information on spot-welding conditions is given in Annex B. This information is provided for guidance only.

Depending on the service conditions of the fabrication, the type of welding equipment, the characteristics of the secondary circuit, the electrode force actuation system, the electrode material and the shape, it is possible that certain modifications will be necessary. In such cases, further information can be obtained from the relevant application standard, where one exists.

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Resistance welding — Procedure for spot welding of uncoated and coated low-carbon steels

1 Scope

This document specifies requirements for resistance spot welding in the fabrication of assemblies of uncoated and metallic-coated or weldable non-metallic-coated low-carbon steel, comprising two or three sheets of metal, where the maximum single-sheet thickness of components to be welded is within the range 0,4 mm to 3,0 mm.

This document is applicable to welding of sheets of the same or unequal thickness, where the thickness ratio is less than or equal to 3:1.

Welding with the following types of equipment is within the scope of this document:

a) pedestal welding equipment;

b) portable welding guns;

c) automatic welding equipment where the components are fed by robots or automatic feeding equipment;

d) multi-spot-welding machines;

e) robotic welding machines.

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 10447, *Resistance welding — Testing of welds — Peel and chisel testing of resistance spot and projection welds*

ISO 15609-5, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 5: Resistance welding*

ISO 15614-12, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 12: Spot, seam and projection welding*

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.

ISO and IEC maintain terminology 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/

3.1
weld pitch
centre-to-centre distance between adjacent spot welds

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