

API 5L Line Pipe

API Specification 5L PSL 1 and PSL 2 Comparison

Summary of Differences Between PSL1 and PSL2			
Parameter	PSL 1	PSL 2	Reference
Grade Range	L175 or A25 through L485 or X70	L245 or B through L830 or X120	Table 1 Table 2
Grade Suffix	—	R, N, Q or M	Table 2 Footnote b
Type of Pipe Ends	Plain End, Belled End, Threaded, Special Coupling Pipe End	Plain End Only < = 0.125"t Square Cut >0.125" 30° Bevel Unless Otherwise Agreed	Table 2, 9.12.1.2 9.12.5, 9.12.5.3
Manufacturing Routes	Not Defined in Detail	Defined in Detail	Table 3
Manufacturing Procedure Qualification	—	If Agreed	7.2 c) 40) Annex B
Resistance to Ductile Fracture	—	If Agreed	7.2 c) 49) Annex G
For Sour Service	—	If Agreed	7.2 c) 50) Annex H
Offshore Pipe	—	If Agreed	7.2 c) 54) Annex J
Steel Making	—	Killed, Fine Grain Practice	8.3.2
Heat Treatment of Weld Seam and the HAZ of HFW Pipe	Simulate Normalizing OR by Agreement Other Methods	Heat Treated so as to Simulate Normalizing	8.8.1 - 8.8.2
Chemical Traceability of Heat Identity	Traceable Only Until All Related Chemical Tests are Performed and Conformance is Shown	Each Length of Pipe Must be Traceable Even After Completion of all Related Chemical Tests and Conformance is Shown	8.13.1 - 8.13.2
Physical Properties Traceability of Unit Identity	Traceable Only Until All Related Mechanical Tests are Performed and Conformance is Shown	Each Length of Pipe Must be Traceable Even After Completion of all Related Mechanical Tests and Conformance is Shown	8.13.1 - 8.13.2
Max C Seamless Pipe N	0.28% for Grades B - X60	0.24% for Grades B - X60	9.2.2, Table 4 & 5
Max C Seamless Pipe Q	0.28% for Grades B - X60	0.18% for Grades B - X60	Table 4 & 5
Max C Welded Pipe M	0.26% for Grades B - X70	0.22% for Grades B - X56 0.12% for Grades 60 - X70	Table 4 & 5
Max Si Seamless Pipe R	—	0.40% for Grades B - X46 0.45% for Grades 52 - X70	Table 4 & 5
Max Si Welded Pipe M	—	0.45% for Grades B - X70	Table 4 & 5
Max Mn Seamless Pipe R	1.30% for Grade X42	1.20% for Grade X42	Table 4 & 5
Max Mn Seamless Pipe N	1.30% for Grade X42	1.20% for Grade X42	Table 4 & 5
Max Mn Seamless Pipe Q	1.20% for Grade B 1.30% for Grade X42 1.40% for Grades X46 - X70	1.40% for Grades B - X42 1.50% for Grades X52 - X56 1.70% for Grades X60 - X70	Table 4 & 5
Max Mn Welded Pipe M	1.40% for Grade X42 1.40% for Grade X60 1.45% for Grade X65 1.45% for Grade X70	1.30% for Grade X42 1.60% for Grade X60 1.60% for Grade X65 1.70% for Grade X70	Table 4 & 5
Max P Seamless Pipe	0.030% for Grade B - X70	0.025% for Grade B - X70	Table 4 & 5
Max P Welded Pipe	0.030% for Grade B - X70	0.025% for Grade B - X70	Table 4 & 5
Max S Seamless Pipe	0.030% for Grade B - X70	0.015% for Grade B - X70	Table 4 & 5
Max S Welded Pipe	0.030% for Grade B - X70	0.015% for Grade B - X70	Table 4 & 5
Max V Seamless Pipe N	—	0.06% for Grade X42 0.07% for Grade X46 0.10% for Grade X52 - X60	Table 4 & 5
Max V Seamless Pipe Q	—	0.05% for Grades B - X52 0.07% for Grades X56	Table 4 & 5
Max V Welded Pipe M	—	0.05% for Grades B - X46	Table 4 & 5
Max Nb Seamless Pipe N	—	0.05% for Grades X42 - X60	Table 4 & 5
Max Nb Seamless Pipe Q	—	0.05% for Grades B - X56	Table 4 & 5
Max Nb Welded Pipe M	—	0.05% for Grades B - X46	Table 4 & 5
Max Ti Seamless Pipe N	—	0.05% for Grades B - X60	Table 4 & 5
Max Ti Seamless Pipe Q	—	0.04% for Grades B - X56	Table 4 & 5
Max Ti Welded Pipe M	—	0.04% for Grades B - X46	Table 4 & 5

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Carbon Equivalent CE	—	Maximum CE Required for Each Grade	Table 4 & 5
Low Frequency Welding LFW <70 kHz	Acceptable Process	Not an Acceptable Process	Table 2
Laser Welding LW	Acceptable Process	Not an Acceptable Process	Table 2
Yield Strength, Maximum	—	Maximum Required for Each Grade	Table 6 & 7
UTS, Maximum	—	Maximum Required for Each Grade	Table 6 & 7
Yield to Tensile Ratio Maximum	—	Maximum Required for Each Grade	Table 6 & 7
CVN Impact Toughness	—	Testing Procedures and Minimum Requirements for Each Grade	9.8, Table 8, Table 22
Drop Weight Tear Test DWT	—	By Agreement (D>=20")	7.2 c) 12), 9.9, Table 18
Inspection Document in Accordance with ISO 10474:1991 or EN 10204:2004	If Agreed	Mandatory	10.1.2
Non-destructive Inspection Full Length (100%), as Given in Table E.2	Grade L245 or B Quenched and Tempered SMLS Pipe and Other SMLA Grades if Agreed	All SMLS Pipe	E.3.1.2

USS Standard Pipe and Line Pipe

Summary of Miscellaneous Pipe Specifications

ASTM A135	Two grades (A and B) of ERW pipe in NPS 3/4 to 30 with wall thickness of 0.500". The pipe is intended for conveying gas, vapor, water or other liquid.
ASTM A333	Nine grades of minimum wall thickness seamless and ERW pipe for use at low temperatures.
ASTM A513	ERW carbon and alloy mechanical tubing in a variety of grades and sizes from NPS 1/2 to 15 in walls to 0.650".
ASTM A519	Several grades of carbon and alloy steel seamless mechanical tubing in sizes to NPS 12 and under.
ASTM A589	Four types of plain end or threaded and coupled carbon steel seamless or ERW pipe for use as water well casing.
CSA Z245.1	Canadian steel pipe specification for seamless and ERW pipe that is somewhat equivalent to the API 5L Line Pipe Specification.