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AMENDMENT 1
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Specification and approval of welding procedures for metallic materials —

Part 1:

General rules for fusion welding

AMENDMENT 1

*Descriptif et qualification d'un mode opératoire de soudage pour
les matériaux métalliques —*

Partie 1: Règles générales pour le soudage par fusion

AMENDEMENT 1



Reference number
ISO 9956-1:1995/Amd.1:1998(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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

Amendment 1 to International Standard ISO 9956-1:1995 was prepared by ISO Technical Committee ISO/TC 44 *Welding and allied processes*, Subcommittee SC 10 *Unification of requirements in the field of welding*. It is based on – and equivalent to – EN 288-1:1992/A 1:1997.

This amendment was prepared with the aim of not changing the content technically, but of clarifying the existing standard by modifications brought about by experience gathered during application.

It is intended and under discussion to revise ISO 9956-1:1995 technically, applying the parallel procedure according to the Vienna agreement under leadership of CEN/TC 121/SC 1. After the technical revision, the number of this International Standard will be changed to ISO 15607, and EN ISO 15607.

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Specification and approval of welding procedures for metallic materials —

Part 1: General rules for fusion welding

AMENDMENT 1

Page 1, clause 1

Delete the third paragraph.

Page 1, clause 2

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

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 857-1:1998, *Welding and allied processes – Vocabulary – Part 1: Welding processes.*

ISO 2553:1992, *Welded, brazed and soldered joints — Symbolic representation on drawings.*

ISO 4063:1998, *Welding and allied processes — Nomenclature of processes and reference numbers.*

ISO 9606-1:1994, *Approval testing of welders — Fusion welding — Part 1: Steels.*

ISO 9606-2:1994, *Approval testing of welders — Fusion welding — Part 2: Aluminium and aluminum alloys.*

ISO 9956-2:1995, *Specification and approval of welding procedures for metallic materials — Part 2 : Welding procedure specification for arc welding.*

ISO 9956-3:1995, *Specification and approval of welding procedures for metallic materials — Part 3 : Welding procedure tests for the arc welding of steels.*

ISO 9956-4:1995, *Specification and approval of welding procedures for metallic materials — Part 4 : Welding procedure tests for the arc welding of aluminium and its alloys.*

ISO 9956-5:1995, *Specification and approval of welding procedures for metallic materials — Part 5: Approval by using approved welding consumables for arc welding.*

ISO 9956-6:1995, *Specification and approval of welding procedures for metallic materials — Part 6: Approval related to previous experience.*

ISO 9956-7:1995, *Specification and approval of welding procedures for metallic materials — Part 7: Approval by a standard welding procedure for arc welding.*

ISO 9956-8:1995, *Specification and approval of welding procedures for metallic materials — Part 8: Approval by a pre-production welding test.*

Page 2, subclause 3.5

Delete 3.5 and replace by the following :

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

Page 2, subclause 3.11

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.

Page 3, subclause 3.26

Delete 3.26 and therefore change all the numbers of the succeeding definitions.

Page 3, subclause 3.27

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

Page 3, subclause 3.28

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

A person who performs fully mechanized or automatic welding.

Page 3, subclause 3.29

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.

Page 3

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 and 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.

3.33 parent metal thickness: The nominal thickness of the materials to be welded.

3.34 weld metal thickness: The dimension measured from the deepest point of the penetration to the highest point of the excess weld metal (usually measured from a cross-section) [taken from EN 12345].

3.35 fillet weld throat thickness: The value of the height of the largest isosceles triangle that can be inscribed in the section of the finalized weld (see ISO 2553) [taken from EN 12345].

3.36 partial penetration weld: Penetration that is intentionally less than complete [taken from EN 12345].

Page 3, clause 4

Delete the first word "all".

Page 3, clause 5

Delete clause 5 and replace by the following :

5.1 General

5.1.1 Methods for approval

This part of ISO 9956 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 other parts of ISO 9956.

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 in accordance with ISO 9956-3 or ISO 9956-4, see 5.2;
- approved welding consumables in accordance with ISO 9956-5, see 5.3;
- previous welding experience in accordance with ISO 9956-6, see 5.4;
- standard welding procedure in accordance with ISO 9956-7, see 5.5;
- pre-production welding test in accordance with ISO 9956-8, see 5.6.

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 production 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 standardized 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 condition that the welding consumables be approved and that all essential variables be 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 be able to 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.

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 in accordance with the relevant part of ISO 9956 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 ISO 9956-3:1995) 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 to 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 ISO 9956, e.g. ISO 9956-3 and ISO 9956-4, 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 upon by the examiner or examining body.

Page 6, annex A

In the fourth and fifth paragraphs, delete the second sentence.