

# ASTM B704 / ASME SB704

## SPECIFICATION FOR WELDED UNS N06625, UNS N06219, AND UNS N08825 ALLOY TUBES

This specification covers welded UNS N06625, UNS N06219, and UNS N08825 alloy boiler, heat exchanger, and condenser tubes for general corrosion resisting and low- or high-temperature service.

This specification covers tubes 1/8 to 5 in. (3.18 to 127 mm), inclusive, in outside diameter and 0.015 to 0.500 in. (0.38 to 12.70 mm), inclusive, in wall thickness. Specification SB-751 lists the dimensional requirements of these sizes.

Tubes having other dimensions may be furnished provided such tubing complies with all other requirements of this specification.

### A. Chemical Composition :-

The material shall conform to the composition limits specified in Table 1.

**Table 1**

	UNS N06625	UNS N06219	UNS N08825
Ni	58.0min. <sup>A</sup>	Bal.	38.0–46.0
Cr	20.0–23.0	18.0–22.0	19.5–23.5
Fe	5.0max.	2.0–4.0	22.0min.A
Mo	8.0–10.0	7.0–9.0	2.5–3.5
Cb + Ta	3.15–4.15	...	...
C	0.10max.	0.05max.	0.05max.
Mn	0.50max.	0.50max.	1.0max.
Si	0.5max.	0.70–1.10	0.5max.
P	0.015max.	0.020max...	.
S	0.015max.	0.010max.	0.03max.
Al	0.4max.	0.50max.	0.2max.
Ti	0.40max.	0.50max.	0.6–1.2
Co (if determined)	1.0max.	1.0max.	...
Cu	...	0.50max.	1.5–3.0

<sup>A</sup> Element may be determined arithmetically by difference.

### B. Mechanical and Other Properties :-

1. Mechanical Properties — The material shall conform to the mechanical property requirements specified in Table 2. One test is required for each lot as defined in Specification SB-751.

**Table 2**

Alloy	Tensile Strength, min, psi (MPa)	Yield Strength, <sup>A</sup> 0.2% Offset, min, psi (MPa)	Elongation in 2 in. or 50 mm, min, %
UNS N06625	120,000 (827)	60,000 (414)	30
UNS N06219	96,000 (660)	39,000 (270)	30
UNS N08825	85,000 (586)	35,000 (240)	30

<sup>A</sup> Yield strength shall be determined by the offset method at 0.2% limiting permanent set in accordance with Test Methods E 8.

2. Flattening Test.
3. Flange Test.

4. Nondestructive Test Requirements:
  - i. Class 1 — Each piece in each lot shall be subject to one of the following four tests: hydrostatic, pneumatic (air underwater), eddy current, or ultrasonic.
  - ii. Class 2 — Each piece in each lot shall be subjected to a leak test and an electric test as follows:
    - a. Leak Test — hydrostatic or pneumatic (air underwater), and
    - b. Electric Test — eddy current or ultrasonic.
5. The manufacturer shall have the option to test to Class 1 or 2 and select the nondestructive test methods, if not specified by the purchaser.

**C. General Requirements :-**

1. Material furnished under this specification shall conform to the applicable requirements of the current edition of Specification SB-751 unless otherwise provided herein.

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