Designation: A 908 – 03

Standard Specification for Stainless Steel Needle Tubing[1]

This standard is issued under the fixed designation A 908; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This specification covers austenitic, stainless steel, needle tubing in hard-drawn tempers for industrial applications.

1.2 In general, needle tubing describes small-diameter tubing with outside diameters (ODs) in the range of 0.008 to 0.203 in. (0.2 to 5.2 mm) with nominal wall thicknesses in the range of 0.002 to 0.015 in. (0.05 to 0.4 mm). Needle tubing gages are normally 6 through 33.

1.3 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

2. Referenced Documents

2.1 *ASTM Standards:*

A 1016/A 1016M Specification for General Requirements for Ferritic Alloy Steel, Austenitic Alloy Steel, and Stainless Steel Tubes[2]

3. Ordering Information

3.1 Orders for material in accordance with this specification should include the following, as required, to describe the material adequately:

3.1.1 Quantity (feet, metres, or number of lengths),

3.1.2 Gage or size (outside diameter and minimum wall thickness),

3.1.3 Length (specific or random), and

3.1.4 Test report required (see the section on certification in Specification A 1016/A 1016M).

4. Process

4.1 An electric furnace or other similar primary melting process with or without degassing or refining may be used.

TABLE 1 Chemical Requirements

Carbon	0.08 max
Manganese	2.00 max
Phosphorous	0.040 max
Sulfur	0.030 max
Silicon	0.75 max
Chromium	18.0–20.0
Nickel	8.0–11.0

5. General Requirements

5.1 Material furnished in accordance with this specification shall conform to the applicable requirements of the current edition of Specification A 1016/A 1016M, unless otherwise provided herein.

TABLE 2 Tensile Requirements

Tensile strength, ksi (MPa)	150–200 (1030–1370)

6. Manufacture

6.1 Needle tubing shall be made by the seamless or welded and drawn process and shall be furnished in the hard-drawn temper condition.

7. Heat Treatment

7.1 Unless otherwise specified by the purchaser, no heat treatment is required.

8. Chemical Composition

8.1 Stainless steel, Type 304, UNS S30400, in accordance with Table 1 shall be used.

8.2 *Heat Analysis*—An analysis of each heat of steel shall be made by the manufacturer from samples made during the pour. The chemical composition thus determined shall meet the requirements of Table 1.

8.3 *Product Analysis*—An analysis may be made by the purchaser from finished tubing. The chemical composition thus determined shall meet the requirements of Table 1.

[1] This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.10 on Stainless and Alloy Steel Tubular Products.

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[2] *Annual Book of ASTM Standards*, Vol 01.01.

***A Summary of Changes section appears at the end of this standard.**

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9. Mechanical Properties

9.1 *Tensile Requirements*—The tubing shall meet the tensile properties specified in Table 2. Yield strength, elongation, and hardness tests are not required for needle tubing.

9.2 *Number of Tests*—Two tension tests for each 5000 ft of product per heat shall be performed.

10. Dimensions

10.1 *Sizes and Tolerances*—Needle tubing sizes and dimensions shall be in accordance with Table 3.

TABLE 3 Sizes and Tolerances

Gage No.	OD, in.	OD Tolerance, in. (±)	Nominal Wall, in.	Wall Tolerance, in. (±)
6	0.203	0.001	0.015	0.001
7	0.180	0.001	0.015	0.001
8	0.165	0.001	0.015	0.001
9	0.148	0.001	0.015	0.001
10	0.134	0.001	0.014	0.001
11	0.120	0.001	0.013	0.001
12	0.109	0.001	0.012	0.001
13	0.095	0.001	0.012	0.001
14	0.083	0.001	0.010	0.001
15	0.072	0.0005	0.009	0.0005
16	0.065	0.0005	0.009	0.0005
17	0.059	0.0005	0.009	0.0005
18	0.050	0.0005	0.0085	0.0005
19	0.0425	0.0005	0.00775	0.0005
20	0.0355	+0.0005/–0.000	0.00625	+0.000/–0.0005
21	0.032	+0.0005/–0.000	0.00625	+0.000/–0.0005
22	0.028	+0.0005/–0.000	0.00625	+0.000/–0.0005
23	0.025	+0.0005/–0.000	0.00625	+0.000/–0.0005
24	0.022	+0.0005/–0.000	0.00525	+0.000/–0.0005
25	0.020	+0.0005/–0.000	0.00525	+0.000/–0.0005
26	0.018	+0.0005/–0.000	0.00425	+0.000/–0.0005
27	0.016	+0.0005/–0.000	0.00425	+0.000/–0.0005
28	0.014	+0.0005/–0.000	0.0035	0.00025
29	0.013	+0.0005/–0.000	0.003	0.00025
30	0.012	+0.0005/–0.000	0.003	0.00025
31	0.010	+0.0005/–0.000	0.0025	0.00025
32	0.009	+0.0005/–0.000	0.0025	0.00025
33	0.008	+0.0005/–0.000	0.002	0.00025

11. Keywords

11.1 needle tubing; stainless steel

SUMMARY OF CHANGES

Committee A01 has identified the location of selected changes to this standard since the last edition (A 908-91 (1998)) that may impact the use of this standard (approved April 2003).

(1) Replaced Specification A 450/A 450M with Specification A 1016/A 1016M.

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