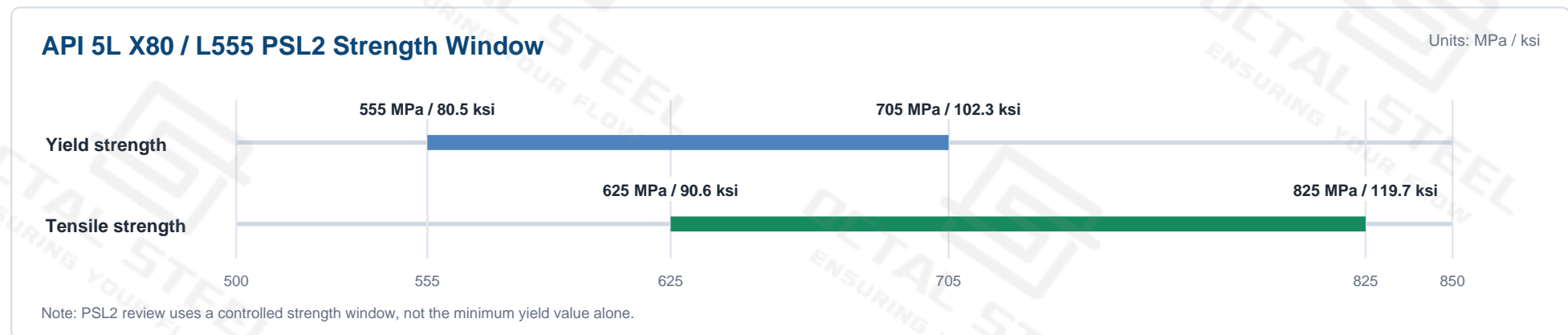


API 5L X80 Mechanical Properties and Strength Control Sheet

PSL2 strength window, yield strength, tensile strength, Y/T ratio and verification records for API 5L X80 / L555 line pipe.

API 5L X80 pipe is a high-strength line pipe grade for oil and gas pipeline transportation. X80 corresponds to **L555**, with a specified minimum yield strength of **555 MPa / 80,500 psi**. For **API 5L X80 PSL2 pipe**, the pipe body is reviewed by a full strength window, not only by the minimum yield value.

Grade identity X80 = L555 SMYS 555 MPa / 80.5 ksi	Yield window 555-705 MPa 80.5-102.3 ksi	Tensile window 625-825 MPa 90.6-119.7 ksi	Y/T control 0.93 max. for applicable pipe
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The first page separates the yield and tensile windows so endpoint values remain clear. Detailed mechanical control points and verification records follow on the next pages.

Detailed Mechanical Property Control

For API 5L X80 mechanical properties, the key acceptance point is the complete PSL2 strength window. Minimum yield strength defines the X80 / L555 identity, while maximum yield strength, maximum tensile strength and Y/T ratio help control over-strength, ductility and pipeline design consistency.

Mechanical Item	API 5L X80 / L555 PSL2 Reference	Technical Meaning
Minimum yield strength	555 MPa / 80,500 psi	Defines X80 / L555 grade identity.
Maximum yield strength	705 MPa / 102,300 psi	Controls over-strength and design consistency.
Minimum tensile strength	625 MPa / 90,600 psi	Confirms pipe body strength after forming and delivery processing.
Maximum tensile strength	825 MPa / 119,700 psi	Helps prevent excessive strength with reduced ductility margin.
Yield-to-tensile ratio	0.93 max. for applicable pipe	Important for deformation behavior and pipeline design review.
Weld seam tensile strength	625 MPa / 90,600 psi min.	Confirms welded pipe seam strength is not below pipe body requirement.

Strength values should be read together with delivery condition, pipe size, product specification level, test unit and actual MTC data. A pipe marked X80 should not be accepted only from the grade stamp if the strength window and traceability records are not aligned.

PSL2 Strength Window and Verification Logic

PSL2 review for X80 / L555 pipe connects mechanical strength with chemistry, carbon equivalent, toughness, welding and inspection records. The following table summarizes how the strength window is verified in a practical document package.

Control Area	Required / Review Data	Why It Matters for X80 Pipe
Grade and designation	API 5L X80 / L555; PSL2 where specified	Confirms the grade identity and the applicable strength control level.
Pipe body strength	Yield: 555-705 MPa; Tensile: 625-825 MPa	Checks both minimum and maximum strength values.
Y/T ratio	0.93 max. for applicable pipe	Supports deformation and design review; prevents overly high yield relative to tensile strength.
Weld seam strength	625 MPa minimum tensile strength for welded pipe seam	Confirms the seam is not weaker than the required pipe body tensile level.
Toughness link	CVN and DWT where required by grade, size and project	High-strength gas line pipe needs toughness and fracture-control review.
MTC linkage	Heat number, test unit, pipe marking, tensile test results	Keeps the reported data tied to the finished pipe actually supplied.

Acceptance checklist:

1	Pipe marking and MTC show API 5L X80 / L555 PSL2 identity.
2	Yield and tensile test results remain inside the PSL2 strength window.
3	Y/T ratio, elongation and weld seam tensile data are reviewed where applicable.
4	CVN / DWT, NDT and hydrostatic test records are linked to the same heat / test unit.
5	Packing list and shipment identity match pipe marking and MTC records.

Reference basis: API 5L / ISO 3183 PSL2 X80 / L555 mechanical property tables. Final acceptance should follow the applicable standard edition, purchase specification, MTC and project ITP.