

Welded Austenitic Steel Boiler, Superheater, Heat Exchanger, and Condenser Tubes

Standard & Material

ASTM A249/A249M ASME SA249 TP304L UNS S30403

It covers nominal wall thickness welded tubes and heavily cold worked welded tubes made from the austenitic steels, with various grades intended for such use as boiler, superheater, heat exchanger, or condenser tubes. Grades TP304H, TP309H, TP309HCb, TP310H, TP310HCb, TP316H, TP321H, TP347H, and TP348H are modifications of Grades TP304, TP309S, TP309Cb, TP310S, TP310Cb, TP316, TP321, TP347, and TP348, and are intended for high temperature service such as for superheaters and reheaters. The tubing sizes and thicknesses usually furnished to ASTM A249/A249M ASME SA249 are 1/8 inch [3.2mm] in inside diameter to 12 inch [304.8mm] in outside diameter and 0.015 to 0.320 inch [0.4 to 8.1mm], inclusive, in wall thickness. Tubing having other dimensions may be furnished, provided such tubes comply with all other requirements of ASTM A249/A249M ASME SA249. Mechanical property requirements do not apply to tubing smaller than 1/8 inch [3.2mm] in inside diameter or 0.015 inch [0.4mm] in thickness.

Chemistry Composition

C, % 0.03 max

Mn, % 2.00 max

P, % 0.045 max

S, % 0.030 max

Si, % 1.00 max

Ni, % 8.00-12.0

Cr, % 18.0-20.0

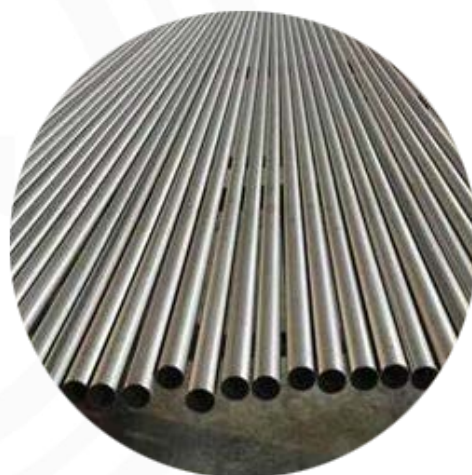
Mechanical Properties

Tensile Strength, MPa 485 min

Yield Strength, MPa 170 min

Elongation, % 35 min

Hardness, 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 welded or welded & cold drawn process.

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

Heat Treatment: the tubes are heat treated under min solution temperature is not less than 1040°C, and the tubes are individually quenched in water or rapidly cooled (direct quenched).

Inspection & Test: chemistry composition analysis, tensile test, flattening test, flange test, reverse-bend test, hardness test, NDT, surface inspection and dimension check.

Further Process: U bending tubes