

CHEMISTRY & MECHANICAL PROPERTY OF SEAMLESS PIPE & TUBES															
Specification	Chemical Composition										Mechanical Properties				
	%C	%Mn	%Si	%P	%S	%Cu	%Cr	%Mo	%Ni	%V	%Al	Y.S MPA(Min)	UTS MPA(Min)	%E(Full section)	Hardness / Supply Condition
CARBON & ALLOY STEEL TUBES & PIPES															
Standard specification for Seamless Carbon Steel Pipes for High Temperature Services															
ASTM A106 GRA	0.25 max	0.27-0.93	0.10 min	0.035 max	0.035 max	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	...	205	330	35	-
ASTM A106 GR.B	0.30 max	0.29-1.06	0.10 min	0.035 max	0.035 max	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	...	240	415	30	-
ASTM A106 GR.B/C	0.35 max	0.29-1.06	0.10 min	0.035 max	0.035 max	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	...	275	485	30	-
Standard specification for Seamless Carbon Steel Tubes for Heat Exchanger and Condenser															
ASTM A179	0.06-0.18	0.27-0.63	...	0.035 max	0.035 max	...	...	...	...	...	...	180	325	35	72 HRB Max.
Standard specification for Seamless Steel Boiler Tubes for High Pressure Service															
ASTM A192	0.06-0.18	0.27-0.63	0.25 max	0.035 max	0.035 max	...	...	...	...	...	...	180	325	35	77 HRB Max.
Standard specification for Seamless Steel Tubes for Boiler and Super Heater Tubes															
ASTM A210 GRA1	0.27 max	0.93 max	0.10 min	0.035 max	0.035 max	...	...	...	...	...	...	255	415	30	79 HRB Max.
ASTM A210 GRC	0.35 max	0.29-1.06	0.10 min	0.035 max	0.035 max	...	...	...	...	...	...	275	485	30	89 HRB Max.
Standard specification for Low Alloy Seamless Steel Tubes for Boiler, Superheater and Heat Exchanger															
ASTM A213-T11	0.05 - 0.15	0.30 - 0.60	0.50 - 1.00	0.025 max	0.025 max	...	1.0 - 1.50	0.44 - 0.65	...	...	...	205	415	30	85 HRB Max.
ASTM A213-T12	0.05 - 0.15	0.30 - 0.61	0.50 max	0.025 max	0.025 max	...	0.80 - 1.25	0.44 - 0.65	...	...	...	220	415	30	85 HRB Max.
ASTM A213-T22	0.05 - 0.15	0.30 - 0.60	0.50 max	0.025 max	0.025 max	...	1.90 - 2.60	0.87 - 1.13	...	...	...	205	415	30	85 HRB Max.
Standard specification for Seamless Steel Pipes for Low Temperature Services															
ASTM A333 GR.1	0.30 max	0.40 - 1.06	...	0.025 max	0.025 max	...	...	...	...	...	...	205	380	35	-
ASTM A333 GR.6	0.30 max	0.29 - 1.06	0.10 min	0.025 max	0.025 max	...	...	...	...	...	...	240	415	30	-
Standard specification for Seamless Steel Tubes for Low Temperature Services															
ASTM A334 GR.1	0.30 max	0.40 - 1.06	...	0.025 max	0.025 max	...	...	...	...	...	...	240	415	30	85 HRB Max.
ASTM A334 GR.6	0.30 max	0.29 - 1.06	0.10 min	0.025 max	0.025 max	...	...	...	...	...	...	240	415	30	90 HRB Max.
Standard specification for Seamless Steel Precision Tubes															
DIN2391 ST35	0.17 max	0.40 min	0.35 max	0.025 max	0.025 max	...	...	...	...	...	...	235	340 - 470	25	NBK
												315	315	25	GBK
												420	420	14	BKS
												480	420	10	BKW
DIN2391 ST52	0.22 max	1.60 max	0.55 max	0.025 max	0.025 max	...	...	...	...	...	...	355	490 - 630	22	NBK
												420	490	22	GBK
												580	420	10	BKS
												640	580	7	BKW
EN10305-4.E235+N	0.17 max	1.20 max	0.35 max	0.025 max	0.015 max	...	...	...	...	...	0.025 min	235	340 - 480	25	
												355	490 - 630	22	
												420	290 - 430	30	
												480	480	6	+C
EN10305-4.E355+N	0.22 max	1.60 max	0.55 max	0.025 max	0.015 max	...	...	...	...	...	0.020 min	355	490 - 630	22	
												420	290 - 430	30	
												480	480	6	+N
												640	480	4	+C
EN10305-4.E215+N	0.10 max	0.70 max	0.05 max	0.025 max	0.015 max	...	...	...	...	...	0.025 min	215	290 - 430	30	
												355	490 - 630	22	
												420	490	22	GBK
												480	480	6	+C
EN10305-1.E235	0.17 max	1.20 max	0.35 max	0.025 max	0.025 max	...	...	...	...	...	...	235	340 - 480	25	+N
												355	490 - 630	22	+C
												420	490	22	+N
												480	480	6	+C
EN10305-1.E355	0.22 max	1.60 max	0.55 max	0.025 max	0.025 max	...	...	...	...	...	...	355	490 - 630	22	+N
												420	490	22	+C
												480	480	6	+N
												640	480	4	+C
Seamless Steel Tubes for Automotive Industry															
CK45/EN8D	0.42 - 0.50	0.50-0.80	0.40 max	0.045 max	0.045 max	...	...	...	...	...	...
SAE4130	0.28 - 0.33	0.40-0.60	0.15-0.35	0.040 max	0.040 max	...	0.80 - 1.10	0.15 - 0.25	...	...	...				as per customer requirement
SAE4140	0.38 - 0.43	0.75-1.00	0.15-0.35	0.040 max	0.040 max	...	0.80 - 1.10	0.15 - 0.25	...	...	...	
Seamless Steel Tubes as per IS and BS Standards															
IS 1239 PT-1	0.20 max	1.30 max	...	0.040 max	0.040 max	...	...	...	...	...	...		320	20	
IS 3601, Gr. 240	...	...	...	0.040 max	0.040 max	...	...	...	...	...	...	310	450	20	HFS or CDS
IS 3601, Gr. 310	...	...	...	0.040 max	0.040 max	...	...	...	...	...	...	240	410	22	HFS or CDS
BS 3059 Part-1, 320	0.16 max	0.30-0.70	0.10-0.35	0.040 max	0.040 max	...	...	...	...	...	...	195	320-480	25	
BS 3059 Part-2, 360	0.17 max	0.40-0.80	0.10-0.35	0.035 max	0.035 max	...	...	...	...	...	...	235	360-500	24	
Stainless Steel Pipes															
A312 TP 304	0.080 max	2.00 max	1.00 max	0.045 max	0.030 max	...	18.0 - 20.0	...	8.0 - 11.0	...	...	205	515	35	90 HRB Max.
A312 TP 304L	0.035 max	2.00 max	1.00 max	0.045 max	0.030 max	...	18.0 - 20.0	...	8.0 - 11.0	...	...	205	515	35	90 HRB Max.
A312 TP 316	0.080 max	2.00 max	1.00 max	0.045 max	0.030 max	...	16.0 - 18.0	2.0 - 3.0	10.0 - 14.0	...	...	205	515	35	90 HRB Max.
A312 TP 316L	0.035 max	2.00 max	1.00 max	0.045 max	0.030 max	...	16.0 - 18.0	2.0 - 3.0	11.0 - 14.0	...	...	205	515	35	90 HRB Max.