

## Seamless Ferritic and Austenitic Alloy Steel Tubes for Boiler, Superheater and Heat Exchanger

### Standard & Material

ASTM A213/A213M ASME SA213 TP347H UNS S34709

It covers seamless ferritic and austenitic steel tubes for boiler, superheater and heat exchanger. The tubing sizes and thicknesses are 1/8 inch [3.2mm] in inside diameter to 5 inch [127mm] in outside diameter and 0.015 to 0.500 inch [0.40 to 12.7mm], inclusive, in minimum wall thickness or, if specified in the order, average wall thickness. Tubing having other diameters may be furnished, provided such tubes comply with all other requirements of ASTM A213/A213M ASME SA213.

### Chemistry Composition

C, % 0.04-0.10

Mn, % 2.00 max

P, % 0.045 max

S, % 0.030 max

Si, % 1.00 max

Ni, % 9.00-13.0

Cr, % 17.0-19.0

Nb, % 8\*C-1.10



### Mechanical Properties

Tensile Strength, MPa 515 min

Yield Strength, MPa 205 min

Elongation, % 35 min

Hardness, HBW 192 or HV 200 or HRB 90 max

Wall Thickness: min wall thickness or average wall thickness

Developed Length: max 30 meters each length, +10mm/-0mm

Manufacture: the tubes are made by cold finished or hot finished process.

Delivery condition: pickled, bright annealing (BA), or polishing.

Heat Treatment: the tubes are heat treated as solution treatment, and for cold worked, the min temperature is not less than 1100°C, while for hot rolled, the temperature is not less than 1050°C. All the tubes are individually quenched in water or rapidly cooled (direct quenched).

Grain Size: it shall be number 7 with test methods E112.

Inspection & Test: chemistry composition analysis, tensile test, flattening test, flaring test, hardness test, NDT, surface inspection and dimension check.

Further Process: U bending tubes, fin tubes, studded tubes