International Standard

ISO 15610

Specification and qualification of welding procedures for metallic materials — Qualification based on tested welding consumables

Descriptif et qualification d'un mode opératoire de soudage pour les matériaux métalliques — Qualification basée sur des produits consommables soumis à essais

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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 document 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).

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This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, *Quality management in the field of welding*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding and allied processes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 15610:2023), of which it constitutes a minor revision. The changes are as follows:

— scope reworded regarding butt and fillet welds.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html. Official interpretations of ISO/TC 44 documents, where they exist, are available from this page: https://committee.iso.org/sites/tc44/home/interpretation.html.

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Introduction

This document is a part of a group of standards dealing with specification and qualification of welding procedures, details of which are given in ISO 15607:2019, Annex A.

In ISO 15607, one of the methods for the qualification of welding procedures is based on tested welding consumable usage data.

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Specification and qualification of welding procedures for metallic materials — Qualification based on tested welding consumables

1 Scope

This document specifies how a welding procedure can be qualified by using tested welding consumable data. It expands on the requirements given in ISO 15607.

In addition, it gives the range of qualification.

This document is applicable to the welding processes according to Table 1.

Table 1 — Applicable welding processes

Process number according to ISO 4063:2023	Welding process
111	Manual metal arc welding
114	Self-shielded tubular cored arc welding
121	Submerged arc welding with solid wire electrode
131	MIG welding with solid wire electrode
132	MIG welding with flux cored electrode
133	MIG welding with metal cored electrode
135	MAG welding with solid wire electrode
136	MAG welding with flux cored electrode
138	MAG welding with metal cored electrode
141	TIG welding with solid filler material
15	Plasma arc welding
311	Oxyacetylene welding

Application of this document is limited to parent material groups 1.1, 8.1, 21, 22.1 and 22.2 in accordance with ISO/TR 15608, which produce acceptable microstructures and properties in the heat-affected zone which do not deteriorate significantly in service.

This document is limited to:

— butt welds and fillet welds in material of thicknesses $t \leq 40$ mm (groups 1.1 and 8.1) and $t \leq 20$ mm (groups 21, 22.1 and 22.2);

— fillet welds with throat thickness $a \geq 1$ mm.

This document is not applicable when any of the following is specified for the welded joint:

a) hardness;

b) impact properties;

c) preheating;

d) controlled heat input;

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e) interpass temperature;

f) post-weld heat treatment.

The use of this document can also be restricted by an application standard, specification or other documents.

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

ISO 15609-1, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 1: Arc welding*

ISO 15609-2, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 2: Gas welding*

ISO 25901 (all parts), *Welding and allied processes — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in the ISO 25901 series and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
qualification
development of a welding procedure qualification record (WPQR), preliminary welding procedure specification (pWPS) and welding procedure specification (WPS) from published welding consumable usage data

3.2
tested welding consumable
consumable or consumable combination tested in accordance with the appropriate welding consumable classification standard

4 Limits of the application of this document

4.1 Limits related to the welded joint

4.1.1 Parent material

Parent material groups shall be limited to those in accordance with ISO/TR 15608 as given in Table 2.

Table 2 — ISO/TR 15608 parent material groups

Steel	Aluminium and its alloys
1.1 8.1	21 22.1 22.2

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