

KEEVITAMINE. METALLMATERJALIDE  
TIIHVTKAARKEEVITUS

Welding - Arc stud welding of metallic materials (ISO  
14555:2017)

## EESTI STANDARDI EESSÕNA

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English Version

**Welding - Arc stud welding of metallic materials (ISO  
14555:2017)**

Soudage - Soudage à l'arc des goujons sur les  
matériaux métalliques (ISO 14555:2017)

Schweißen - Lichtbogenbolzenschweißen von  
metallischen Werkstoffen (ISO 14555:2017)

This European Standard was approved by CEN on 23 March 2017.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## European foreword

This document (EN ISO 14555:2017) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding and allied processes" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2017 and conflicting national standards shall be withdrawn at the latest by November 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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### Endorsement notice

The text of ISO 14555:2017 has been approved by CEN as EN ISO 14555:2017 without any modification.

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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](http://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](http://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 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 the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, *Quality management in the field of welding*.

This fourth edition cancels and replaces the third edition (ISO 14555:2014), of which it constitutes a minor revision and contains the following changes:

- undated references to ISO 14732, ISO 13918 and ISO 15607;
- the expression “welding diameter” has been changed to “welded cross-section” in [3.6](#);
- the word “deformability” has been changed to “deformation” in the last sentence of [12.3](#);
- the second and third paragraphs of [12.4](#) have been combined;
- the expression “welding diameter” has been changed to “visible width of the welding zone” in [12.6](#);
- the appearance “Collar off-centre with unacceptable undercut” is now given under “Visual examination or macro cut” in [Table A.5](#);
- the missing symbol “≤” in [Annex D](#) has been introduced for application ≤100 °C.

Requests for official interpretations of any aspect of this document should be directed to the Secretariat of ISO/TC 44/SC 10 via your national standards body. A complete listing of these bodies can be found at [www.iso.org](http://www.iso.org).



## Introduction

The purpose of arc stud welding is to weld predominantly pin-shaped metal parts to metal workpieces. In this document, it is referred to simply as stud welding. Among other things, stud welding is used in bridge building (especially in composite structures), steel structures, shipbuilding, facade-wall fabrication, vehicle manufacture, apparatus engineering, steam-boiler construction, and the manufacture of household appliances.

The quality of a stud weld depends not only on strict compliance with the welding procedure specification but also on the correct function of the actuating mechanism (e.g. welding guns), and on the condition of the components, of the accessories and of the power supply.

This document does not invalidate former specifications, providing the technical requirements are equivalent and satisfied.

# Welding — Arc stud welding of metallic materials

## 1 Scope

This document covers arc stud welding of metallic materials subject to static and fatigue loading. It specifies requirements that are particular to stud welding, in relation to welding knowledge, quality requirements, welding procedure specification, welding procedure qualification, qualification testing of operators and testing of production welds.

This document is appropriate where it is necessary to demonstrate the capability of a manufacturer to produce welded construction of a specified quality.

NOTE General quality requirements for fusion welding of metallic materials are given in ISO 3834-1, ISO 3834-2, ISO 3834-3, ISO 3834-4 and ISO 3834-5.

This document has been prepared in a comprehensive manner, with a view to it being used as a reference in contracts. The requirements contained within it can be adopted in full, or partially, if certain requirements are not relevant to a particular construction (see [Annex B](#)). For processing of stud welding, see [Annex A](#).

## 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 3834-1, *Quality requirements for fusion welding of metallic materials — Part 1: Criteria for the selection of the appropriate level of quality requirements*

ISO 3834-2, *Quality requirements for fusion welding of metallic materials — Part 2: Comprehensive quality requirements*

ISO 3834-3, *Quality requirements for fusion welding of metallic materials — Part 3: Standard quality requirements*

ISO 3834-4, *Quality requirements for fusion welding of metallic materials — Part 4: Elementary quality requirements*

ISO 4063, *Welding and allied processes — Nomenclature of processes and reference numbers*

ISO 6947, *Welding and allied processes — Welding positions*

ISO 9606-1, *Qualification testing of welders — Fusion welding — Part 1: Steels*

ISO 9606-2, *Qualification test of welders — Fusion welding — Part 2: Aluminium and aluminium alloys*

ISO 13918, *Welding — Studs and ceramic ferrules for arc stud welding*

ISO 14175, *Welding consumables — Gases and gas mixtures for fusion welding and allied processes*

ISO 14731, *Welding coordination — Tasks and responsibilities*

ISO 14732, *Welding personnel — Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials*

ISO 15607, *Specification and qualification of welding procedures for metallic materials — General rules*

ISO/TR 15608, *Welding — Guidelines for a metallic materials grouping system*

ISO 15611, *Specification and qualification of welding procedures for metallic materials — Qualification based on previous welding experience*

ISO 15613, *Specification and qualification of welding procedures for metallic materials — Qualification based on pre-production welding test*

ISO 17636 (all parts), *Non-destructive testing of welds — Radiographic testing*

ISO/TR 25901-3, *Welding and allied processes — Vocabulary — Part 3: Welding processes*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3834-1, ISO 4063, ISO 14731, ISO 14732, ISO 15607 and ISO/TR 25901-3 and the following apply.

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

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

#### 3.1 **stud**

fastener to be attached by stud welding

#### 3.2 **auxiliaries**

ceramic ferrules and shielding gases

#### 3.3 **stud-welding operator**

operating personnel for stud-welding equipment

Note 1 to entry: In special cases (e.g. mass production at the manufacturer's factory), the welding can be carried out by suitable auxiliary personnel, appropriately trained and supervised.

#### 3.4 **stud diameter** *d*

*stud* (3.1) nominal diameter

Note 1 to entry: See ISO 13918.

#### 3.5 **welding diameter** *d<sub>w</sub>*

diameter at the weld base

#### 3.6 **weld zone**

welded area underneath the welded cross-section

#### 3.7 **current intensity**

root-mean-square (RMS) value of the welding current in the steady state during the burning time of the arc

Note 1 to entry: Current intensity is not applicable to capacitor discharge.

#### 3.8 **welding time**

time difference between the ignition and the final extinction of the main arc