



SLOVENSKI STANDARD
oSIST prEN ISO 5817:2012
01-oktober-2012

Varjenje - Talično zvarjeni spoji na jeklu, niklju, titanu in njihovih zlitinah (varjenje s snopom izključeno) - Stopnje sprejemljivosti nepopolnosti (ISO/DIS 5817:2012)

Welding - Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) - Quality levels for imperfections (ISO/DIS 5817:2012)

Schweißen - Schmelzschweißverbindungen an Stahl, Nickel, Titan und deren Legierungen (ohne Strahlschweißen) - Bewertungsgruppen von Unregelmäßigkeiten (ISO/DIS 5817:2012)

Soudage - Assemblages en acier, nickel, titane et leurs alliages soudés par fusion (soudage par faisceau exclu) - Niveaux de qualité par rapport aux défauts (ISO/DIS 5817:2012)

Ta slovenski standard je istoveten z: prEN ISO 5817

ICS:

25.160.40	Varjeni spoji in vari	Welded joints
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oSIST prEN ISO 5817:2012

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN ISO 5817

May 2012

ICS 25.160.40

Will supersede EN ISO 5817:2007

English Version

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This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 121.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (prEN ISO 5817:2012) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding" the secretariat of which is held by DIN.

This document is currently submitted to the parallel Enquiry.

This document will supersede EN ISO 5817:2007.

Endorsement notice

The text of ISO/DIS 5817:2012 has been approved by CEN as a prEN ISO 5817:2012 without any modification.

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DRAFT INTERNATIONAL STANDARD ISO/DIS 5817

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections

Soudage — Assemblages en acier, nickel, titane et leurs alliages soudés par fusion (soudage par faisceau exclu) — Niveaux de qualité par rapport aux défauts

[Revision of second edition (ISO 5817:2003) and ISO 5817:2003/Cor.1:2006]

ICS 25.160.40

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ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five-month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.

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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.

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 5817 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, *Unification of requirements in the field of metal welding*.

This second/third/... edition cancels and replaces the first/second/... edition (ISO 5817:2003), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

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Introduction

This International Standard should be used as a reference in the drafting of application codes and/or other application standards. It contains a simplified selection of fusion weld imperfections based on the designations given in ISO 6520-1.

Some of the imperfections described in ISO 6520-1 have been used directly and some have been grouped together. The basic numerical referencing system from ISO 6520-1 has been used.

The purpose of this International Standard is to define dimensions of typical imperfections which might be expected in normal fabrication. It may be used within a quality system for the production of welded joints. It provides three sets of dimensional values from which a selection can be made for a particular application. The quality level necessary in each case should be defined by the application standard or the responsible designer in conjunction with the manufacturer, user and/or other parties concerned. The quality level shall be prescribed before the start of production, preferably at the enquiry or order stage. For special purposes, additional details may be prescribed.

The quality levels given in this International Standard provide basic reference data and are not specifically related to any particular application. They refer to types of welded joint in fabrication and not to the complete product or component itself. It is possible, therefore, that different quality levels are applied to individual welded joints in the same product or component.

It would normally be expected that for a particular welded joint the dimensional limits for imperfections could all be covered by specifying one quality level. In some cases, it may be necessary to specify different quality levels for different imperfections in the same welded joint.

The choice of quality level for any application should take account of design considerations, subsequent processing (e.g. surfacing), mode of stressing (e.g. static, dynamic), service conditions (e.g. temperature, environment) and consequences of failure. Economic factors are also important and should include not only the cost of welding but also of inspection, test and repair.

Although this International Standard includes types of imperfection relevant to the fusion welding processes listed in Clause 1, only those which are applicable to the process and application in question need to be considered.

Imperfections are quoted in terms of their actual dimensions, and their detection and evaluation may require the use of one or more methods of non-destructive testing. The detection and sizing of imperfections is dependent on the inspection methods and the extent of testing specified in the application standard or contract.

This International Standard does not address the methods used for the detection of imperfections. However, ISO 17635 contains a correlation between the quality level and acceptance level for different NDT methods.

This International Standard is directly applicable to visual testing of welds and does not include details of recommended methods of detection or sizing by non-destructive means. It should be considered that there are difficulties in using these limits to establish appropriate criteria applicable to non-destructive testing methods such as ultrasonic, radiographic, eddy current, penetrant, magnetic particle testing and may need to be supplemented by requirements for inspection, examining and testing.

The values given for imperfections are for welds produced using normal welding practice. Requirements for smaller (more stringent) values as stated in quality level B may include additional manufacturing processes, e.g. grinding, TIG dressing.

Annex C (informative) gives additional guidance for welds subject to fatigue.

ISO/DIS 5817

Requests for official interpretations of any aspect of this International Standard should be directed to the Secretariat of ISO/TC 44/SC 10 via your national standards body. For a complete listing consult www.iso.org

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Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections

1 Scope

This International Standard provides quality levels of imperfections in fusion-welded joints (except for beam welding) in all types of steel, nickel, titanium and their alloys. It applies to material thickness above 0,5 mm. It covers fully penetrated butt welds and all fillet welds. The principles of this International Standard may also be applied to partial-penetration butt welds.

Quality levels for beam welded joints in steel are presented in ISO 13919-1.

Three quality levels are given in order to permit application to a wide range of welded fabrication. They are designated by symbols B, C and D. Quality level B corresponds to the highest requirement on the finished weld.

For the application of this standard several types of loads are considered, e.g. static load, thermal load, corrosion load, pressure load. Additional guidance on fatigue loads is given in Annex C (informative).

The quality levels refer to production and good workmanship.

This International Standard applies to:

- non-alloy and alloy steels;
- nickel and nickel alloys;
- titanium and titanium alloys;
- manual, mechanized and automatic welding;
- all welding positions;
- all types of welds, e.g. butt welds, fillet welds and branch connections;
- the following welding processes and their defined sub-processes in accordance with ISO 4063:
 - 11 metal-arc welding without gas protection;
 - 12 submerged-arc welding;
 - 13 gas-shielded metal-arc welding;
 - 14 gas-shielded welding with non-consumable electrodes;
 - 15 plasma arc welding;
 - 31 oxy-fuel gas welding (for steel only).

Metallurgical aspects, e.g. grain size, hardness, are not covered by this International Standard.

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 6520-1, *Welding and allied processes — Classification of geometric imperfections in metallic materials — Part 1: Fusion welding*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

quality level

description of the quality of a weld on the basis of type, size and amount of selected imperfections

3.2

fitness-for-purpose

ability of a product, process or service to serve a defined purpose under specific conditions

3.3

short imperfections

in cases when the weld is 100 mm long or longer, imperfections are considered to be short imperfections if, in the 100 mm which contains the greatest number of imperfections, their total length is not greater than 25 mm

in cases when the weld is less than 100 mm long, imperfections are considered to be short imperfections if their total length is not greater than 25 % of the length of the weld

3.4

systematic imperfection

imperfections that are repeatedly distributed in the weld over the weld length to be examined, the size of a single imperfection being within the specified limits

3.5

projected area

area where imperfections distributed along the volume of the weld under consideration are imaged two-dimensionally

NOTE 1 to entry In contrast to the cross-sectional area, the occurrence of imperfections is dependent on the weld thickness when exposed radiographically (see Figure 1).

3.6

cross-sectional area

area to be considered after fracture or sectioning

3.7

smooth weld transition

even surface with no irregularities or sharpness at the transition between the weld bead and the parent material

3.8

fatigue class (FAT_x)

classification reference to S-N curve, in which x is the stress range in MPa at 2 · 10⁶ cycles

NOTE 1 to entry Fatigue properties are described by S-N-Curves (Stress-Number of cycle- curves).

NOTE 2 to entry See Annex C.