INTERNATIONAL STANDARD

ISO 9956-8

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Specification and approval of welding procedures for metallic materials —

Part 8:
Approval by a pre-production welding test

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

Partie 8: Épreuve de qualification par exécution d'un assemblage soudé particulier préalable à la production

Reference number
ISO 9956-8:1995(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.

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.

International Standard ISO 9956-8 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 part of ISO 9956 is the equivalent of European Standard EN 288-8.

ISO 9956 consists of the following parts, under the general title *Specification and approval of welding procedures for metallic materials*:

— *Part 1: General rules for fusion welding*

— *Part 2: Welding procedure specification for arc welding*

— *Part 3: Welding procedure tests for the arc welding of steels*

— *Part 4: Welding procedure tests for the arc welding of aluminium and its alloys*

— *Part 5: Approval by using approved welding consumables for arc welding*

— *Part 6: Approval related to previous experience*

— *Part 7: Approval by a standard welding procedure for arc welding*

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— *Part 8: Approval by a pre-production welding test*

— *Part 10: Welding procedure specification for electron beam welding*

— *Part 11: Welding procedure specification for laser beam welding*

— *Part 12: Welding procedure tests for arc welding of cast steels*

Introduction

Approval by a pre-production welding test can be used where the shape and dimensions of the standard test pieces (e.g. those of ISO 9956-3) 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 can be made to simulate the production joint in all essential features, e.g. dimensions, restraint, heat sink effects.

Specification and approval of welding procedures for metallic materials —

Part 8:
Approval by a pre-production welding test

1 Scope

This part of ISO 9956 specifies the conditions for the approval of a welding procedure based on pre-production welding tests in accordance with ISO 9956-1. In addition, it gives the range of approval and the validity.

This part of ISO 9956 is applicable to fusion welding of metallic materials. Any other welding processes can be accepted by agreement between the contracting parties.

The use of this part of ISO 9956 can be restricted by an application standard or at the enquiry or order stage by contracting parties.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 9956. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 9956 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 9956-1:1995, *Specification and approval of welding procedures for metallic materials — Part 1: General rules for fusion welding.*

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.*

3 Definitions

For the purposes of this part of ISO 9956, the definitions given in ISO 9956-1 apply.

4 Preliminary welding procedure specification (pWPS)

The approval of a welding procedure based on pre-production welding tests shall be based on a pWPS according to ISO 9956-2. This pWPS shall specify the range for all relevant parameters.

5 Approval of the welding procedure

The approval of the welding procedure shall be carried out by an examiner or test body in accordance with the relevant part of ISO 9956 for procedure testing as modified by this standard.

6 Welding of test pieces

Special test pieces to be welded shall be in accordance with the relevant application standard or shall be agreed between the contracting parties.

Preparation and welding of the pre-production weld test piece shall be carried out under the general conditions of production welding which they shall represent with shapes and dimensions of the test piece simulating the actual welding conditions of the structure. This includes welding positions and other essential items, e.g. stress conditions, heating effects, limited access.

Jigs and fixtures shall be similar to those used in production.

Tack welds to be incorporated in the final joint should be made from the side to be welded and their location should be identifiable after the test weld has been completed.

7 Testing

The testing of the pre-production test pieces shall, as far as possible, relate to the relevant part of ISO 9956 for procedure testing.

If a pre-production test relates to ISO 9956-3 or ISO 9956-4, all types of test according to table 1 of ISO 9956-3:1995 or ISO 9956-4:1995, shall be carried out as far as possible. In general, at least the following tests shall be performed:

a) visual inspection (100 %);

b) surface crack detection (for non-magnetic material dye penetrant only);

c) hardness tests (not required for parent metals of ferritic steels with $R_m < 420$ N/mm^2 or $R_e < 275$ N/mm^2 or for steels according to group 9 or aluminium alloys in accordance with groups 21 and 22);

d) macrographic examination (number depends on the geometry of the structure).

8 Range of approval

8.1 General

Any approval issued under this part of ISO 9956 is limited to the type of joint used in the pre-production test.

The range of approval is generally in accordance with the relevant parts of ISO 9956 for welding procedure tests. However, the range of approval for thickness can be applied to each component in the joint, as well as weld thickness.

8.2 Related to the manufacturer

An approval of welding procedure specification WPS obtained by a manufacturer is valid for welding in workshops or sites under the same technical and quality control of that manufacturer.

9 Validity

An approved welding procedure based on pre-production welding tests is valid indefinitely unless otherwise agreed between the contracting parties at the time of issue.

10 Welding procedure approval record (WPAR)

The welding procedure approval record (WPAR) is a statement of the results of assessing each test piece including retests. The WPAR format according to ISO 9956-3 or ISO 9956-4 shall be used as far as possible.

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Descriptors: welding, metals, fusion welding, procedure, specifications, acceptance, tests.

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