

ASME B36.19-2022
(Revision of ASME B36.19M-2018)

Welded and Seamless Wrought Stainless Steel Pipe

AN AMERICAN NATIONAL STANDARD



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Mechanical Engineers**

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Two Park Avenue • New York, NY • 10016 USA

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FOREWORD

This Standard for corrosion-resistant piping, designated categorically as *stainless*, is based on the same principles that formed the background for the development of ASME B36.10M, Welded and Seamless Wrought Steel Pipe, and reference is made to this source of information.

The more recent development of the highly alloyed stainless steels has brought about a minor conflict with convention. With these newer materials, the need for standards is just as great and the present types of threads are just as satisfactory, but the basic cost of the metal is much higher and the art of fusion welding has developed concurrently. The character of stainless steel permits the design of thin-wall piping systems without fear of early failure due to corrosion, and the use of fusion welding to join such piping has eliminated the necessity of threading it. For these reasons, the wall-thickness dimensions shown under Schedule 10S have been developed, based on the conventional formula, but then modified to correspond to the nearest Birmingham Wire Gage (B.W.G.) number.

Following publication of the 1949 edition, a demand developed for a still lighter wall pipe. A Schedule 5S was determined cooperatively by representatives of chemical companies, processing industries, and manufacturers of welding fittings. This was endorsed by the American Standards Association (ASA) Chemical Industry Formulating Committee and the Manufacturers Standardization Society of the Valve and Fittings Industry. The new schedule was included in the revised standard that was approved by ASA [now American National Standards Institute (ANSI)] on April 7, 1952.

In 1956, it was recommended that the wall thickness of 12 in. 5S be lessened, and a new revision of the standard was issued shortly after its approval by ASA on February 27, 1957. In this fourth edition, dimensions were expanded beyond 12 in. pipe size by inclusion of, and reference to, ASTM Specification A409. This revision was approved by ASA on October 29, 1965.

The B36 Standards Committee membership was asked in March 1970 for recommendations as to what action should be taken on ANSI B36.19-1965 since, according to ANSI procedures, this Standard was due for revision or affirmation. The B36 Standards Committee recommended reaffirmation. This action was approved by the Secretariat and by ANSI on May 26, 1971.

In 1975, the B36 Standards Committee undertook a review of the standard, considering its acceptability and usefulness. The results were favorable; some editorial refinements and updates were proposed, along with the incorporation of factors for conversion to SI (metric) units. The revision was approved by the Standards Committee, the Secretariat, and subsequently ANSI on October 4, 1976.

The standard was revised in 1984 to include SI dimensions. The outside diameters and wall thicknesses were converted to millimeters by multiplying the inch dimensions by 25.4. Outside diameters larger than 16 in. were rounded to the nearest 1 mm, and outside diameters 16 in. and smaller were rounded to the nearest 0.1 mm. Wall thicknesses were rounded to the nearest 0.01 mm. These converted and rounded SI dimensions were added. A formula to calculate the SI plain end mass, kg/m, using SI diameters and thicknesses, was added, and the calculations were added. These changes in the standard were approved by the Standards Committee, the Sponsor, and ANSI, and it was designated an American National Standard on October 7, 1985.

The text of the standard was revised in the 2004 edition to conform to the format and content, as appropriate, of ASME B36.10M-2004. A new table was added, combining the information in the previous tables into a single table. Also, the roster of the disbanded B36 Committee was replaced by the roster of the B32 Committee. The 2004 edition was approved as an American National Standard on June 23, 2004.

The 2018 edition revised some of the outside diameters and plain end masses in [Table 2-1](#) (formerly Table 1). A number of editorial revisions were also made to [Table 2-1](#) and [sections 1, 2, 4, 5, and 7](#). The 2018 edition was approved as an American National Standard on August 13, 2018.

This Standard is available for public review on a continuing basis. This provides an opportunity for additional public review input from industry, academia, regulatory agencies, and the public-at-large.

This 2022 edition modifies the SI outside diameter rounding rules, updates the calculated plain end mass listings in [Table 2-1](#), and adds new Schedule 160S nominal wall thicknesses for standard sizes from NPS $1/8$ to NPS 3 (DN 6 to DN 80) and from NPS 4 to NPS 6 (DN 100 to DN 150). In addition, the designation of the Committee was changed from the B32 to the B36 Committee. ASME B36.19-2022 was approved by ANSI on March 31, 2022.

ASME B36 COMMITTEE

Nominal Wrought Pipe Sizes and Wall Thicknesses

(The following is the roster of the Committee at the time of approval of this Standard.)

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F. W. Tatar, *Chair*
D. Papert, *Secretary*

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CORRESPONDENCE WITH THE B36 COMMITTEE

General. ASME Standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Standard may interact with the Committee by requesting interpretations, proposing revisions or a case, and attending Committee meetings. Correspondence should be addressed to:

Secretary, B36 Standards Committee
The American Society of Mechanical Engineers
Two Park Avenue
New York, NY 10016-5990
<http://go.asme.org/Inquiry>

Proposing Revisions. Revisions are made periodically to the Standard to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published periodically.

This Standard is always open for comment, and the Committee welcomes proposals for revisions. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

Proposing a Case. Cases may be issued to provide alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee web page.

Requests for Cases shall provide a Statement of Need and Background information. The request should identify the Standard and the paragraph, figure, or table number(s), and be written as a Question and Reply in the same format as existing Cases. Requests for Cases should also indicate the applicable edition(s) of the Standard to which the proposed Case applies.

Interpretations. Upon request, the B36 Standards Committee will render an interpretation of any requirement of the Standard. Interpretations can only be rendered in response to a written request sent to the Secretary of the B36 Standards Committee.

Requests for interpretation should preferably be submitted through the online Interpretation Submittal Form. The form is accessible at <http://go.asme.org/InterpretationRequest>. Upon submittal of the form, the Inquirer will receive an automatic e-mail confirming receipt.

If the Inquirer is unable to use the online form, he/she may mail the request to the Secretary of the B36 Standards Committee at the above address. The request for an interpretation should be clear and unambiguous. It is further recommended that the Inquirer submit his/her request in the following format:

Subject: Cite the applicable paragraph number(s) and the topic of the inquiry in one or two words.
Edition: Cite the applicable edition of the Standard for which the interpretation is being requested.
Question: Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. Please provide a condensed and precise question, composed in such a way that a "yes" or "no" reply is acceptable.
Proposed Reply(ies): Provide a proposed reply(ies) in the form of "Yes" or "No," with explanation as needed. If entering replies to more than one question, please number the questions and replies.
Background Information: Provide the Committee with any background information that will assist the Committee in understanding the inquiry. The Inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in the format described above may be rewritten in the appropriate format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

Moreover, ASME does not act as a consultant for specific engineering problems or for the general application or understanding of the Standard requirements. If, based on the inquiry information submitted, it is the opinion of the Committee that the Inquirer should seek assistance, the inquiry will be returned with the recommendation that such assistance be obtained.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME Committee or Subcommittee. ASME does not “approve,” “certify,” “rate,” or “endorse” any item, construction, proprietary device, or activity.

Attending Committee Meetings. The B36 Standards Committee regularly holds meetings and/or telephone conferences that are open to the public. Persons wishing to attend any meeting and/or telephone conference should contact the Secretary of the B36 Standards Committee. Future Committee meeting dates and locations can be found on the Committee Page at <http://go.asme.org/B36committee>.

ASME B36.19-2022 SUMMARY OF CHANGES

Following approval by the ASME B36 Committee and ASME, and after public review, ASME B36.19-2022 was approved by the American National Standards Institute on March 31, 2022.

ASME B36.19-2022 includes the following changes identified by a margin note, **(22)**.

<i>Page</i>	<i>Location</i>	<i>Change</i>
1	Title	Revised
1	2	Last paragraph revised
1	5	Nomenclature for <i>D</i> revised in both instances
2	8	Revised
3	Table 2-1	Revised in its entirety
2	9	Added

WELDED AND SEAMLESS WROUGHT STAINLESS STEEL PIPE (22)

1 SCOPE

This Standard covers the standardization of dimensions of welded and seamless wrought stainless steel pipe for high or low temperatures and pressures.

The word “pipe” is used, as distinguished from “tube,” to apply to tubular products of dimensions commonly used for pipeline and piping systems.

(22) 2 SIZE

The size of all pipe in [Table 2-1](#) is identified by the dimensionless designator nominal pipe size (NPS) [diamètre nominal (DN)]. Pipes NPS 12 (DN 300) and smaller have outside diameters numerically larger than their corresponding sizes. In contrast, the outside diameters of tubes are numerically identical to the size number for all sizes.

The manufacture of pipe NPS $\frac{1}{8}$ (DN 6) to NPS 12 (DN 300), inclusive, is based on a standardized outside diameter (O.D.). This O.D. was originally selected so that pipe with a standard O.D. and having a wall thickness that was typical of the period would have an inside diameter (I.D.) approximately equal to the nominal size. Although there is no such relation between the existing standard thicknesses — O.D. and nominal size — these nominal sizes and standard O.D.s continue in use as “standard.”

The manufacture of pipe NPS 14 (DN 350) and larger is based on the O.D. being the same as the nominal pipe size.

3 MATERIALS

The dimensional standards for pipe described here are for products covered in ASTM specifications.

4 WALL THICKNESSES

The nominal wall thicknesses are given in [Table 2-1](#). The wall thicknesses for NPS 14 (DN 350) to NPS 22 (DN 550), inclusive, of Schedule 10S; NPS 12 (DN 300) of Schedule 40S; and NPS 10 (DN 250) and NPS 12 (DN 300) of Schedule 80S are not the same as those of ASME B36.10. The suffix “S” in the schedule number is used to differentiate B36.19 pipe from B36.10 pipe. ASME B36.10 includes other pipe thicknesses that are also commercially available with stainless steel material.

5 WEIGHTS/MASSES

The nominal weights (masses)¹ of steel pipe are calculated values and are tabulated in [Table 2-1](#).

(a) The nominal plain end weight, in pounds per foot, is calculated using the following equation:

$$W_{pe} = 10.69(D - t)t$$

where

D = outside diameter to the nearest 0.001 in. for NPS 8 and smaller, and to the nearest 0.01 in. for NPS 10 and larger (the symbol D is used for O.D. only in mathematical equations or formulas)

t = specified wall thickness, rounded to the nearest 0.001 in.

W_{pe} = nominal plain end weight, rounded to the nearest 0.01 lb/ft

(b) The nominal plain end mass, in kilograms per meter, is calculated using the following equation:

$$M_{pe} = 0.0246615(D - t)t$$

where

D = outside diameter to the nearest 0.01 mm for DN 200 and smaller, and to the nearest 0.1 mm for DN 250 and larger (the symbol D is used for O.D. only in mathematical equations or formulas)

M_{pe} = nominal plain end mass, rounded to the nearest 0.01 kg/m

t = specified wall thickness, rounded to the nearest 0.01 mm

6 PERMISSIBLE VARIATIONS

Variations in dimensions differ depending upon the method of manufacture employed in making the pipe to the various specifications available. Permissible variations for dimensions are indicated in each specification.

7 PIPE THREADS

Unless otherwise specified, the threads of threaded pipe shall conform to ASME B1.20.1.

Schedules 5S and 10S wall thicknesses do not permit threading in accordance with ASME B1.20.1.

¹ The different grades of stainless steel have different specific densities; hence their weights (masses) may be less than or greater than the values listed in [Table 2-1](#) would indicate [see [Table 2-1](#), General Note (e)].