



Designation: A908 – 03 (Reapproved 2019)

Standard Specification for Stainless Steel Needle Tubing¹

This standard is issued under the fixed designation A908; 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 U.S. 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 standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

A1016/A1016M Specification for General Requirements for Ferritic Alloy Steel, Austenitic Alloy Steel, and Stainless Steel Tubes

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 Gauge 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 **A1016/A1016M**).

4. Process

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

5. General Requirements

5.1 Material furnished in accordance with this specification shall conform to the applicable requirements of the current edition of Specification **A1016/A1016M**, unless otherwise provided herein.

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**.

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.

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.

Current edition approved March 1, 2019. Published March 2019. Originally approved in 1991. Last previous edition approved in 2013 as A908 – 03 (2013). DOI: 10.1520/A0908-03R19.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.



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

11. Keywords

11.1 needle tubing; stainless steel

TABLE 2 Tensile Requirements

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

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

Gauge 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

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, Tel: (978) 646-2600; <http://www.copyright.com/>



Contact ASTM

Call Us

Monday through Friday 8:30am-6:00pm Eastern US
Standard Time

Sales & Support

1-877-909-2786 (USA & Canada)

International

001-610-832-9585 (Customer Service)

001-610-832-9578 (Technical Support)

ASTM Headquarters

100 Barr Harbor Drive
P.O. Box C700
West Conshohocken, PA
19428-2959, USA
Tel: +1.610.832.9500
Fax: +1.610.832.9555
service@astm.org
[Directions](#)

Washington Office

1850 M Street, NW
Suite 1030
Washington, DC 20036
[Jeffrey Grove](#)
Tel: +1.202.223.8505

Latin America Office

EnginZone
Monterosa 233
of. 402 Chacarilla del Estanque
Surco, Lima 33
PERU
[Maria Isabel Barrios](#)
Tel: +51 (1) 205-5502



Contact ASTM

Call Us

Monday through Friday 8:30am-6:00pm Eastern
US Standard Time

Sales & Support

1-877-909-2786 (USA & Canada)

International

001-610-832-9585 (Customer Service)

001-610-832-9578 (Technical Support)

Canada Office

171 Nepean Street, Suite 400
Ottawa, ON K2P 0B4
[Diane Thompson](#)
Tel: +1.613.751.3409

Brussels Office

Rue de la Loi 67
B-1040 Brussels,
Belgium
[Sara Gobbi](#)
Tel +32.(0)2.8405127

China Office

Suite EF-09, Twin Towers East,
B-12 Jianguomenwai Ave.
Chaoyang District, Beijing, P.R. China
100022
[Liu Fei](#)
Tel: +86.10.5109.6033
Fax: +86.10.5109.6039



Contact ASTM

Call Us

Monday through Friday 8:30am-6:00pm Eastern
US Standard Time

Sales & Support

1-877-909-2786 (USA & Canada)

International

001-610-832-9585 (Customer Service)

001-610-832-9578 (Technical Support)

Media Contact

[Nathan Osburn](#), Director,
Corporate Communications
Tel: +610.832.9603