

API 5DP Drill Pipe Manufacturing Process

1

Pipe Body
Inspection



2

End Upsetting



3

Heat Treatment



4

Friction Welding



5

Tool Joint
Machining



6

Thread
Processing



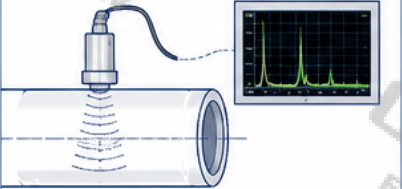
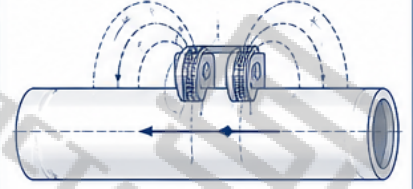
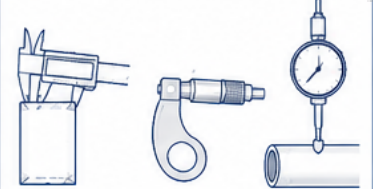
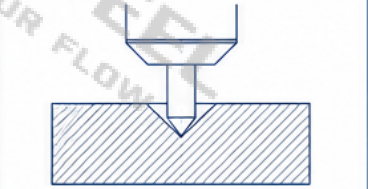
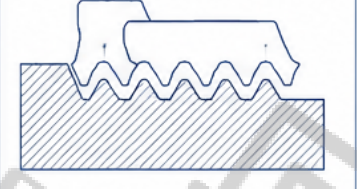
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Final
Inspection



API 5DP DRILL PIPE QUALITY INSPECTION

Quality inspection of API 5DP drill pipe is essential to ensure structural integrity, performance, and compliance with the standard. The following inspection workflow illustrates the key non-destructive and mechanical testing stages used throughout the manufacturing process.

1	ULTRASONIC TESTING	2	ELECTROMAGNETIC INSPECTION	3	DIMENSIONAL INSPECTION	4	HARDNESS TESTING	5	THREAD INSPECTION
									
UT probe is used to detect internal flaws and discontinuities such as longitudinal seams, cracks, and inclusions. Provides high reliability for volumetric defect detection.		EMI equipment detects surface and near-surface defects including seams, laps, and cracks. Fast, 100% coverage with high sensitivity for surface-breaking flaws.		Dimensional checks verify critical measurements to ensure conformance to API 5DP requirements. Includes outside diameter, wall thickness, and straightness.		Hardness testing verifies the material's ability to withstand wear and stress. Ensures compliance with specified hardness range requirements.		Thread inspection ensures proper thread form, pitch, and condition. Critical for connection integrity and leak prevention in the field.	
									

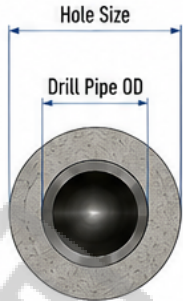
INSPECTION OBJECTIVE	Ensure each drill pipe meets API 5DP quality requirements through a combination of advanced testing methods and precise dimensional and mechanical verification.
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WELL DEPTH



- Greater depth requires higher strength grades
- Consider axial load, collapse and tension
- Deeper wells increase fatigue and torque demands

HOLE SIZE



- Drill pipe OD must be compatible with hole size
- Ensure adequate annular clearance for circulation
- Larger holes allow for larger OD drill pipe

TORQUE REQUIREMENT



- Higher torque requires higher grade drill pipe
- Consider connection type and make-up capacity
- Evaluate stick-slip potential and torsional limits

DRILL PIPE SPECIFICATION SELECTION

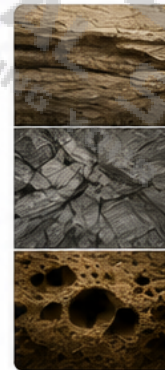


HYDRAULIC REQUIREMENT



- Adequate ID for required flow rate
- Ensure effective hole cleaning and cuttings transport
- Consider pressure loss and pump capacity

DRILLING ENVIRONMENT



- Consider formation hardness and abrasiveness
- H_2S , CO_2 or corrosive conditions require proper material selection
- Temperature and pressure affect performance

FINAL DRILL PIPE SPECIFICATION DECISION

1 PROJECT REQUIREMENT



- Well depth and target formation
- Drilling method and BHA design
- Operating conditions and environment
- Performance and reliability requirements



Well Depth



Loads



Temperature



Pressure

2 PIPE SIZE SELECTION



- Select OD based on hole size
- Check ID for hydraulic requirement
- Ensure compatibility with BHA
- Verify clearance and annular space



COMMON OD OPTIONS

2-3/8"	2-7/8"	3-1/2"	4"
4-1/2"	5"	5-1/2"	6-5/8"

3 STEEL GRADE SELECTION



- Select grade based on strength demand
- Consider depth, loads and torque
- Evaluate fatigue and collapse resistance
- Confirm compliance to API 5DP

COMMON GRADE OPTIONS

E75	X95	G105	S135
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4 CONNECTION SELECTION



- Select connection type and size
- Verify torque capacity and make-up limit
- Ensure compatibility with other components
- Confirm availability and field support

COMMON CONNECTION OPTIONS

NC26	NC31	NC38	NC40	NC50	FH
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5 LENGTH RANGE SELECTION



- Select length range for handling capability
- Consider transportation limitation
- Optimize for make-up efficiency
- Minimize connections in the drill string

COMMON LENGTH RANGE OPTIONS

18 – 22 ft	27 – 31 ft	38 – 45 ft
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6 FINAL DRILL PIPE SPECIFICATION



PIPE SIZE (OD)



Example:
5-1/2 inch

STEEL GRADE



Example:
G105

CONNECTION



Example:
NC38

LENGTH RANGE



Example:
27 – 31 ft

SPECIFICATION SUMMARY



API 5DP
Qualified