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Welding for aerospace applications — Welding information in design documents

Soudage pour applications aérospatiales — Informations de soudage dans les documents de conception

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Foreword

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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 documents 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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 44, *Welding and allied processes*.

Requests for official interpretations of any aspect of this International Standard should be directed to the Secretariat of ISO/TC 44 via your national standards body. A complete listing of these bodies can be found at www.iso.org.

Welding for aerospace applications — Welding information in design documents

1 Scope

This International Standard is applicable to welded and brazed metallic component parts used in aerospace construction. This International Standard specifies appropriate welding/brazing design information on drawings serving to ensure fit, form and function of welded/brazed joints.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2553, *Welding and allied processes — Symbolic representation on drawings — Welded joints*

3 Design documents content requirements

Intended materials shall be clearly defined in the design documents. Additional requirements (e.g. microstructural composition, grain direction) shall be described.

On drawings, welded/brazed joints shall be depicted and indicated with a symbol according to ISO 2553. If weld/braze joint details (type, location and implementation of a weld/braze joint) cannot be identified unambiguously by means of a weld symbol, then detail shall be represented separately (e.g. sectional view of the shape of the joint with dimensions).

Information relevant to manufacturing shall be specified in a design definition and be confirmed by the cognizant welding authority.

It is recommended that information relevant to manufacturing is specified in cooperation with the design/engineering authority, manufacturing and the cognizant welding authority.

The design definition for welding/brazing details shall contain, as a minimum, the following information:

a) welding/brazing process (see ISO 4063);

b) welding/brazing specification;

c) parent material condition (for aluminium see for example EN 4632-002);

d) requirements for the welded/brazed joint, e.g. safety class, acceptance level according to ISO/PWI 17927, ISO 16338, etc.;

e) filler material (if necessary);

f) pre-heat temperature;

g) post-weld/brazing heat treatment;

h) non-destructive testing;

i) cognizant welding authority.

If required, more details can be provided, e.g.:

— dimensional tolerances;

— accompanying samples;

— destructive testing;

— specific cleaning requirements;

— flux type.

Requirements derived from special instructions for use (e.g. class of manufacturer qualification, class of component part) shall be added.

Examples of this information in tabular form are contained in Annex A.

4 Inspection and approval

Prior to production, the cognizant welding authority shall review and approve all welding/brazing information.

Annex A
(informative)

Example for a table format and examples for entries in the table of welding/brazing details

See Tables A.1 and A.2.

Table A.1 — Example for a table format of welding/brazing details

Welding/brazing details according to ISO 17533	
Welding/brazing process:	Safety class:
Parent material:	Acceptance level:
Filler material:	Non-destructive testing:
Pre-heat temperature:	Welding/brazing specification:
Post-weld/brazing heat treatment:	
The welding/brazing information defined on this design document has been verified by the cognizant welding authority: Date Signature	

Table A.2 — Examples for entries of welding details in the table of welding/brazing details

Welding details according to ISO 17533	
Welding process: 141	Safety class: I
Filler material: AMS 4965	Acceptance level: B
Material prior to welding: 3.7164.1	Test: according to test instruction
Thermal treatment:	Cognizant welding authority: ... Name
Post-weld mechanical treatment: -	

Welding details according to ISO 17533	
Welding process: 51	Safety class: II
Filler material: -	Acceptance level: B
Material prior to welding:	Test: Visual, dimensional test, radiographic inspection
Thermal treatment: solution annealed	Cognizant welding authority: ... Name
Post-weld mechanical treatment: -	

Welding details according to ISO 17533	
Welding process: 141	Safety class: I
Filler material: 3.2245.20	Acceptance level: B
Material prior to welding: 3.3214T4	Test: (Dimensional, visual and penetration test)
Thermal treatment: (on T62 after welding)	Cognizant welding authority: ... Name
Post-weld mechanical treatment: -	