



20G Seamless pipe

20G is a special carbon structural steel grade exclusively for high-pressure boiler seamless tubes, manufactured in compliance with Chinese national standard GB/T 5310-2017 Seamless Steel Tubes for High Pressure Boiler.

The delivery state of finished tubes is normalized heat treatment at 880°C~940°C, which optimizes microstructure and balances mechanical strength & ductility for high-temperature boiler service.



Chemical Composition

Based on certified test certificate, typical chemical composition of qualified 20G steel:

Element	C	Si	Mn	P	S	Cr	Ni	Cu	Mo
Range	0.17~0.24	0.17~0.37	0.35~0.65	≤0.025	≤0.015	≤0.25	≤0.25	≤0.20	≤0.08

Low phosphorus & sulfur content effectively avoids hot brittleness and internal defects during high-temperature operation; trace alloy elements are strictly controlled to guarantee stable performance under boiler working conditions.

Mandatory Mechanical Properties

- Yield Strength (Rp0.2): ≥ 250 MPa
- Tensile Strength (Rm): 415 ~ 550 MPa
- Elongation (A): ≥ 24 %

Metallographic Inspection Results

- Microstructure: F+P (Ferrite + Pearlite), the standard qualified microstructure for normalized 20G steel, with uniform grain distribution and no abnormal overheated structures.
- Grain Size Grade: Grade 8.0, meets the standard requirement of grain size \geq Grade 7, which provides excellent anti-fatigue performance under cyclic temperature and pressure loads.
- Non-metallic Inclusions: All inclusion grades (A/B/C/D/DS) are controlled below 0.5 grade, much lower than the upper limit of GB/T 5310, minimizing the risk of crack initiation under high pressure.

Core Advantages

1. Outstanding high-temperature resistance and pressure-bearing capacity, stable mechanical performance under long-term high-temperature working environment of boilers;
2. Excellent ductility and forming property, suitable for bending, cold working and pipe processing;
3. Low impurity content, uniform metallographic structure, good welding performance and long service life;
4. Strict full-process inspection including chemical analysis, mechanical test, metallographic examination and full-body NDT to meet power station boiler safety standards.



Applications

20G seamless tubes are specially designed for high-pressure boiler systems, widely used as boiler water wall tubes, superheater tubes, economizer tubes and header pipelines in thermal power plants, industrial boilers and high-temperature pressure vessel equipment.

