

ASTM B677 / ASME SB677

SPECIFICATION FOR UNS N08904, UNS N08925, AND UNS N08926 SEAMLESS PIPE AND TUBE

This specification covers UNS N08904, UNS N08925, and UNS N08926 seamless, cold-worked or hot finished pipe and tube intended for general corrosive service.

A. Heat Treatment :-

1. The material shall be supplied in the solution treated condition.
2. The recommended heat treatment shall consist of heating to a temperature of 1950 to 2100°F (1065 to 1150°C) for UNS N08904 or 2010 to 2100°F (1100 to 1150°C) for UNS N08925 and UNS N08926, followed by quenching in water or rapid cooling by other means.

B. Chemical Composition :-

The material shall conform to the requirements as to chemical composition prescribed in Table 1.

Table 1

Element	UNS N08904	UNS N08925	UNS N08926	Product (Check) Analysis Variations, under min or over max of the Specified Limit of Element, %	
				UNS N08904, UNS N08925	UNS N08926
Carbon, max	0.02	0.02	0.02	0.005	0.005
Manganese, max	2.0	1.0	2.0	0.04	0.04
Phosphorus, max	0.045	0.045	0.03	0.005	0.005
Sulfur, max	0.035	0.03	0.01	0.005	0.003
Silicon, max	1.0	0.5	0.5	0.05	0.03
Nickel	23.0-28.0	24.0-26.0	24.00-26.00	0.2	0.25
Chromium	19.0-23.0	19.0-21.0	19.00-21.00	0.2	0.25
Molybdenum	4.0-5.0	6.0-7.0	6.0-7.0	0.1	0.15
Copper	1.0-2.0	0.8-1.5	0.5-1.5	0.1	0.04
Nitrogen	...	0.1-0.2	0.15-0.25	...	0.01
Iron	balance	balance	balance

C. Mechanical Properties and Other Requirements :-

1. Mechanical Properties — The material shall conform to the mechanical properties prescribed in Table 2.

Table 2

Alloy	Temper	Tensile Strength, min, psi (Mpa)	Yield Strength, 0.2% offset, min, psi (Mpa)	Elongation in 2 in. or 50 mm, (or 4D) , min, %
UNS N08904	solution annealed	71 (490)	31 (220)	35
UNS N08925	solution annealed	87 (600)	43 (300)	40
UNS N08926	solution annealed	94 (650)	43 (295)	35

2. Nondestructive Tests:

- i. Each pipe and tube shall be subjected to either a hydrostatic test or a nondestructive electric test in accordance with specification A 450/A 450M, at the manufacturers option. The purchaser may specify which test is to be used.
- ii. Hydrostatic Test:
 - a. Each pipe or tube with an outside diameter 1/8 in. (3.2 mm) and larger and with wall thickness of 0.015 in. (0.38 mm) and over shall be tested by the manufacturer to an internal hydrostatic pressure of 1000 psi (6.9 MPa) provided that the fiber stress calculated in accordance with the following equation does not exceed the allowable fiber stress, S, indicated below:
$$P = 2St/D \quad \dots\dots (1)$$
where: P = hydrostatic test pressure, psi (or MPa),
S = allowable fiber stress for material in the condition (temper) furnished, 20 000 psi (138 MPa),
t = minimum wall thickness, in. (or mm); equal to the specified average wall minus the permissible "minus" wall tolerance, Table 3, or the specified minimum wall thickness, and
D = outside diameter of the tube, in. (or mm).
 - b. The test pressure shall be held for a minimum of 5 s.
 - c. When so agreed upon between the manufacturer and the purchaser, pipe or tube may be tested to one and one-half times the allowable fiber stress given in point C.2.ii.
- iii. When specified by the purchaser, a nondestructive electric test in accordance with Specification A 450 / A 450M may be used instead of or in addition to the hydrostatic test.

D. Length :-

1. When pipe or tube is ordered cut-to-length, the length shall not be less than that specified, but a variation of +1/8 in. (3.2 mm) will be permitted, except that for lengths over 30 ft (9.1 m), a variation of + 1/4 in. (6.4 mm) will be permitted.

E. Test Methods :-

Determine the chemical composition, mechanical, and other properties of the material as enumerated in this specification, in case of disagreement, in accordance with the following methods:

<u>Test</u>	<u>ASTM Designation</u>
Chemical analysis	E 354
Tension	E 8
Rounding procedure	E 29

Related Keywords

- [asme sb677 pdf](#)
- [astm b677 pdf](#)
- [astm b677 pdf free download](#)
- [astm b677](#)
- [asme sb677](#)