

# **Line Pipe Specification for Onshore Applications (API 5L) for Pipe Purchased from Suppliers**

## **STD.4501**

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### **Scope**

This specification, when read in conjunction with the contract referenced standards, specifications, and other listed documents, defines the minimum requirements for the purchase and delivery of steel line pipe for onshore applications from suppliers.

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## 1.0 CODES, SPECIFICATIONS, AND STANDARDS

### 1.1. Compliance

This specification is complementary to the requisition for individual item(s) of equipment, legislative requirements, and guidance notes issued by any relevant authority and specifications referenced herein.

### 1.2. Conflict of Information

If there is any conflict between this specification or any other specification and related data sheets or with any applicable codes, standards and regulations, Supplier shall inform Company in writing.

### 1.3. Project Specifications and Data Sheets

It is responsibility of the Supplier to ensure that it has received from the Company all the specifications and documents that are referenced herein to enable it to understand and comply with all aspects of work it is performing for the Company. Any exception and/or clarification pertaining to the requirements of this specification shall be documented in writing and approved by an authorized Company representative.

### 1.4. References

It is the responsibility of the Supplier to ensure that only the latest approved editions or editions incorporated by reference into 49 CFR Part 192 or 195 where applicable, of the following codes, standards, and regulations shall be used in conjunction with this specification. Specific reference should be made to the following.

#### 1.4.1. American Petroleum Institute (API)

API 5L	Specification for Line Pipe, 45th Edition, December 2012
API Q1	Specification for Quality Programs for the Petroleum, Petrochemical, and Natural Gas Industry
API RP 5L1	Recommended Practice for Railroad Transportation of Line Pipe, 7th Edition, September 2009
API RP 5LT	Recommended Practice for Truck Transportation of Line Pipe, 1st Edition, March 2012
API RP 5LW	Recommended Practice for Transportation of Line Pipe on Barges and Marine Vessels, 3rd Edition, September 2009

#### 1.4.2. American Society of Mechanical Engineers (ASME)

2007 ASME Boiler and Pressure Vessel Code	Section IX - Welding and Brazing Qualifications
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#### 1.4.3. American Society for Testing and Materials (ASTM)

ASTM A578/A578M-96 (reapproved 2001)	Standard Specification for Straight Beam Ultrasonic Examination of Plain and Clad Steel Plates for Special Applications
ASTM E709	Standard Guide for Magnetic Particle Testing

#### 1.4.4. American Society of Nondestructive Testing (ASNT)

ASNT TC-1A	Non-Destructive Testing
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**1.4.5. International Organization for Standards (ISO)**

ISO 9000	Quality Management and Quality Assurance Standards
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**1.4.6. National Association of Corrosion Engineers (NACE)**

NACE MR175/ISO 15156*	Petroleum and Natural Gas Industries – Materials for use in H <sub>2</sub> S Containing Environments in Oil and Gas Production
NACE TM0177*	Laboratory Testing of Materials for Resistance to Sulfide Stress Cracking in Hydrogen Sulfide (H <sub>2</sub> S) Environments
NACE TM0284*	Standard Test Method – Evaluation of Pipeline and Pressure Vessel Steels for Resistance to Hydrogen Induced Cracking

**NOTES:**

\* Only applicable when specified in the Purchase Order.

## 2.0 DEFINITIONS

**API** – American Petroleum Institute

**ASME** – American Society of Mechanical Engineers

**ASNT** – American Society of Nondestructive Testing

**ASTM** – American Standard for Testing and Materials

**AUT** – Automatic Ultrasonic Inspection

**Company** – Enterprise Product Company, including its employees, agents, inspectors, and other authorized representatives.

**COV** – Coefficient of Variance

**DSAWH** – Double Submerged Arc Welding Helical Seam

**DSAWL** – Double Submerged Arc Welding Longitudinal Seam

**FL** – Fusion Line

**HAZ** – Heat Affected Zone

**HFW** – High Frequency Welding

**HV** – Hardness Vickers

**ID** – Inner Diameter

**IRN** – Inspection Release Note

**ISO** – International Standards Organization

**MPS** – Manufacturing Procedure Specification

**NACE** – National Association of Corrosion Engineers

**NDT** – Nondestructive Testing

**OD** – Outer Diameter

**PQR** – Procedure Qualification Record

**PSL** – Product Specification Level

**SMTS** – Specified Minimum Tensile Strength

**SMYS** – Specified Minimum Yield Strength

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**Supplier** – The group or organization responsible by contract for the inspection, testing, certification, and delivery of the line pipe.

**WT** – Wall Thickness

### **3.0 GENERAL REQUIREMENTS**

#### **3.1. General**

- (1) Line pipe shall be manufactured, inspected, and tested in accordance with API 5L PSL 2.
- (2) Complete traceability is required and shall be maintained with respect to manufacturer, heat, slab, coil, and pipe number.

#### **3.2. Marking**

- (1) The pipe shall be certified and traceable per API 5L.
- (2) Marking shall be in English using U.S. customary units. The marking shall include as a minimum the Manufacturer's name, API monogram, manufacturing date, nominal diameter, nominal wall thickness, weight, grade, process of manufacture, hydrostatic test pressure, purchase order number, item number, project name, buyer name, pipe number, heat number, pipe length, etc.
- (3) The unique pipe number shall be stenciled or painted internally on the pipe at both ends.
- (4) Each pipe shall have four bar code stickers (two at each end) with the pipe information on the inside surface at approximately 180 mm (7 inch) from the pipe ends.

#### **3.3. Pipe Loading**

- (1) Handling, storage, and shipping of pipe shall be in accordance with API RP 5LT, API RP 5L1 and/or API RP 5LW.
- (2) Pipes shall be stacked using a rope fiber at three locations along the pipe length.
  - (a) For pipe OD  $\leq$  914.4 mm (36 inch), the ropes shall be 25.4 mm (1 inch) thick.
  - (b) For pipe OD  $\geq$  1016 mm (40 inch), the ropes shall be 31.75 mm (1.250 inch) thick.
- (3) The pipes shall be stacked with sufficient height from the ground to prevent water/moisture and dirt contamination.
- (4) Non-metallic end closures shall be used to ensure that water from rain, sea spray, or any other source does not enter the pipes. Water cannot accumulate internally or externally at any support. End closures shall be suitable for lifting.
- (5) No welding of temporary attachments for handling or securing shall be permitted.
- (6) Supplier shall ensure supervision at the time of material loading and unloading.

### **4.0 QUALITY ASSURANCE AND QUALITY CONTROL**

#### **4.1. General**

- (1) All certification, test results, reports, or any other documentation submitted to the Company shall be in the English language.
- (2) The Supplier shall establish and maintain a fully documented approved quality control system in accordance with the applicable parts of ISO 9000 or API Q1, to ensure the following:
  - (a) Adequate, effective inspection and objective evidence that items conform to contract requirements.
  - (b) Adequate identification and suitable handling of items.
- (3) A quality assurance audit schedule shall be drawn up by Supplier to cover all aspects of the work.

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**4.2. Quality Records**

- (1) The Supplier shall maintain quality records as documentary evidence of compliance with quality requirements. Quality records shall be available to the Company's inspector for analysis and review.
- (2) Quality records may include item identification by reference to drawing and revision number, acceptance criteria, specific inspections performed, and results obtained (if measurements are not required, include in the record basis of acceptance), date of inspections, identification of inspector, data recorder charts, qualification of material, personnel procedures, and equipment.

**4.3. Final Inspection**

- (1) Visual inspection and dimensional checks shall be carried out at the point of discharge or receipt to confirm that no damage has occurred during transportation.

**4.4. Preparation for Shipment**

- (1) The Supplier shall submit to the Company a procedure detailing its method of packing and shipping for all items.
- (2) Supplier shall also detail its requirements for short (six months) and long term storage, including any special maintenance procedures which may be required. Supplier shall provide approved bevel protectors.
- (3) No welding of temporary attachments for handling or securing shall be permitted.
- (4) All handling, loading, and unloading shall be performed in accordance with API recommended practices, as appropriate.

**5.0 DOCUMENTATION****5.1. Documentation/Certification Requirements on Supplied Pipe**

- (1) The following documentation is required with the supplied pipe:
  - Manufacturing details, including Manufacturing Procedure Specification (MPS), Procedure Qualification Record (PQR), and statistical quality control procedures/data where available
  - Quality documentation (ISO 9000 and/or API)
  - Packing and marking procedures
  - Chemical analyses
  - Mechanical properties
  - Any qualifications to this specification
  - Unique identification number of each pipe joint
  - Heat, heat treatment numbers from which the pipe joint originates
  - Length of beveled pipes
  - Weight of pipe
  - Pipe material certificates required including heat treatment (time and temperature)

## Attachment Revision Log

Revision 0.0			Publish Date: 27 Jun 11
Location of Change	Type of Change	Reason for Change	
N/A	N/A		
Revision 0.1			Publish Date: 25 Feb 15
Location of Change	Type of Change	Reason for Change	
Throughout document	Deletion	Deleted reference to ISO 3183	
Section 2.4	Clarification	Added "or editions incorporated by reference into 49 CFR Part 192 or 195 where applicable"	
Section 2.4.1	Update	Updated references for API 5L, API RP 5L1, and API RP 5LW	
Section 2.4.2	Update	Updated reference for ASME BPVC Section IX	
Section 2.4.3	Update	Updated reference for ASTM A578	
Revision 0.2			Publish Date: 17 Mar 15 Reaffirmed: 18 Oct 16
Location of Change	Type of Change	Reason for Change	
Section 2.4.1	Addition	Added reference for API RP 5LT	
Section 3.3(1)	Addition	Added "API RP 5LT"	