ASME B16.25-2003
(Revision of ASME B16.25-1997)

Buttwelding Ends

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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Three Park Avenue • New York, NY 10016

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The next edition of this Standard is scheduled for publication in 2008. There will be no addenda issued to this edition.

ASME issues written replies to inquiries concerning interpretations of technical aspects of this Standard. Interpretations are published on the ASME Web site under the Committee Pages at http://www.asme.org/codes/ as they are issued, and will also be published within the next edition of the Standard.

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CONTENTS

FOREWORD

In July 1953, the American Welding Society presented a proposal on Welding End Preparation to Sectional Committee B16 of the American Standards Association (ASA), with the recommendation that it be considered as a candidate American Standard. The proposal was expanded to include welding preparation for flanges and valves covered by ASA B16.5, Steel Pipe Flanges and Flanged Fittings, and for fittings covered by ASA B16.9, Buttwelding Fittings. Consideration was also given to Pipe Fabrication Institute Standard ES-1.

The third draft reviewed by Subcommittee 3, Subgroup 6 (now Subcommittee F) of the B16 Sectional Committee was forwarded to the Committee, to the cosponsor organizations, and thence to ASA for approval. Final approval was given on September 14, 1955, with the designation ASA B16.25–1955.

Revisions were developed as need for clarification and improvement became known, and were approved as ASA B16.25–1958 and ASA B16.25–1964. After ASA reorganized as the American National Standards Institute (ANSI) and the Sectional Committee became American National Standards Committee B16, a further revision was approved as ANSI B16.25–1972.

Subcommittee F immediately began work on a major expansion and updating of the standard, adding illustrations and requirements for welding end configurations applicable to a number of specific circumstances, including cast steel and alloy valves. When a draft had been developed that overcame the many problems and conflicting demands, the Standards Committee, cosecretariat organizations, and ANSI concurred in approval of ANSI B16.25–1979 on July 18, 1979.

In 1982, American National Standards Committee B16 was reorganized as an ASME Committee operating under procedures accredited by ANSI. In the 1986 edition, inch dimensions were established as the standard and numerous changes in text and format were made. Notes for illustrations were also clarified. Following approval by the Standards Committee and ASME, approval as American National Standard was given by ANSI on October 8, 1986, with the new designation ASME/ANSI B16.25–1986.

In 1992, the subcommittee revised the requirements for the preparation of the inside diameter of welding end. The references in Annex B were also updated. After public review and approval by ASME, this edition was approved by ANSI on October 26, 1992, with the new designation ASME B16.25–1992.

In the 1997 Edition, metric dimensions were added as an independent but equal standard to the inch units. An Annex was also added to reference quality system requirements. Following approval by the Standards Committee and ASME, this revision to the 1992 edition of B16.25 was approved as an American National Standard by ANSI on April 17, 1997, with the new designation ASME B16.25–1997.

In this 2003 Edition, the reference standard dates were updated. There were clarifications to text made to address inquiries. Tolerances on bevel angles were modified slightly. Following approval by the Standards Committee and ASME, this revision of the 1997 edition of B16.25 was approved as an American National Standard by ANSI on December 17, 2003, with the new designation ASME B16.25-2003.

Requests for interpretation or suggestions for revision should be sent to the Secretary, B16 Committee, The American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990.

ASME B16 STANDARDS COMMITTEE
Standardization of Valves, Flanges, Fittings, and Gaskets

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

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CORRESPONDENCE WITH THE B16 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, and attending Committee meetings. Correspondence should be addressed to:

Secretary, B16 Standards Committee
The American Society of Mechanical Engineers
Three Park Avenue
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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.

The Committee welcomes proposals for revisions to this Standard. 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.

Interpretations. Upon request, the B16 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 B16 Standards Committee.

The request for 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.
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. The inquirer may also include any plans or drawings, which are necessary to explain the question; however, they should not contain proprietary names or information.

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

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 B16 Standards Committee regularly holds meetings, which are open to the public. Persons wishing to attend any meeting should contact the Secretary of the B16 Standards Committee.

BUTTWELDING ENDS

1 SCOPE

1.1 General

This Standard covers the preparation of buttwelding ends of piping components to be joined into a piping system by welding. It includes requirements for welding bevels, for external and internal shaping of heavy-wall components, and for preparation of internal ends (including dimensions and tolerances). Coverage includes preparation for joints with the following:

(a) no backing rings
(b) split or noncontinuous backing rings
(c) solid or continuous backing rings
(d) consumable insert rings
(e) gas tungsten arc welding (GTAW) of the root pass.

Details of preparation for any backing ring must be specified when ordering the component.

1.2 Application

This Standard applies to any metallic materials for which a welding procedure can be satisfactorily qualified, but does not prescribe specific welding processes or procedures. Unless otherwise specified by the purchaser, it does not apply to welding ends conforming to ASME B16.5 or B16.9.

1.3 Standard Units

The values stated in either metric or inch units are to be regarded separately as standard. Within the text, the inch units are shown in parentheses. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the Standard.

1.4 Size

NPS, followed by a dimensionless number, is the designation for nominal fitting size. NPS is related to the reference nominal diameter, DN, used in international standards. The relationship is typically as follows:

NPS	DN
½	15
¾	20
1	25
1¼	32
1½	40
2	50
2½	65
3	80
4	100

For NPS ≥ 4, the related DN is: DN = 25 × NPS

1.5 Referenced Standards

Standards and specifications adopted by reference in this Standard are shown in Mandatory Appendix II, which is part of this Standard. It is not considered practical to identify the specific edition of each standard and specification in the individual references; instead, the specific edition is identified in Mandatory Appendix II. An end preparation made in conformance to this Standard in all other respects will be considered to be in conformance to the Standard even though the edition reference may be changed in a revision of the Standard.

1.6 Quality Systems

Nonmandatory requirements relating to the manufacturer's quality system program are described in Nonmandatory Appendix A.

1.7 Convention

For the purpose of determining conformance with this Standard, the convention for fixing significant digits where limits, maximum or minimum values, are specified shall be "rounding off" as defined in ASTM Practice E 29. This requires that an observed or calculated value shall be rounded off to the nearest unit in the last right-hand digit used for expressing the limit. Decimal values and tolerances do not imply a particular method of measurement.

2 TRANSITION CONTOURS

Figure 1 delineates the maximum envelope in which transitions from welding bevel to the outer surface of the component and from the root face to the inner surface of the component must lie. Except as specified in Note (5) to Fig. 1 and as otherwise specified by the purchaser, the exact contour within this envelope is the manufacturer's option, providing it maintains the specified minimum wall thickness, has no slopes steeper than those indicated for the respective regions, and includes the proper surface for backing rings if specified.

3 WELDING BEVEL DESIGN

3.1 Bevels for Other Than GTAW Root Pass

(a) Components having nominal wall thicknesses of 3 mm (0.12 in.) and less shall have ends cut square or slightly chamfered.