



SLOVENSKI STANDARD
SIST EN 288-1:1996/A1:1999

01-december-1999

Popis inodobritev varilnih postopkov za kovinske materiale - 1. del: Splošna pravila za talično varjenje - Dopolnilo A1

Specification and approval of welding procedures for metallic materials - Part 1: General rules for fusion welding

Anforderung und Anerkennung von Schweißverfahren für metallische Werkstoffe - Teil 1: Allgemeine Regeln für das Schmelzschweißen

Descriptif et qualification d'un mode opératoire de soudage sur les matériaux métalliques - Partie 1: Règles générales pour le soudage par fusion

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Ta slovenski standard je istoveten z: EN 288-1:1992/A1:1997

ICS:

25.160.10 Varilni postopki in varjenje Welding processes

SIST EN 288-1:1996/A1:1999 **en**

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EUROPEAN STANDARD

EN 288-1:1992/A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 1997

ICS 25.160.10

Descriptors: welding, welded joints, procedure, qualification, definitions, generalities

English version

Specification and approval of welding procedures
for metallic materials - Part 1: General rules for
fusion welding

Descriptif et qualification d'un mode
opérateur de soudage pour les matériaux
métalliques - Partie 1: Règles générales pour
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Anforderung und Anerkennung von
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This amendment 1 modifies the European Standard EN 288-1:1992. This amendment was approved by CEN on 1996-12-11. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Page 2
EN 288-1:1992/A1:1997

Foreword

This Amendment EN 288-1:1992/A1:1997 to EN 288-1:1992 has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DS.

This Amendment to the European Standard EN 288-1:1992 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 1997, and conflicting national standards shall be withdrawn at the latest by December 1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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SIST EN 288-1:1996/A1:1999

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1 Scope

Delete the third paragraph.

2 Normative references

Delete the text of clause 2 and replace by the following :

This standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- EN 287-1 Approval testing of welders - Fusion welding - Part 1 : Steels
- EN 287-2 Approval testing of welders - Fusion welding - Part 2 : Aluminium and aluminium alloys
- EN 288-2 Specification and approval of welding procedures for metallic materials - Part 2 : Welding procedure specification for arc welding
- EN 288-3 Specification and approval of welding procedures for metallic materials - Part 3 : Welding procedure tests for the arc welding of steels
- EN 288-4 Specification and approval of welding procedures for metallic materials - Part 4 : Welding procedure tests for the arc welding of aluminium and its alloys
- EN 288-5 Specification and approval of welding procedures for metallic materials - Part 5 : Approval by using approved welding consumables for arc welding
- EN 288-6 Specification and approval of welding procedures for metallic materials - Part 6 : Approval related to previous experience
- EN 288-7 Specification and approval of welding procedures for metallic materials - Part 7 : Approval by a standard welding procedure for arc welding
- EN 288-8 Specification and approval of welding procedures for metallic materials - Part 8 : Approval by a pre-production welding test
- pr EN 1011 Recommendations for arc welding of ferritic steels
- pr EN 12345 Welding - Pictorial representation of terms for welded joints
- EN 24063 Welding brazing, soldering and braze welding of metals - Nomenclature of processes and reference numbers for symbolic representation on drawings (ISO 4063:1990)

Page 4
EN 288-1:1992/A1:1997

EN 26520 Classification of imperfections in metallic fusion welds, with explanations (ISO 6520:1982)

ISO 857:1990 Welding brazing and soldering processes - Vocabulary

3.5 work instruction

Delete 3.5 and replace by the following :

Simplified specification (written or verbal) of the welding procedure, suitable for direct application in the workshop.

3.11 standard welding procedure

Delete 3.11 and replace by the following :

A welding procedure tested and certified by an examiner or examining body which may then be made available to any manufacturer.

3.26 welder

Delete 3.26. Change all the number of the following definitions.

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3.27 manual welder

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Amend the title of this paragraph to "3.26 welder".

3.28 welding operator

Change the number to 3.27 and delete 3.28 and replace by the following :

A person who performs fully mechanized or automatic welding.

3.29 examiner or test body

Amend the title to "3.28 examiner or examining body"

Delete 3.28 and replace by the following :

A person or organisation who verifies compliance with the applicable standard. The examiner/examining body shall be acceptable to any contracting parties.

Add the following definitions :

3.30 welding coordination personnel

Personnel who, within a manufacturer, have responsibilities in the manufacturing operation for welding and welding related activities whose competence and knowledge has been demonstrated by e.g. training, education and/or relevant manufacturing experience.

3.31 heat input

The energy introduced into the weld region during welding a run per unit length of the run length.

NOTE : See EN 1011 for calculation of heat input.

3.32 run out length

The length of a run produced by melting a covered electrode.

NOTE : See EN 1011 for calculation of run out length.

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3.33 parent metal thickness (standards.iteh.ai)

The nominal thickness of the materials to be welded.

SIST EN 288-1:1996/A1:1999
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3.34 weld metal thickness

See prEN 12345

3.35 fillet weld throat thickness

See prEN 12345

3.36 partial penetration weld

See prEN 12345

4 Specification of welding procedures

Delete the first word "all".

5 Approval of welding procedures

Delete clause 5 and replace by the following :

5.1 General

5.1.1 Methods for approval

This standard defines a number of methods for approval of welding procedures. Each method of approval has certain limits of application as regards welding process, parent metal and consumables (if used). Limitations for the application of the various methods of approval are stated in this standard and in subsequent parts of this standard.

Each pWPS shall be approved by only one method. The use of a particular method of approval of a welding procedure is often a mandatory requirement of an application standard. In the absence of such a requirement the method of approval shall be agreed between the contracting parties at the enquiry or at the order stage.

Approval shall be obtained by one of the following methods :

- welding procedure tests to EN 288-3 or -4 - See 5.2 ;
- approved welding consumables to EN 288-5 - See 5.3 ;
- previous welding experience to EN 288-6 - See 5.4 ;
- standard welding procedure to EN 288-7 - See 5.5 ;
- pre-production welding test to EN 288-8 - See 5.6.

The annex A provides some guidelines for the application of each method of approval.

5.1.2 Application

The manufacturer shall prepare a pWPS in accordance with the rules in clause 4. The workshop shall ensure that the pWPS is applicable for the actual production, using experience from previous productions and the general fund of knowledge of welding technology. Subsequently, the pWPS shall be approved by one of the methods stated in 5.1.1.

If the approval involves welding of test pieces, then the test pieces shall be welded in accordance with the pWPS.

Welding procedures shall be approved prior to actual welding in production.

5.2 Approval by welding procedure tests

This method specifies how a pWPS can be approved by the welding and testing of a standardised test piece.

5.3 Approval by use of approved welding consumables

Some materials do not deteriorate significantly in the heat affected zones, provided heat inputs are kept within specified limits. For such materials, a pWPS shall be considered approved on the condition that the welding consumables are approved and that all essential variables are within the range for which the approval is valid.

All activities related to welding, testing and examination of test pieces shall be the responsibility of an examiner or examining body. The examiner or examining body shall state the permitted range of approval with regards to essential variables for the approved welding consumables.

5.4 Approval by previous welding experience

A manufacturer may have a pWPS approved by referring to previous experience on condition that he can prove by appropriate authentic documentation of an independent nature that he has previously satisfactorily welded the type of joint and materials in question.

The permissible range for a WPS, approved by reference to previous experience, shall be limited to the standard material(s), welding process(es), consumable(s) and ranges of essential variables, for which adequate previous experience can be documented.

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5.5 Approval by use of a standard welding procedure

A pWPS prepared by a manufacturer is approved, if the ranges for all variables are within the range permitted by a standard welding procedure.

A standard welding procedure shall be issued as a specification in the format of a WPS or WPAR based on an approval to the relevant part of EN 288 for welding procedure testing. Issue and amendment of standard welding procedures shall be via the examiner or examining body taking responsibility for the initial approval.

Application of a standard welding procedure is also subject to conditions to be satisfied by the user.

5.6 Approval by a pre-production welding test

Approval by a pre-production welding test may be used where the shape and dimensions of standardized test pieces (e.g. those in 6.2 of part 3) do not adequately represent the joint to be welded, e.g. attachment weld to thin pipe.

In such cases, one or more special test pieces shall be made to simulate the production joint in all essential features e.g. dimensions, restraint, heat sink effects. The test shall be carried out prior and under the conditions to be used in production.

Examination and testing of the test piece shall be carried out as far as possible within the requirements of this standard e.g. Parts 3 and 4, but this testing may need to be supplemented or replaced by special tests according to the nature of the joint in question and shall be agreed by the examiner or examining body.