--

Definition and Applications

GB/T 8163

- ALLLAND Production Standards Overview

1. Definition

GB/T 8163 "Seamless Steel Tubes for Fluid Transportation" is a national standard of the People's Republic of China. It specifies the dimensions, shape, weight, technical requirements, test methods, inspection rules, packaging, marking, and quality certificates for general-purpose seamless steel tubes used for transporting fluids (such as water, oil, gas, etc.). This standard is applicable to seamless steel tubes used for manufacturing pipelines, vessels, equipment structural parts, and other applications involving fluid transportation.

2. ALLLAND BS 1387 Steel Pipe Dimensions

Parameters	Dimensions
O.D.	6 mm --630 mm
WT	0.25 mm -- 75 mm
Length	4 m -- 12 m (Fixed Length or Multiple Length)
Material	Grade 10, 20, 16Mn, Q345B, 15CrMo, 12Cr1MoV, etc.
Process	Hot-rolled, Cold-drawn
Connection	Welding, Flange Connection, Threaded Connection (depending on wall thickness)

3. Application

- Long-distance pipelines for petroleum and natural gas

Critical Tolerances

- Piping systems for boilers and heat exchangers
- Pipelines for hydraulic and pneumatic systems
- Process piping in chemical and pharmaceutical industries
- Mechanical structural components (when their primary function is fluid transport

GB/T 8163 steel pipes are widely used in fluid transportation systems requiring high safety and the ability to withstand certain pressures:

GB/T 8163 seamless steel pipes are manufactured in strict accordance with national standard requirements, ensuring dimensional accuracy meets various engineering needs..

Item	Tolerance	Description
O.D.	Hot-rolled: ±1.0% (min. ±0.5mm) Cold-drawn: High Precision ±0.4mm ~ ±1.25mm	Tolerances are classified into ordinary and high grades, depending on O.D. and manufacturing process.
WT	Hot-rolled: +12.5% / -10% Cold-drawn: ±10% (WT≤3mm) Cold-drawn: +12.5% / -10% (WT>3mm)	The wall thickness at any point shall not be less than 90% of the nominal wall thickness.
Length	Fixed length: +15 mm / 0 mm (Length ≤6m) Fixed length: +20 mm / 0 mm (Length >6m)	Usual delivery length is 4m~12m.
Straightness	≤ 1.5 mm/m (Hot-rolled) ≤ 2.0 mm/m (Cold-drawn)	Ensures straightness for pipeline installation.
Ovality	Not exceeding 80% of the O.D. tolerance	Ensures cross-sectional shape of the pipe.

--

Chemical and Mechanical Properties

1. Chemical Composition (wt%, max)

Grade	C	Si	Mn	P≤	S≤	Cr	Ni	Cu≤	Others
10	0.07-0.13	0.17-0.37	0.35-0.65	0.035	0.035	≤0.15	≤0.25	0.25	-
20	0.17-0.23	0.17-0.37	0.35-0.65	0.035	0.035	≤0.25	≤0.25	0.25	-
Q345B	≤0.20	≤0.55	1.00-1.60	0.035	0.035	-	-	-	V: 0.02-0.15, Nb: 0.015-0.060
16Mn	0.13-0.19	0.20-0.60	1.20-1.60	0.03	0.03	≤0.30	≤0.30	≤0.25	-
15CrMo	0.12-0.18	0.17-0.37	0.40-0.70	0.035	0.035	0.80-1.10	≤0.30	-	Mo: 0.40-0.55
12Cr1MoV	0.08-0.15	0.17-0.37	0.40-0.70	0.035	0.035	0.90-1.20	≤0.30	-	Mo: 0.25-0.35, V: 0.15-0.30

Note: The above are common grades. Specific compositions must comply with GB/T 8163 and its referenced material standards (e.g., GB/T 699, GB/T 1591, GB/T 3077).

2. Mechanical Properties

Grade	Yield Strength (Rp0.2), min (MPa)	Tensile Strength (Rm), min (MPa)	Elongation (A), min (%)	Delivery Condition
10	205	335	24	Hot-rolled or Annealed
20	245	410	20	Hot-rolled or Annealed
Q345B	345	470-630	20	Hot-rolled or Normalized
16Mn	345	490	21	Hot-rolled
15CrMo	295	440	21	Heat Treated (N+T)
12Cr1MoV	255	470	21	Heat Treated (N+T)

Note: Mechanical properties apply to transverse or longitudinal specimens, depending on product wall thickness and process.

Testing Requirements

--

奥蓝德钢管
ALLLAND STEEL PIPE

1. Chemical Analysis

- Purpose: To verify the chemical composition of the steel pipe complies with the standard specified for the corresponding grade.
- Method: Spectrometric analysis (OES), Wet chemical analysis, etc.
- Frequency: One sample per heat.
- Standard: GB/T 223 series.

2. Tensile Test

- Purpose: To determine the yield strength, tensile strength, and elongation after fracture of the steel pipe.
- Specimen: May be taken transversely or longitudinally from the pipe body, or a full-section tensile specimen may be used.
- Requirement: Results must comply with the standard specifications for the corresponding grade and condition.
- Standard: GB/T 228.1.

3. Hydrostatic Test

- Purpose: To test the pressure-bearing capacity and leak tightness of the steel pipe under static water pressure. (Note: GB/T 8163 stipulates that each steel pipe shall be subjected to a hydrostatic test.)
- Test Pressure: Calculation formula: P = 2 * S * t / D, where S is the stress (taken as 60% of the specified yield strength), t is the wall thickness, and D is the outside diameter. The maximum test pressure shall not exceed 20 MPa.
- Holding Time: Not less than 5 seconds.
- Requirement: During the test, the steel pipe shall show no leakage or permanent deformation.

4. Flattening Test

- Purpose: To examine the plastic deformation capability and internal defects of the steel pipe.
- Specimen: A pipe section not less than 50 mm long cut from the pipe end.
- Requirement: The specimen is flattened until the distance between two parallel plates is H, where H is calculated based on the pipe's outside diameter and wall thickness. After the test, the specimen surface shall show no cracks or splits.
- Standard: GB/T 246.

5. Drift Expanding (Flaring) Test

- Purpose: examine the plastic deformation capability of the pipe end during flaring.
- Applicability: Usually applied to steel pipes with thinner walls.

--

奥蓝德钢管
ALLLAND STEEL PIPE