

Inspection and Test Plan for Line Pipe

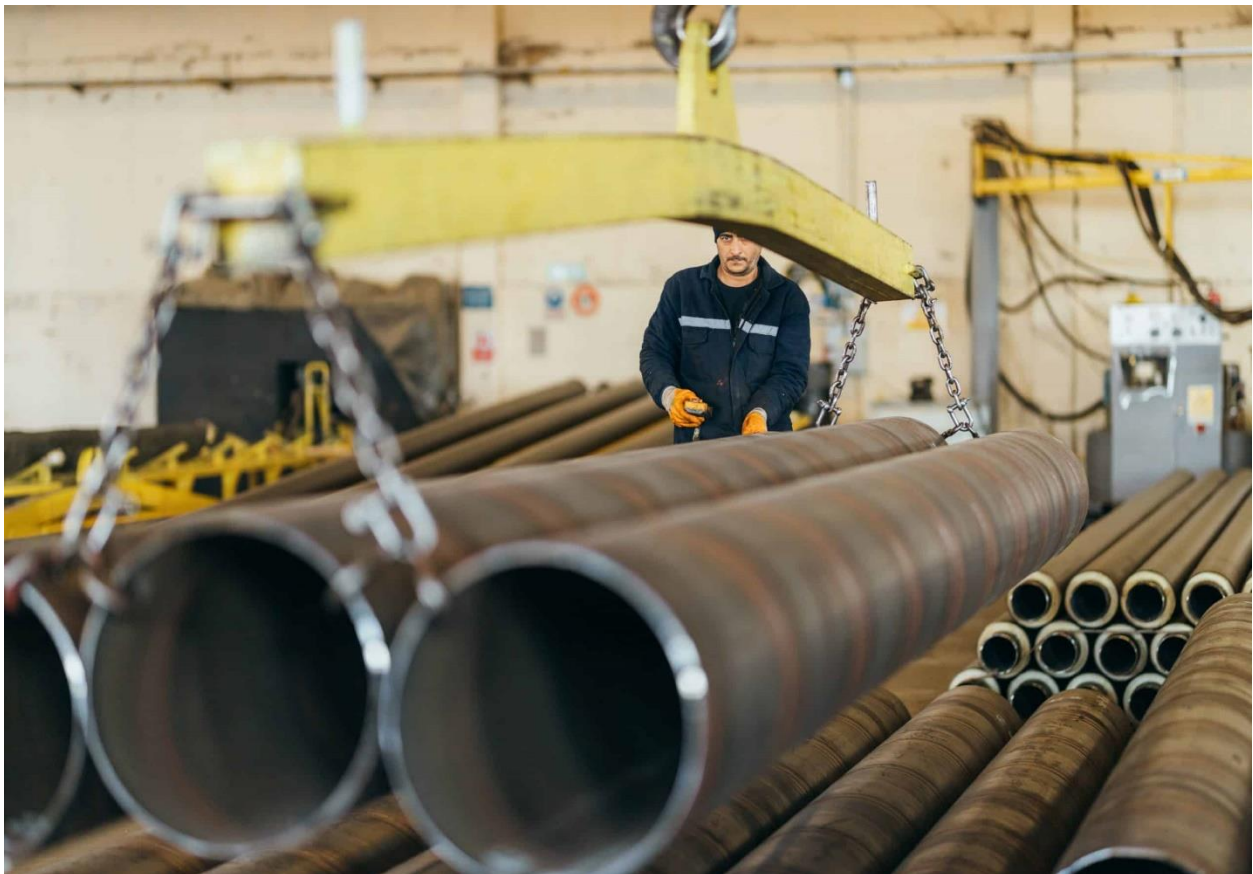
All Line Pipe inspections and tests are carried out against the approved drawings, purchase order specifications, purchasers or company standards, and within the practices and rules of the country, state or province and any government decrees, laws, ordinance or regulation as may apply.

The applicable codes and specifications for Line Pipe which is under construction process are:

- Design code
- Purchase order specification
- Purchaser's standards
- Approved drawings

and the applicable codes and standards are:

- API 5L
- API 5LX
- API 5LS



Required Documents for Third Party Inspector Review:

The list of documents normally is agreed in the Pre-Inspection meeting which is hold several weeks before actual commencement of inspection work. The parties which are participated in this meeting are manufacture, purchaser and third party inspection agency representatives.

These are the list of documents which are normally agreed to be presented to the inspector:

- Line Pipe Purchase Order or Contract
- Line Pipe Manufacture Quality Control Plan
- Line Pipe Inspection and test plan
- Line Pipe Material Test Reports
- Welding Specification Procedures (WPS) and Procedure Qualification Records(PQR)
- Line Pipe Welders Operator Qualifications Reports
- Line Pipe NDE procedures
- Line Pipe NDE Personnel qualifications Reports
- Line Pipe Heat treatment procedure
- Line Pipe Calibration Certificates for Test Equipment
- Line Pipe Hydrostatic Testing Procedure and Water Quality Document
- Line Pipe Preparation and Painting Procedure
- Line Pipe Preservation, Packing and Shipping Procedure
- Line Pipe Packing List

The first actual inspection work in Line Pipe is raw materials inspection.

The original or authenticated copies of mill certificates of material normally are available at manufacturer's premises.

The third party inspector examines these certificates for compliance with specifications and where appropriate, drawings.

The review includes checks on:

- Certificate No.
- Heat or cast No.
- Chemical composition.
- Mechanical properties.
- Heat treated condition.
- NDE applied and results.
- Details of welding consumables

Then the inspector witnesses the materials identification on the certificates against materials marking.

Visual inspection for surface finish and probable defects are done and dimensional compliance with specification need also to be controlled.

When the third party inspector carried out the material inspection, then provides inspection visit report (IVR), the report contains following items:

- Confirmation of satisfactory document review
- Record of the endorsement of certification reviewed/witnessed
- Record of all non-conformities
- Record of any tests witnessed and the result

Third Party Inspection for Line Pipe - Manufacture

After clearance of the above points to the satisfaction of the third party inspector, the manufacturer will proceed with the production of the Line Pipe.

The third party Inspector checks following points on Line Pipe based on the inspection and test plan (ITP) which is already agreed between purchaser and Line Pipe manufacture.

The inspection scope is determined in the ITP, some purchasers prefer to have stringent control and assign the TPI inspector in more “hold or witness points” for inspection and test activities and some others prefer lesser “hold or witness points” and assign TPI much more in the “review document”.

This depend to the inspection budget which purchasers assign for inspection, much more inspection will have much more costs and less risks and conversely less more inspection will have less costs but more risks.

Third Party Inspection for Line Pipe Inspection during Manufacturing

As required by the approved welding procedure inspector visually inspects to ensure that joint geometry, fit up method, joint preparation, preheat are properly carried out.

Third party inspector visually checks the finished welds for correct profile cracks, craters. Ensure that material identities for parent material and welding consumables are correctly reported.

Third Party Inspection for Line Pipe Hydrostatic Testing

Third party inspector witnesses hydrostatic testing of pipes in accordance with the code requirements ensuring that minimum hold times and test pressures are applied to each pipe.

If third party inspector is not in hold or witness point in ITP, then will review the line pipe manufacture test report in his/her coming visit or in final inspection day.

Third Party Inspection for Line Pipe Non Destructive Examination

The pipes welds, repairs and finished product either witnessed or monitored throughout the mill in accordance with the detailed project and code requirements.

The check includes witness of calibration of ultrasonic test equipment at the prescribed intervals, monitoring of Fluoroscopic Examination where appropriate.

Particular attention is paid to the examination of repaired areas.

If third party inspector is not in hold or witness point in ITP, then will review the line pipe manufacture test report in his/her coming visit or in final inspection day.

Third Party Inspection for Line Pipe Visual and Dimensional Examination

In accordance with the referencing code requirements pipes is subjected to visual and dimensional examination by third party inspector. Particular attention is paid to the following points in the weld area.

- Profile of weldment for Width
- Reinforcement Height
- Irregularity
- Undercut
- Overlap
- Porosity and spatter
- Slag inclusions
- Cracks
- Lamination
- It is also necessary the pipes to be free from dents, scrapes and handling damage.

Third Party Inspection for Line Pipe Marking

Full identification marks in accordance with the code requirements for the particular pipe sizes is checked by third party inspector.

Third Party Inspection for Line Pipe - Reporting:

Third party inspector provides Inspection Visit Report (IVR) after each visit as well as a final report summarising the activities carried out during the line pipe production in accordance with the contract requirements and circulated within the time limits specified in the contract.

The report is in the format required by the client and clearly indicates final acceptance or rejection of the line pipe.

Third Party Inspection for Line Pipe - Release Note:

When required by the contract or purchase order a release note is issued by third party agency and given to the manufacturer when the line pipe have been finally accepted.

Third Party Inspection for Line Pipe Packing, Marking and Shipping:

The following points are checked by third party inspector:

- Verify that the packing materials conform to specifications and accepted practice for the mode of transport.
- Verify protection against humidity, abrasion, distortion and other damage.
- Verify shipping marks to marking instructions and record.
- Verify handling marks.

Third Party Inspection for Line Pipe Documentation

All quality verification documents required by the code are reviewed for completeness and endorsed as necessary by third party inspector.