

AWS D1.6 (Structural Welding Code-Stainless Steel)

Quick Review on Essential Variables

1-Guide (Position)

AWS D1.6, 6.7.1: **CJP** groove weld qualification in any test position qualifies for all positions.

AWS D1.6, 6.7.2: **PJP** groove weld qualification in any test position qualifies for all positions.

AWS D1.6, Table 6.2, **Supplementary Essential Variables for CVN Testing**: A change of position to vertical up need requalification. A 3G vertical up test qualifies all positions and vertical down.

2-Guide (Thickness of Base Metal Range)

AWS D1.6, Table 6.3:

Test on Plate or Pipe, CJP or PJP Groove Welds*:

T: Thickness of Test Coupon Welded

t: Deposited Weld Metal Thickness

(Test Plate or Pipe Wall)

T from 1/16 in. (2 mm) to 3/8 in. (10 mm), incl.:

Qualified Thickness Range: 1/16 in. (2 mm) **Min.**, 2T **Max.**

Qualified Weld Metal Thicknesses: 2t Max.

T over 3/8 in. (10 mm) to less than 3/4 in. (20 mm):

Qualified Thickness Range: 3/16 in. (5 mm) **Min.**, 2T **Max.**

Qualified Weld Metal Thicknesses: 2t Max.

T from 3/4 in. (20 mm) to less than 1-1/2 in. (38 mm):

Qualified Thickness Range: 3/16 in. (5 mm) **Min.**, 2T **Max.**

Qualified Weld Metal Thicknesses:

2t Max. when t is less than 3/4 in. (19 mm)

2T Max. when t is equal or larger than 3/4 in. (19 mm)

T from 1-1/2 in. (38 mm) to less than 6 in. (152 mm):

Qualified Thickness Range: 3/16 in. (5 mm) **Min.**, 8 in. (203) **Max.**

Qualified Weld Metal Thicknesses:

2t Max. when t is less than 3/4 in. (19 mm)

8 in. (203 mm) Max. when t is equal or larger than 3/4 in. (19 mm)

T from 6 in. (152 mm) and over:

Qualified Thickness Range: 1 in. (25 mm) **Min.**, 1.33T **Max.**

Qualified Weld Metal Thicknesses:

2t Max. when t is less than 3/4 in. (19 mm)

8 in. (203 mm) Max. when t is from 3/4 in. (19 mm), but less than 6 in.(152)

1.33t Max. when t is over 6 in. (152 mm)

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* **AWS D1.6, 6.7.1: CJP** qualified on pipe shall also qualify for plate and vice versa. Qualification of a **CJP** qualifies for all **PJP** groove welds, plug and slot, and fillet welds, when the tests and requirements of 6.7.1.1 are met.

* **AWS D1.6, 6.7.2: PJP** qualified on pipe shall also qualify for plate and vice versa. Qualification of a **PJP** qualifies for all **PJP** groove welds, plug and slot welds, and fillet welds, when the tests and requirements of 6.7.2.1 are met.

Fillet Weld WPS Qualification (Qualify all Plate/Pipe Thickness): Test shall be based on Max. single pass and Min. multiple pass fillet weld size to be used in construction.
(See AWS D1.6, Table 6.3(B))

-AWS D1.6, Table 6.2, Supplementary Essential Variables for CVN Testing: Minimum thickness qualified is T or 5/8 in. (16 mm), whichever is less, except if T is less than 1/4 in. (6 mm), then minimum thickness qualified is 1/16 in. (2 mm).

-See AWS D1.6, Table 6.4 and Clause 6.12 for Weld Cladding Requirements.

3-Guide (Base Metal Selection)

AWS D1.6, Table 6.1 WPS Qualification Variables

-A change in the base metal M-number as shown in AWS B2.1 or use of any unlisted metal (Table 5.2) is essential variable. Use of any test material of Table 5.2 of AWS D1.6, shall qualify procedure for all other materials on this Table, as well as materials in group M-8 of AWS B2.1. For materials other than M-8, qualification shall be made for each M-Number or combination of M-Numbers.
(See Clause 6.5 of AWS D1.6)

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4-Guide (Filler Metal Selection)

AWS D1.6, Table 6.1 WPS Qualification Variables

-A change of Filler metal from one F-Number to any other F-Number (Table 6.5) is essential variable.

-A change of Filler metal from one A-Number to any other A-Number (Table 6.6) is essential variables.

See AWS D1.6, Table 6.1, 6.2 (CVN), and 6.4 (Cladding) for more Essential Variables