

ASTM A-53 PIPE

Diameter – For pipe NPS 1-1/2 and under, the outside diameter at any point shall not vary more than $\pm 1/64$ in. (0.40 mm) from the standard specified. For pipe NPS 2 and over, the outside diameter shall not vary more than ± 1 % from the standard specified.

Thickness – The minimum wall thickness at any point shall be not more than 12.5 % under the nominal wall thickness specified.

ASTM A-53 PIPE

TABLE 1

Chemical Requirements

Composition, max, %

| | Carbon | Manganese | Phosphorus | Sulfur | Copper ^A | Nickel ^A | Chromium ^A | Molybdenum ^A | Vanadium ^A |
|--|--------|-----------|------------|--------|---------------------|---------------------|-----------------------|-------------------------|-----------------------|
| Type S (seamless pipe) | | | | | | | | | |
| Open-hearth, electric furnace or basic oxygen: | | | | | | | | | |
| Grade A | 0.25 | 0.95 | 0.05 | 0.045 | 0.40 | 0.40 | 0.40 | 0.15 | 0.08 |
| Grade B | 0.30 | 1.20 | 0.05 | 0.045 | 0.40 | 0.40 | 0.40 | 0.15 | 0.08 |
| Type E (electric-resistance-welded) | | | | | | | | | |
| Open-hearth, electric furnace or basic oxygen: | | | | | | | | | |
| Grade A | 0.25 | 0.95 | 0.05 | 0.045 | 0.40 | 0.40 | 0.40 | 0.15 | 0.08 |
| Grade B | 0.30 | 1.20 | 0.05 | 0.045 | 0.40 | 0.40 | 0.40 | 0.15 | 0.08 |
| Type F (furnace-welded pipe) | | | | | | | | | |
| Open-hearth, electric furnace or basic oxygen: | | | | | | | | | |
| Grade A | 0.30 | 1.20 | 0.05 | 0.045 | 0.40 | 0.40 | 0.40 | 0.15 | 0.08 |

^A The combination of these five elements shall not exceed 1%.

TABLE 2

Tensile Requirements

| | Type F | Types E and S | |
|----------------------------------|---|---------------|--------------|
| | Open-Hearth, Basic Oxygen, or Electric-Furnace, Grade A | Grade A | Grade B |
| Tensile strength, min, psi (MPa) | 48 000 (330) | 48 000 (330) | 60 000 (415) |
| Yield strength, min, psi, (MPa) | 30 000 (205) | 30 000 (205) | 35 000 (240) |
| Elongation in 2 in. | A | A | A |

^A The minimum elongation is 2 in. (50.8 mm) shall be that determined by the following equation: $e = 625\,000 A^{0.2}/U^{0.9}$ where:

e = minimum elongation in 2 in. (50.8 mm) in percent rounded to the nearest 0.5%,

A = cross-sectional area of the tension test specimen in square inches, based on specified outside diameter or nominal specimen width and specified wall thickness rounded to the nearest 0.01 in.² If the area thus calculated is greater than 0.75 in.², then the value 0.75 shall be used, and

U = specified tensile strength, psi.