

API 5L Line Pipe Grades and Specification Requirements

Grade • PSL • Manufacturing Route • Dimensions • Delivery Condition

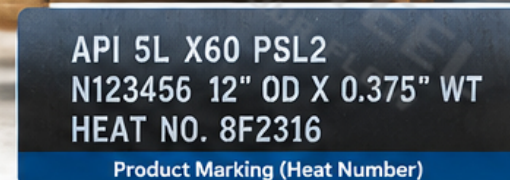
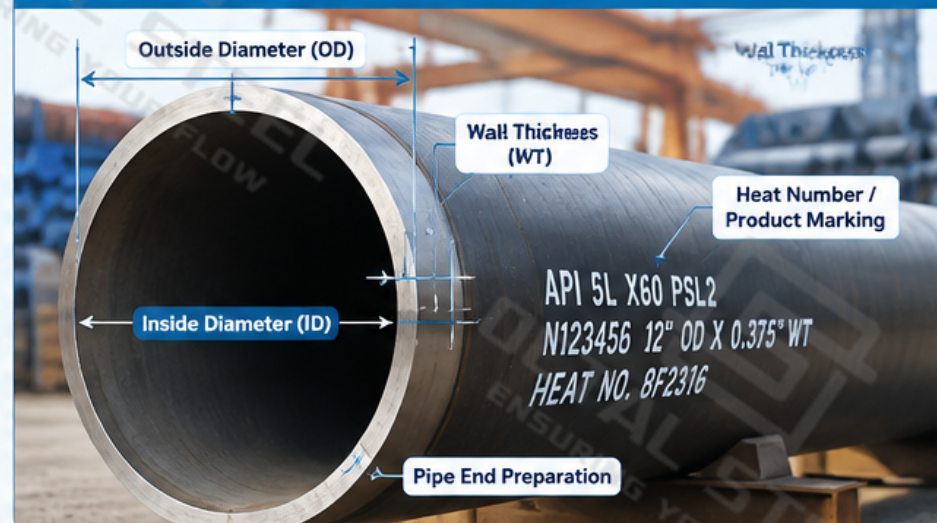
API 5L Specification Inputs

Parameter	What to Confirm	Engineering / Procurement Significance
Applicable Standard	API Spec 5L and specified edition	Establishes applicable product requirements
Product Specification Level	PSL1 or PSL2	Defines applicable quality and testing requirements
Steel Grade	Grade B, X42, X52, X56, X60, X65, X70, X80, as applicable	Confirms specified strength class and material requirements
Manufacturing Route	Seamless, HFW/ERW, LSAW or SSAW	Must match project specification and qualified mill capability
Outside Diameter	Specified OD and applicable tolerances	Defines pipe dimensions and compatibility
Wall Thickness	Nominal WT and applicable tolerances	Affects pipe mass and dimensional requirements
Length	Required length range and distribution	Affects handling, installation and shipment planning
Pipe Ends	Plain, beveled or specified end preparation	Must match joining and installation requirements
Surface Protection	Bare pipe, temporary protection or specified coating	Defines required delivery condition

Grade and PSL Selection

Selection Item	What the Buyer Must Verify
Steel Grade	Specified strength class and applicable material requirements
PSL1 / PSL2	Applicable testing, inspection and acceptance requirements
Supplementary Requirements	Project-specific toughness, testing or documentation, where specified
Manufacturing Route	Availability of required grade and dimensions through the proposed route

Pipe Dimensions and Identification



Specification Matching

Grade + PSL
Confirm the specified grade and PSL level.

Manufacturing Route
Match the project requirements and mill capability.

OD + WT
Verify dimensions and applicable tolerances.

Length + Pipe Ends
Confirm length range, end preparation and coating requirements.

Confirm the complete order specification before stock allocation or production release.



Engineering Takeaway

API 5L pipe selection starts with the complete specification, not the grade name alone. Grade, PSL, manufacturing route, dimensions, inspection requirements and project-specific conditions must be confirmed before the order is placed.

API 5L Pipe Manufacturing Routes and Selection

Seamless • HFW/ERW • LSAW • SSAW

Four Manufacturing Routes



Seamless Steel Pipe (SMLS)

Manufactured from a solid billet through piercing and rolling processes, without a longitudinal weld seam.

Selection focus: specified grade, OD, wall thickness, dimensional tolerances and the manufacturer's qualified production range.



HFW / ERW Steel Pipe

Formed from steel strip or coil, with a longitudinal seam produced by high-frequency electric-resistance welding.

Selection focus: weld-seam quality controls, dimensional range, grade availability and applicable inspection requirements.



LSAW / SAWL Steel Pipe

Steel plate is formed into a pipe and joined by longitudinal submerged arc welding.

Selection focus: plate dimensions, required OD and wall thickness, weld quality, inspection scope and project acceptance.



SSAW / SAWH Steel Pipe

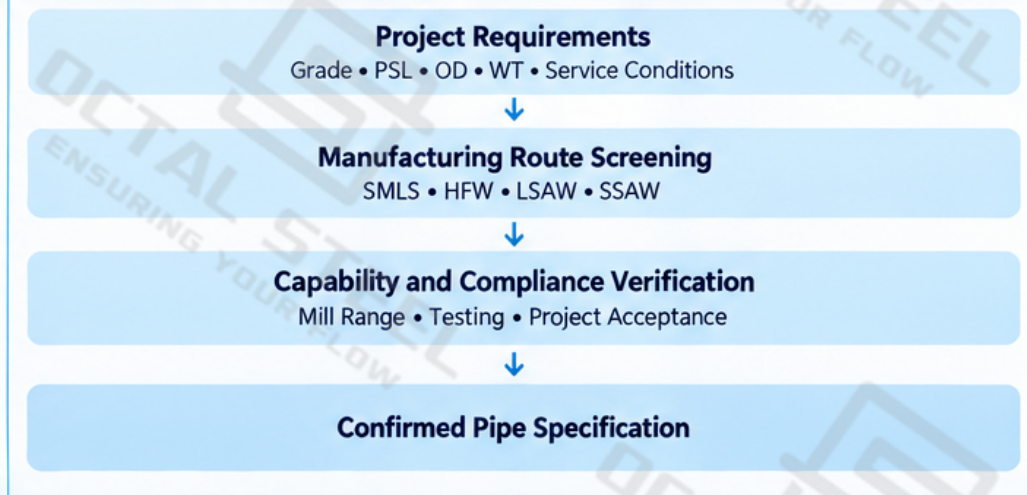
Steel strip is formed helically and joined along a spiral weld seam by submerged arc welding.

Selection focus: project acceptance of spiral-welded pipe, dimensional capability, seam inspection and required service conditions.

Manufacturing Route Comparison

Manufacturing Route	Construction	Main Selection Considerations
Seamless	No longitudinal weld seam	Qualified size range, wall thickness, grade and manufacturing availability
HFW / ERW	Longitudinal resistance-welded seam	Weld quality, dimensional range and applicable inspection requirements
LSAW / SAWL	Longitudinal submerged arc weld	Plate forming capability, wall thickness, OD and weld inspection
SSAW / SAWH	Spiral submerged arc weld	Spiral seam acceptance, dimensions, inspection and project requirements

From Project Conditions to Pipe Route



Engineering Takeaway

No manufacturing route should be selected by price or product name alone. The proposed route must satisfy the project specification and be available for the required grade, dimensions, inspection scope and delivery schedule.

API 5L Pipe Quality Control and Inspection

Material Verification • Mechanical Testing • Weld Inspection • Traceability

Inspection and Verification Matrix

What Should Be Checked Before Pipe Release?

Inspection Item	Main Verification Points	Typical Evidence
 Chemical Composition	Heat or product analysis, as applicable	Chemical analysis report
 Mechanical Properties	Yield strength, tensile strength and elongation; additional tests where required	Mechanical test report
 Dimensional Inspection	OD, WT, length, applicable tolerances and end preparation	Dimensional inspection record
 Weld Integrity	Applicable weld-seam NDT requirements for welded pipe	NDT records and acceptance results
 Hydrostatic Testing	Applicable test pressure, duration and acceptance requirements	Hydrostatic test record
 Visual Inspection	Surface condition, visible defects, pipe ends and marking	Visual inspection record
 Material Traceability	Heat number, pipe identification and grade-to-record matching	Traceability records and material certificate
 Final Documentation	Required inspection results, certificates and shipping records	Final document package

Note: Specific inspection items, methods, scope and acceptance criteria should be confirmed according to the applicable API 5L edition, PSL, manufacturing route and purchase agreement, and any supplementary requirements applicable to the order.

Quality Control Across the Production Process

From Material Receipt to Shipment Release

-  **Material Verification**
Confirm material identification, grade requirements and traceability records.
-  **Manufacturing Process Control**
Track the specified manufacturing route and applicable process controls.
-  **Testing and Inspection**
Complete applicable dimensional, mechanical, weld and pressure tests.
-  **Inspection Review and Release**
Close agreed inspection points and review required records before shipment release.

Third-Party Inspection

Third-Party Inspection Must Have a Defined Scope

Third-party inspection provides independent verification of agreed inspection and testing activities. The purchase order and Inspection and Test Plan (ITP) should define the inspection scope, witness or hold points, applicable acceptance criteria, required records and release conditions.

BV or another purchaser-approved inspection body may be engaged according to the contract. The inspection scope must be agreed in advance; the inspector's name alone does not establish that every required test has been completed.



Engineering Takeaway

API 5L compliance must be supported by the applicable test results, inspection records and material traceability. Third-party verification is most effective when its scope and acceptance criteria are defined before production and shipment.

API 5L Pipe Supplier Capability and Supply Planning

Stock Availability • Manufacturing Capacity • Quality Assurance • Export Logistics

Supplier Capability Verification Matrix

Capability	Evidence to Verify	Procurement Benefit
 Stock Availability	Current stock list by grade, PSL, OD, WT, length and quantity	Identifies which specifications can be supplied without a full production lead time
 Overseas Warehousing	Warehouse location, specification-matched inventory, traceability and dispatch arrangements	Supports regional supply and replenishment planning
 Multi-Line Production	Manufacturing routes, qualified size ranges, active production lines and confirmed production schedules	Helps assess the feasibility of large-volume orders
 Multi-Factory Coordination	Production allocation, raw-material availability and heat/lot traceability	Supports coordination across multiple specifications and production batches
 Digital Production Management	Work-order tracking, process status, inspection records and traceability information	Improves production visibility and order-status verification
 Third-Party Inspection	Agreed ITP, inspection access, test records and purchaser-approved inspector arrangements	Supports independent verification of contractual quality requirements
 Export Logistics	Inland transport plan, loading port, export packing and shipping milestones	Helps coordinate dispatch and delivery schedules

Stock and Overseas Warehouse



Stock Check	Required Confirmation
Grade and PSL	Exact specification available
OD and WT	Required dimensions and applicable tolerances
Length	Available length range and distribution
Quantity	Confirmed stock quantity and allocation
Identification	Heat number, lot identification and traceability
Dispatch	Inspection status, packing and release lead time

Stock availability should be verified against the complete order specification, not just the product category. A warehouse listing is useful only when the grade, dimensions, quantity, identification records and dispatch conditions match the project requirements.

Overseas stock can reduce replenishment time for suitable orders, but availability must be confirmed for the actual warehouse location and required pipe specifications.

Large-Volume Order Coordination



Export Logistics



Engineering Takeaway

A reliable supply plan connects specification-matched inventory, confirmed production capacity, traceable materials, agreed inspection requirements and a realistic shipping schedule.

API 5L Pipe Procurement Checklist and Delivery Readiness

From Technical Clarification to Inspection Release and Shipment



Procurement Checklist

Evaluation Stage	Key Questions	Required Confirmation
 Technical Specification	Are grade, PSL, OD, WT, length and manufacturing route defined?	Complete and approved pipe specification
 Project Compliance	Are the applicable standard edition and supplementary requirements identified?	Agreed technical requirements and acceptance criteria
 Supplier Capability	Can the supplier manufacture or supply the exact specification and quantity?	Verified stock or confirmed production plan
 Quality Assurance	Are applicable testing, inspection and traceability requirements agreed?	Approved ITP and required quality records
 Third-Party Inspection	Are inspection scope, witness points and release conditions defined?	Agreed inspection arrangements
 Delivery Planning	Are production, inspection, packing and shipping milestones realistic?	Confirmed delivery schedule and logistics plan
 Documentation	Are material certificates, inspection records and shipping documents specified?	Agreed document list and submission requirements

Supplier Evaluation

Evaluation Criterion	Evidence to Review	Warning Sign
Product Compliance	Specification-by-specification confirmation	Grade name supplied without complete technical details
Manufacturing Capability	Qualified production range and route-specific capability	General capacity claims without matching specifications
Stock Availability	Current inventory and identification records	Stock quantity stated without size or lot details
Quality Control	Applicable test records and inspection arrangements	Inspection scope left undefined
Traceability	Material identification and linked inspection records	Incomplete heat or lot identification
Delivery Reliability	Production milestones and logistics schedule	Delivery date given without a feasible production plan

Order Execution Path



Important Reminder

 **A Supply Claim Is Not a Specification Confirmation**
A quoted tonnage, nominal production capacity or available grade list does not by itself confirm that a supplier can deliver the required API 5L pipe. The final decision must account for the exact grade, PSL, manufacturing route, dimensions, inspection scope, traceability, order quantity and delivery schedule.

Reference Framework

-  **API Spec 5L** — Line Pipe Requirements
-  **Project Specification** — Project-Specific Technical Requirements
-  **Inspection and Test Plan (ITP)** — Agreed Inspection Scope and Acceptance Criteria
-  **Purchase Order** — Confirmed Product, Quantity, Documentation and Delivery Requirements



Engineering Takeaway

A successful API 5L pipe purchase depends on matching the complete technical specification with verified supply capability, defined quality requirements and a realistic delivery plan. The final order should be approved only after these elements have been confirmed together.