



AWS Amendment Notice

The following Amendments have been made and incorporated into the current edition of this document.

3rd Printing: January, 2019

AWS Standard: D17.1/D17.1M:2017, *Specification for Fusion Welding for Aerospace Applications*

Amendment Number: 2

Subject: Clause 5.3.3.1: Item 3 added

5.3.3.1 Welder Qualification Variables. The qualification variables for performance qualification are as follows:

- (1) welding process (see 5.4.1)
- (2) base metal composition group (see 5.4.2)
- (3) base metal thickness (see 5.4.3)
- (4) welding position (see 5.4.4)
- (5) base metal form, sheet or tube (see 5.4.5)
- (6) type of weld, groove or fillet
- (7) other welding conditions (see 5.4.6)

NOTE: Filler metal alloy type used for test welds shall be the same as those used in production welding of the base metal.

Amendment Number: 2

Subject: Clause 5.4.3: 'tack welders' removed

5.4.3 Base Metal Thickness. The qualification limits, with regard to base metal thickness (sheet thickness or tube wall thickness), are given below for welders and welding operators. These limits apply to both groove welds and fillet welds.

Amendment Number: 2**Subject:** New table 5.5, footnotes, table 5.5 references have been modified: 5.4.4.1, 5.4.5.1

Table 5.5
Welder Qualification – Positions and Base Metal Forms Qualified by Sheet or Tube Tests

Qualification Test ^a			Positions Qualified ^b			
			Sheet		Tube	
Base Metal Form	Weld Type	Test Position	Groove	Fillet	Groove	Fillet
Sheet	Groove	1G	F	F, H ^c	F ^d	F, H ^{c, d}
		2G	F, H	F, H ^c	F, H ^d	F, H ^{c, d}
		3G	F, V	F, H, V ^c	F, V ^d	F, H, V ^{c, d}
		4G	F, O	F, H, O ^c	F, O ^d	F, H, O ^{c, d}
	Fillet	1F		F		F ^d
		2F		F, H		F, H ^d
		3F		F, H, V		F, H, V ^d
		4F		F, H, O		F, H, O ^d
Tube	Groove	1G	F	F, H ^c	F	F, H ^c
		2G	F, H	F, H ^c	F, H	F, H ^c
		5G	F, V, O	All ^c	F, V, O	All ^c
		6G	All	All ^c	All	All ^c
	Fillet	1F		F		F
		2F		F, H		F, H
		4F		F, H, O		F, H, O
		5F		All		All

^a Use of heat sinks is optional.^b Qualified positions for production welding are defined in AWS A3.0 as Flat (F), Horizontal (H), Vertical (V), Overhead (O). All = Flat, Horizontal, Vertical and Overhead.^c A fillet weld test is required to qualify fillet welds in material thickness equal to or less than 0.063 in [1.6 mm].^d For Qualified thickness and tube diameter range see clause 5.4.3.1 (3).

5.4.4.1 Welders. The welding positions qualified by a given test weld position are denoted in Table 5.5. The welding position designations are identified and illustrated in Figures 5.1, 5.2, 5.3, and 5.4.

5.4.5.1 Welders. The base metal forms and weld types qualified by a given test weld are denoted in Table 5.5. Welders qualified to perform groove welds are also qualified to perform plug and slot welding in the qualified position.

Amendment Number: 2

Subject: Table 7.1 footnotes b – f have been modified (footnote g was removed), ‘Acceptable’ and ‘Rejectable’ have been changed to ‘Accept’ and ‘Reject’; Discolorations of: Titanium; Stainless Steel, Nickel, and Cobalt Alloys; and Steel. Portions of the table not shown remain unchanged.

Table 7.1
Acceptance Criteria (in [mm])

Discoloration^{c, f}—Titanium			
Bright Silver	Accept	Accept	Accept
Silver	Accept	Accept	Accept
Light Straw	Accept	Accept	Accept
Dark Straw	Accept	Accept	Accept
Bronze	Accept	Accept	Accept
Brown	Accept	Accept	Accept
Violet	Reject ^d	Accept	Accept
Blue	Reject ^d	Reject ^e	Reject ^e
Green	Reject ^d	Reject ^e	Reject ^e
Gray	Reject	Reject	Reject
White	Reject	Reject	Reject
Discontinuity	Class A	Class B	Class C
Discoloration—Stainless Steel, Nickel, and Cobalt Alloys			
All oxidation colors, except for Black	Accept	Accept	Accept
Black discoloration or the presence of scale	Reject	Reject	Reject
Discoloration—Steel			
All oxidation colors, except for Black	Accept	Accept	Accept
Black	Reject	Reject	Reject

^a For groove weld only.

^b Discontinuity of size 0.005 in [0.13 mm] or less shall not be considered when determining compliance to the spacing requirements.

^c Discoloration determined to be acceptable shall be removed prior to additional welding.

^d This discoloration is acceptable on the base metal outside of 0.030" from the toe of the weld.

^e This discoloration is acceptable on finished welds but must be removed prior to additional processing.

^f Discoloration that is not acceptable per the table may be determined acceptable through testing. Test methods, acceptance criteria and approval requirements shall be as specified by the engineering authority.