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Shouldered ERW Pipe

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Specifications

The following specifications describe the requirements for hot dip galvanised shouldered pipe suitable for use with either forged steel or cast iron couplings. Furthermore the pipe is suitable, depending on fluid type and service conditions, for service up to AS4041 Class 2 pipe work in underground applications.

Size Range

OD (mm)	t (mm)	Standard Lengths	Mass In Kg/m	Max Recommended Working Pressure	Max Recommended Test Pressure Ambient Temp.
114.3	2.1	6.0m	5.86	3.6MPa	5.4MPa
114.3	2.1	6.5m	5.86		
165.1	2.5	6.0m	10.02	3.0MPa	4.5MPa
165.1	2.5	6.5m	10.02		
219.1	3.5	6.0m	18.60	3.1MPa	4.7MPa
219.1	3.5	6.5m	18.60		
323.9	4.8	6.0m	38.22	2.9MPa	4.35MPa
355.6	4.8	6.0m	41.52	2.6MPa	3.9MPa
457.0	4.8	6.0m	53.52	2.0MPa	3.1MPa
610.0	6.0	6.0m	89.37	1.9MPa	2.9MPa

Note: The above maximum recommended test and working pressures are applicable only to the pipe and only if;

- The only applied stresses are those from the internal fluid pressure
- The pipeline is designed using the appropriate standard applicable to its use.

762mm and 914mm also available on application.



Surface Finish

Hot dip galvanised minimum coating thickness at any location of the product is 34microns, and the minimum mass per square metre of the coating shall be 300 g. Each pipe is visually inspected to ensure the coating on each pipe is adherent, smooth and free from dross, bubbles, spikes, lumps, flaking or peeling.

Bundling Data

OD (mm)	t (mm)	Standard Lengths	Mass In Kg/m	Lengths per Bundle	Mass per Bundle kg
114.3	2.1	6.0m	5.86	10	351.60
114.3	2.1	6.5m	5.86	10	380.90
165.1	2.5	6.0m	10.02	10	601.20
165.1	2.5	6.5m	10.02	10	651.30
219.1	3.5	6.0m	18.60	5	558.00
219.1	3.5	6.5m	18.60	5	604.50
323.9	4.8	6.0m	38.22	1	229.32
355.6	4.6	6.0m	51.52	1	309.12
457.0	4.8	6.0m	53.52	1	321.12
610.0	6.0	6.0m	89.37	1	536.22

Note: Sizes 114.3 through 219.1 shall be supplied bundled in accordance with the above table. A minimum of 4 straps per bundle shall be supplied.

Specifications

Chemical Composition

Coil feed material shall conform to API 5LB PSL1 chemical composition with special regard to Silicon content that ensures full adhesion of hot dipped galvanising.

Mechanical Properties

- Minimum Yield Strength: 245 MPa
- Minimum Tensile Strength: 415 MPa
- Minimum Elongation: 15%

Straightness and Length Tolerance

Pipes shall not deviate from a straight line by more than the length divided by 500 at the centre of the pipe length. Each pipe shall be the ordered length with a tolerance of -0.50mm, +20.0 mm.

End Squareness

Each pipe shall be cut with a squareness not exceeding 1.6mm.

Weld Bead

The external weld bead shall be trimmed to an essentially flush condition. The maximum height of the internal weld bead shall not exceed 1.5mm.

Mass

The mass of any mill length of pipe shall not be less than 98% of the nominal mass.

Roundness

Each pipe shall meet or exceed the requirements for Out-of-roundness as defined in API5L Specifications:

OD (mm)	Out-of-Roundness	
	Except Ends (mm)	Ends (mm)
114.3	2.29	1.72
165.1	3.30	2.48
219.1	4.38	3.29
323.9	7.03	5.27
355.6	7.11	5.33
457.0	9.14	6.86
610.0	12.20	9.15

Non-Destructive Testing

Traditional automated non-destructive examinations such as; Ultrasonic and Hydrostatic as outlined in API5L are completed on every length of pipe. Hydrostatic test pressures are calculated as follows and held for five (5) seconds.

$$P \text{ (MPa)} = \frac{1.2 \times YS \times t}{D}$$

Where YS = minimum YS of pipe (MPa) = and t = nominal thickness (mm)

A second Hydrostatic Test, as outlined in API5L, is completed on every length of pipe after the shouldered ring has been welded to the pipe, prior to the galvanisation process.

Identification and Documentation

The identity of each pipe is maintained through galvanising process to ensure that the correct Heat Number and Purchase Order Number is stencilled on each pipe. Each Pipe is marked with the following in permanent ink:

- Diameter (mm)
- Manufacturing specification and grade
- Heat Number

Each pipe is traceable to a Test Certificate which shall be supplied to the purchaser. SI units shall be used. For at least each heat of steel, the Test Certificate shall contain, at minimum:

- Details of the pipe section, specification and grade.
- Measured Chemical composition, for each element intentionally added and each element in the IIW CEq formula.
- Bare pipe measured Yield Strength, Tensile Strength & Elongation.
- A statement of compliance for welding to AS3992.
- A statement of compliance with regard to the non-destructive test method used.
- A statement of compliance for coating to the galvanising Standard.

References

- AS/NZS 3679.1:1996 (Amd. 1 & 2)
Structural steel Part 1:
Hot-rolled bars & sections
- AS/NZS 3992:1998 (Amd. 1) Pressure equipment
– Welding and brazing qualification
- AS 4041:2006 Pressure piping
- AS/NZS 4680:2006 Hot-dip galvanized (zinc)
coatings on fabricated ferrous articles
- ISO 9001:2008 Quality management
systems – Requirements
- ANSI/API Specification 5L 44th edition:2007
Specification for Line Pipe



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