



Definition and Applications of API 5L Grade B

API 5L Grade B

- ALLLAND Production Standards Overview

1. Definition

API 5L Grade B is a steel pipe standard developed by the American Petroleum Institute (API) for the transportation of oil, gas, and other fluids. Pipeline systems that require high strength, durability, and corrosion resistance primarily use these pipes. API 5L Grade B is a pipeline grade within the API 5L standard, suitable for lower pressure pipelines. The oil and gas industry, water supply systems, and other industrial applications widely use API 5L Grade B.

2. ALLLAND API 5L Grade B Steel Pipe Dimensions

Parameters	Dimensions
O.D.	21.3 mm – 1420 mm (0.84" – 56")
WT	2.0 mm – 60 mm (0.08" – 2.36")
Length	6 m – 12 m (19' – 40')
Material	Carbon steel / Low-alloy high-strength steel
Process	Seamless/ ERW/ SSAW/ LSAW
Connection	Butt-weld/ Socket-weld/ Threaded

3. Application

API 5L Grade B represents a classic choice that has endured in the pipeline steel sector. While it may not be the highest strength material, it strikes the best balance between weldability, toughness, cost, and availability.

Critical Tolerances

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Item	Size Range	Tolerance
OD	≤ 60.3 mm (≤ 2 3/8")	±0.5 mm
	>60.3 – 168.3 mm (2 3/8" – 6 5/8")	±0.75%
	>168.3 – 610 mm (6 5/8" – 24")	±0.75%
	>610 mm (>24")	±0.75%
WT	≤ 15.0 mm	-12.5% / +Unlimited
	>15.0 mm	-10% / +Unlimited
LENGTH	Random length	4.88 m – 12.2 m
	Fixed length	±500 mm
	Double random length	10.7 m – 12.2 m
Straightness	Full length	≤ 0.2% of length
Ovality	Full bore	≤ 1.0% OD

Chemical and Mechanical Properties of API 5L Grade B

1. Chemical Composition (wt%, max)

Element	C	Mn	P	S	Si	V	Nb	Ti	CE
Content (%)	≤ 0.28	≤ 1.20	≤ 0.030	≤ 0.030	≤ 0.45	≤ 0.05	≤ 0.05	≤ 0.04	≤ 0.40

2. Mechanical Properties

Item	Required Value
Yield Strength	≥ 245 MPa (35,500 psi)
Tensile Strength	415 – 760 MPa (60,200 – 110,200 psi)
Elongation	≥ 23%
Impact Toughness	PSL2: Mandatory (Charpy V-notch)
Hardness	No mandatory upper limit (recommended control: ≤ 22 HRC)
Service Temperature	-20°C to 350°C (depending on project requirements)

Testing Requirements

During production, API 5L Grade B steel pipes undergo rigorous chemical composition analysis to ensure that elements such as carbon, manganese, sulfur, and phosphorus meet standard specifications. This step is crucial for guaranteeing the material's

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