



ASTM A333 Grade 4 specification

Seamless and Welded Steel Pipe for Low-Temperature Service

ASTM A333 Grade 4 is the part of [ASTM A333](#) standard covers wall seamless and welded carbon and alloy steel pipe intended for use at low temperatures. ASTM A333 Grade 4 alloy pipe shall be made by the seamless or welding process with the addition of no filler metal in the welding operation.

Each length of pipe shall be subjected to the hydrostatic test. Also, each pipe shall be examined by a non-destructive examination method in accordance to the required practices.



ASTM A333 Grade 4 low-temperature service seamless pipe

Tag: Seamless pipe for Low-Temperature Service, Welded Steel Pipe for Low-Temperature Service, ASTM A333 Grade 4, ASTM A333 Grade 4 seamless pipe, ASTM A333 pipe

ASMT A333 Grade 4 seamless and welded pipes shall be treated to control their microstructure. Tensile tests, impact tests, hydrostatic tests, and nondestructive electric tests shall be made in accordance to specified requirements.

The range of ASMT A333 Grade 4 pipe sizes that may be examined by each method shall be subjected to the limitations in the scope of the respective practices.



The different mechanical test requirements for pipes, namely, transverse or longitudinal tension test, flattening test, and hardness or bend test are presented. Both ends of each crate will indicate the order no., heat no., dimensions, weight and bundles or as requested.

Seamless and Welded Steel Pipe size for Low-Temperature Service:

- Outer Dimensions: 19.05mm – 114.3mm
- Wall Thickness: 2.0mm – 14 mm
- Length: max 16000mm

Application:

For seamless and welded steel pipe for Low-temperature Service.

Steel grade:

ASTM A333 Grade 4

Packing:

Bare packing/bundle packing/crate packing/wooden protection at the both sides of tubes and suitably protected for sea-worthy delivery or as requested.

Inspection and Test:

Chemical Composition Inspection

Mechanical Properties Test (Tensile Strength, Yield Strength, Elongation, Flaring, Flattening, Bending, Hardness, Impact Test)

Surface and Dimension Test

No-destructive Test

Hydrostatic Test

Surface treatment:

Oil-dip, Varnish, passivation, phosphating, Shot Blasting.

Both ends of each crate will indicate the order no., heat no., dimensions, weight and bundles or as requested.



ASTM A333 Grade 4 Chemical Compositions(%)

Grade	Chemical Composition (%)										
	C(max)	Si	Mn	P(max)	S(max)	Cr	Ni	Cu	Mo	V	Al
Grade 4	0.12	0.18-0.37	0.50-1.05	0.025	0.025	0.44-1.01	0.47-0.98	0.40-0.75			0.04-0.30

ASTM A333 Grade 4 Mechanical Properties

Grade	Tensile Strength (MPa)	Yield Point (MPa)	Elongation (%)	
			Y	X
ASTM A333 Grade 4	≥415	≥240	≥30	≥16.5

Strike Temperature Condition

Grade	The lowest temperature for strike test	
	°F	°C
Gr.4	-150	-100

Material & Manufacture

Pipe may be either hot finished or cold drawn with the finishing heat treatment noted below.

Heat Treatment

- A / N+T
- N+T / Q+T
- N+T



Mechanical Tests Specified

- Transverse or Longitudinal Tension Test and Flattening Test, Hardness Test, or Bend Test
- For material heat treated in a batch-type furnace, tests shall be made on 5% of the pipe from each treated lot. For small lots, at least one pipe shall be tested.
- For material heat treated by the continuous process, tests shall be made on a sufficient number of pipe to constitute 5% of the lot, but in no case less than 2 pipe.

Notes for Bend Test

- For pipe whose diameter exceeds NPS 25 and whose diameter to wall thickness ratio is 7.0 or less shall be subjected to the bend test instead of the flattening test.
- Other pipe whose diameter equals or exceeds NPS 10 may be given the bend test in place of the flattening test subject to the approval of the purchaser.
- The bend test specimens shall be bent at room temperature through 180 without cracking on the outside of the bent portion.

Read more: <http://www.sunnysteel.com/blog/index.php/astm-a333-grade-4/>

Killed steel

Killed steel has a very even grain and texture as a result of the absence of carbon monoxide bubbles. It is also very dense, lacking the small holes found in steel which has not been killed, which makes it heavier than pieces of steel of the same size which have not been subjected to this process. Killed steel is sometimes subject to shrinkage because of the density, which can be a concern in certain casting applications. This steel product's strength and durability are increased by deoxidation, although factors can influence the qualities of a finished steel product.

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Scope of ASTM A333

This specification covers nominal (average) wall seamless and welded carbon and alloy steel pipe intended for use at low temperatures. Several grades of ferritic steel are included as listed in Table 1. Some product sizes may not be available under this specification because heavier wall thicknesses have an adverse affect on low-temperature impact properties.

Supplementary Requirement S1 of an optional nature is provided. This shall apply only when specified by the purchaser.

The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification. The inch-pound units shall apply unless the “M” designation of this specification is specified in the order.

Note 1: The dimensionless designator NPS (nominal pipe size) has been substituted in this standard for such traditional terms as “nominal diameter”, “size”, and “nominal size”.

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Relation information of steel:

- [Why seamless steel pipe? Some benefits of Seamless Steel Pipe](#)
- [Seamless steel pipes for high temperature and pressure sevice](#)
- [ASTM A335 Pipe Specifications, Seamless Ferritic Alloy Steel Pipe for High-Temperature Service](#)
- [ASTM Standard of Steel pipes](#)
- [Silicon-Manganese Steel, resulfurized and rephosphorized Carbon Steels](#)
- [ASTM Standard for Boilers tube, Super heater tubes](#)
- [ASTM standard for forgings](#)
- [ASTM standard for steel castings](#)
- [ASTM Standard of Structural Tubing](#)
- [ASTM Standard of Steel pipes](#)
- [ASTM standard for Welded fittings](#)



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