

POPULAR SPECIFICATION OF TUBES AND PIPES

| SPECIFICATION | CHEMICAL ANALYSIS | | | | | | | | | | | MECHANICAL PROPERTIES | | | | |
|---|---|---|---|---|---|---|---------------------------------|---|---------------------------------|---------------------------------|---|---------------------------------|---|---|--|--|
| | C % | Mn % | P % MAX | S % MAX | Si % | Cr % | Cu % MAX | Mo % | Ni % MAX | Va % MAX | MPa | Impact Test -500F 40x10 | Yield Stress MPa | Elongation In 50 mm MIN Longitudinal | Hardness | |
| ASTM A53/A ASTM A53/B | 0.25 MAX 0.30 MAX | 0.95 MAX 1.20 MAX | 0.050 0.050 | 0.060 0.060 | - - | - - | - - | - - | - - | - - | 330 MIN 415 MIN | - - | 205 MIN 240 MIN | 36 29.5 | - - | |
| ASTM A106/A ASTM A106/B ASTM A106/C | 0.25 MAX 0.30 MAX 0.35 MAX | 0.27-0.93 0.29-1.06 0.29-1.06 | 0.025 0.025 0.025 | 0.025 0.025 0.025 | 0.10 MIN 0.10 MIN 0.10 MIN | 0.40 MAX 0.40 MAX 0.40 MAX | 0.40 0.40 0.40 | 0.15 MAX 0.15 MAX 0.15 MAX | 0.40 0.40 0.40 | 0.08 0.08 0.08 | 330 MIN 415 MIN 485 MIN | - - - | 205 MIN 240 MIN 275 MIN | 35 30 30 | - - - | |
| ASTM A179 ASTM A192 | 0.06-0.18 0.06-0.18 | 0.27-0.63 0.27-0.63 | 0.048 0.048 | 0.058 0.058 | - 0.25 MAX | - - | - - | - - | - - | - - | - - | - - | - - | - - | 72HRB MAX 72HRB MAX | |
| ASTM A209/T1 ASTM A209/T1A ASTM A209/T1B | 0.10-0.20 0.15-0.25 0.14 MAX | 0.30-0.80 0.30-0.80 0.30-0.80 | 0.045 0.045 0.045 | 0.045 0.045 0.045 | 0.10-0.50 0.10-0.50 0.10-0.50 | - - - | - - - | 0.44-0.65 0.44-0.65 0.44-0.65 | - - - | - - - | 380 MIN 365 MIN 415 MIN | - - - | 205 MIN 195 MIN 220 MIN | 30 30 30 | 80HRB MAX 81HRB MAX 77HRB MAX | |
| ASTM A210/A1 ASTM A210/C | 0.27 MAX 0.35 MAX | 0.93 MAX 0.29-1.06 | 0.048 0.048 | 0.058 0.058 | 0.10 MIN 0.10 MIN | - - | - - | - - | - - | - - | 415 MIN 485 MIN | - - | 255 MIN 275 MIN | 30 30 | 79HRB MAX 89HRB MAX | |
| ASTM A213/T2 ASTM A213/T5 ASTM A213/T9 ASTM A213/T11 ASTM A213/T12 ASTM A213/T22 | 0.10-0.20 0.15 MAX 0.15 MAX 0.05-0.15 0.05-0.15 0.05-0.15 | 0.30-0.61 0.30-0.61 0.30-0.61 0.30-0.61 0.30-0.61 0.30-0.61 | 0.045 0.030 0.030 0.030 0.045 0.030 | 0.045 0.030 0.030 0.030 0.045 0.030 | 0.10-0.30 0.50 MAX 0.25-1.00 0.50-1.00 0.50 MAX 0.50 MAX | 0.50-0.81 4.00-5.00 8.00-10.00 1.00-1.50 0.80-1.25 1.90-2.60 | - - - - - - | 0.44-0.65 0.44-0.65 0.90-1.10 0.44-0.65 0.44-0.65 0.87-1.13 | - - - - - - | - - - - - - | 415 MIN 415 MIN 415 MIN 415 MIN 415 MIN 415 MIN | - - - - - - | 205 MIN 205 MIN 205 MIN 205 MIN 205 MIN 205 MIN | 30 30 30 30 30 30 | 85HRB MAX 85HRB MAX 85HRB MAX 85HRB MAX 85HRB MAX 85HRB MAX | |
| ASTM A333/1 ASTM A333/6 ASTM A334/1 ASTM A334/6 | 0.30 MAX 0.30 MAX 0.30 MAX 0.30 MAX | 0.40-1.06 0.29-1.06 0.40-1.06 0.29-1.06 | 0.025 0.025 0.025 0.025 | 0.025 0.025 0.025 0.025 | - 0.10 MIN - 0.10 MIN | - - - - | - - - - | - - - - | - - - - | - - - - | 380 MIN 415 MIN 380 MIN 415 MIN | -500F -500F J14 J14 | 205 MIN 240 MIN 205 MIN 240 MIN | 35 30 35 30 | - - 85HRB MAX 90HRB MAX | |
| ASTM A335/P1 ASTM A335/P2 ASTM A335/P5 ASTM A335/P9 ASTM A335/P11 ASTM A335/P12 ASTM A335/P22 | 0.10-0.20 0.10-0.20 0.15 MAX 0.15 MAX 0.05-0.15 0.05-0.15 0.05-0.15 | 0.30-0.80 0.30-0.61 0.30-0.60 0.30-0.60 0.30-0.60 0.30-0.60 0.30-0.60 | 0.025 0.025 0.025 0.025 0.025 0.025 0.025 | 0.025 0.025 0.025 0.025 0.025 0.025 0.025 | 0.10-0.50 0.10-0.30 0.50 MAX 0.50 MAX 0.50-1.00 0.50 MAX 0.50 MAX | - 0.50-0.81 4.00-6.00 4.00-6.00 1.00-1.50 0.80-1.25 1.90-2.60 | - - - - - - - | 0.44-0.65 0.44-0.65 0.44-0.65 0.44-0.65 0.44-0.65 0.44-0.65 0.87-1.13 | - - - - - - - | - - - - - - - | 380 MIN 380 MIN 415 MIN 415 MIN 415 MIN 415 MIN 415 MIN | - - - - - - - | 205 MIN 205 MIN 205 MIN 205 MIN 205 MIN 205 MIN 205 MIN | 30 30 30 30 30 30 30 | - - - - - - - | |
| BS/3059/1/33 BS/3059/2/33 BS/3059/2/45 BS/3059/2/620 | 0.15 MAX 0.15 MAX 0.12-0.18 0.10-0.15 | 0.30-0.70 0.40-0.70 0.90-1.20 0.30-0.70 | 0.050 0.050 0.040 0.040 | 0.050 0.050 0.030 0.040 | - 0.10-0.35 0.10-0.35 0.10-0.35 | - - - 0.70-1.10 | - - - - | - - - 0.45-0.65 | - - - - | - - - - | 324-441 324-441 441-560 441-618 | - - - - | 186 MIN 186 MIN 245 MIN 235 MIN | 25 21 22 22 | - - - - | |
| DIN/17175/ST35.8 DIN/17175/ST45.8 DIN/17175/15MO3 DIN/17175/13CrMO44 | 0.17 MAX 0.22 MAX 0.12-0.20 0.10-0.18 | 0.40 MIN 0.45 MIN 0.50-0.80 0.40-0.70 | 0.040 0.040 0.040 0.040 | 0.040 0.040 0.040 0.040 | 0.35 MAX 0.10-0.35 0.15-0.35 0.15-0.35 | - - - 0.70-1.00 | - - - - | - - 0.25-0.35 0.40-0.50 | - - - - | - - - - | 340-441 441-540 441-540 441-570 | - - - - | 235 MIN 235 MIN 285 MIN 294 MIN | 25 25 21 22 | - - - - | |