

AWS D1.2 (Structural Welding Code-Aluminum)

Quick Review on Performance Qualification

(References: AWS D1.2, Section 3 (Part D), Table 3.7, 3.8, 3.9)

AWS D1.2, Table 3.8, Essential Variables: Process, Shielding gas used, Position, Diameter, Thickness, Vertical progression, Omission of backing (if used in test)

1-Guide (Position)

(I) Test on Plate: (See AWS D1.2, Table 3.7 for Test Figures)

AWS D1.2, Table 3.7, Groove Test

Position Tested Position Qualified on Plate (Pipe*)

On Plate	Groove	Fillet
1G	F	F, H
2G	F, H (F)	F, H
3G	F, V (F)	F, H, V (F, H)
4G	F, OH (F)	F, H, OH (F, H)

AWS D1.2, Table 3.7, Fillet Test

Position Tested* Position Qualified on Plate (Pipe*)

On Plate	Fillet
1F	F
2F	F, H
3F	F, H, V (F, H)
4F	F, H, OH (F, H)

*Plate test qualifies pipe only for F groove and F, H fillet.

(II) Test on Pipe: (See AWS D1.2, Table 3.7 for Test Figures)

AWS D1.2, Table 3.7, Groove Test

Position Tested Position Qualified on Pipe or Plate

On Pipe	Groove	Fillet
1G Rotated	F	F, H
2G	F, H	F, H
5G	F, V, OH	All
6G	All	All

AWS D1.2, Table 3.7, Fillet Test

Position Tested Position Qualified on Pipe or Plate

On Pipe	Fillet
1F Rotated	F
2F, 2FR	F, H
4F	F, H, OH
5F	All

*Vertical uphill to downhill or vice versa is essential variable.

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2-Guide (Thickness of Base Metal Range)

(I) Test on Plate: (See AWS D1.2, Table 3.8 for Test Figures)

AWS D1.2, Table 3.8, Groove Welds*

T: Thickness of Test Coupon Welded (Plate)

T in. (mm)	Qualified Thickness Range
Less than 1/8 (3)	T Min., 2T Max.
From 1/8 (3) to less than 1 (25)	1/8 (3) Min., 2T Max.
From 1 (25) and over	1/8 (3) Min., Unlimited

AWS D1.2, Table 3.8, Fillet Welds*

T in. (mm)	Qualified Thickness Range
Up to 1/8 (3), incl.	T Min., Larger of 2T or 3/16 (5) Max.
Over 1/8 (3) to less than 3/8 (10)	0.5 T Min., 2T Max.
From 3/8 (10) and over	0.5 T Min., Unlimited

* Groove weld test qualifies fillet welds of unlimited thickness.

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Quick Review on Performance Qualification

3-Guide (Thickness/Diameter of Base Metal Range)

(II) Test on Pipe: (See AWS D1.2, Table 3.8 for Test Figures)

AWS D1.2, Table 3.8, Groove Welds*, Class II Structures:

a) Job Size Test Pipe or Tube:

4 in. (100 mm) Nominal Pipe Size and smaller

Qualified Thickness Range:

0.063 in. (2 mm) **Min.**, 0.674 in. (17.1 mm) **Max.**

Qualified Nominal Diameter of Pipe (Tube) Size:

4 in. (100 mm OD) or smaller

Over 4 in. (100 mm) Nominal Pipe Size

Qualified Thickness Range: 0.187 in. (5 mm) **Min.**, **Unlimited**

Qualified Nominal Diameter of Pipe (Tube) Size:

The greater of 4 in. (100 OD) or half test diameter **Min.**, **Unlimited**

b) Standard Test Pipes:

2 in. Sch. 80 or 3 in. Sch. 40

Qualified Thickness Range:

0.063 in. (2 mm) **Min.**, 0.674 in. (17.1 mm) **Max.**

Qualified Nominal Diameter of Pipe (Tube) Size:

4 in. (100 mm OD) or smaller

6 in. Sch. 120 or 8 in. Sch. 80

Qualified Thickness Range: 0.187 in. (5 mm) **Min.**, **Unlimited**

Qualified Nominal Diameter of Pipe (Tube) Size:

Over 4 in. (100 mm OD)

*Groove test qualifies fillet welds of unlimited thickness.

*Fillet weld test on pipes qualifies fillet welds on material of unlimited thickness and diameter.