ASME B32.100-2016
[Revision of ASME B32.100-2005 (R2011)]

Preferred Metric Sizes for Flat, Round, Square, Rectangular, and Hexagonal Metal Products

AN AMERICAN NATIONAL STANDARD

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The American Society of Mechanical Engineers
Two Park Avenue • New York, NY • 10016 USA

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This Standard will be revised when the Society approves the issuance of a new edition. This Standard will become effective 1 year after the Date of Issuance.

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The American Society of Mechanical Engineers
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FOREWORD

The U.S. Department of Commerce, in its July 1971 report to Congress, titled "A Metric America — A Decision Whose Time Has Come," recommended that the United States should change to the metric system of measurement through a coordinated national program. This action, along with subsequent increased metric activity in industry, resulted in a number of requests from producers and users that the B32 Committee develop preferred series of metric sizes for the various forms of wrought metal mill products.

The B32.100 standard is based on the previously published standards B32.3M-1984 and B32.4M-1980. Development of these standards was started in 1973. The proposal received Standards Committee B32 approval on June 4, 1974. It was subsequently approved by the sponsor and submitted to the American National Standards Institute (ANSI) for designation as an American National Standard. This was granted on July 9, 1974. The last edition was approved by ANSI on September 24, 1984 and reaffirmed in 1994.

The sizes in this Standard are derived from a list of preferred metric sizes in which each number is approximately 60% greater than the number preceding it (ANSI B4.2 or ISO 497 Series R5'). Second Choice sizes are in increments of 25% (Series R10') and Third Choice sizes in increments of 12% (Series R20'). Some deviations from this principle occur as the result of minor rounding. The selected sizes also reflect standard material sizes in ISO and national standards in traditional metric countries.

In 2002, the B32 Committee established a task force to draft a new metric standard for the product group: ASME B32.100-200X Preferred Metric Sizes for Flat, Round, Square, Rectangular, and Hexagonal Metal Products.

Material tolerances must be included in order to fully define the size of a product. International or leading national metric standards data were used as the basis for the tolerance data included in this Standard. References to the sources of these tolerances have been made, and a list of related standards are shown in Nonmandatory Appendix A.

The 2005 edition was approved by ANSI on February 11, 2005.

The present edition deleted obsolete references, the year date of the referenced standards have been deleted, and some corrections were made to Nonmandatory Appendix A. The present edition also includes additional data and clarification related to para. 5.8 and Table 13.

The present edition was approved by ANSI on June 29, 2016.

ACKNOWLEDGEMENT

Data shown in this Standard were developed with the help of the global standards material published in the book, *Metric Standards for Worldwide Manufacturing*, with the permission of the publishers, ASME Press and *GO*metric*USA*.org.

ASME B32 COMMITTEE
Metal and Metal Alloy Wrought Mill Product Nominal Sizes

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

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CORRESPONDENCE WITH THE B32 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, B32 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.

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.

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 B32 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 B32 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 B32 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.

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 B32 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 B32 Standards Committee. Future Committee meeting dates and locations can be found on the Committee Page at go.asme.org/B32committee.

PREFERRED METRIC SIZES FOR FLAT, ROUND, SQUARE, RECTANGULAR, AND HEXAGONAL METAL PRODUCTS

1 SCOPE

This Standard establishes a preferred series of metric thicknesses, widths, and lengths for flat metal products of rectangular cross section. The thicknesses and widths shown in this Standard are also applicable to base metals that may be coated in later operations. This Standard also establishes a preferred series of metric sizes for round, square, rectangular, and hexagonal metal products.

2 GENERAL

The sizes in this Standard provide an orderly series of thicknesses for all flat metal products and widths for rectangular cross-section metal products. The series was developed to provide a reasonable selection of metal thicknesses from 0.050 mm to 300 mm and of metal widths from 10 mm to 5 000 mm. In each case, the series provides for some second, third, and sometimes fourth choice sizes (thicknesses and widths) to cover instances where selection from the primary preferred sizes may be inadequate. Sufficient coverage in logical steps is presented in the tables to adequately serve most of the general purpose requirements of industry for flat metal products. This Standard provides an orderly series of lengths for flat metal products.

This Standard also provides a series of sizes for each of round, square, rectangular, and hexagonal forms of metal products used for general applications. The series was developed to provide a reasonable selection of metal diameters from 0.020 mm to 320 mm for rounds and distance-across-flats from 3 mm to 300 mm for squares, various cross-section sizes from 1.6 mm by 2 mm to 100 mm by 200 mm for rectangles, and from 1.5 mm to 150 mm for hexagons. The series provides for some second, third, and fourth choice diameters for rounds and second and third choice distance-across-flats for squares and hexagons, where selection from the primary preferred sizes may be inadequate. The series also provides for preferred lengths of rounds, squares, rectangles, and hexagons. Sufficient coverage in logical steps is presented in the tables to adequately serve most of the general purpose requirements of industry for round, square, rectangular, and hexagonal metal products.

It is recognized that for some applications, particularly large-volume requirements in some metals for specific end uses, precise engineering requirements dictate a need for sizes other than those presented in this Standard. This Standard is in no way meant to preclude the use of such sizes where they are required. However, for general purpose applications or where requirements permit some latitude in the selection of thickness or thickness/width/length combinations, the simplified preferred sizes given in this Standard should facilitate interchangeability of metals in design, reduce inventories, and increase the availability of warehouse stocks of those sizes commonly used for general purpose applications. In such instances, the use of sizes listed in this Standard is to be encouraged.

All of the sizes included in this Standard are not necessarily produced in all metals and grades. Producers or distributors should be consulted to determine availability of a particular thickness or thickness/width combination for a given metal product.

3 USE OF TABLES

Wherever possible, sizes should be selected from the columns headed “First Choice.” Only if no size in the preferred list is suitable should a selection be made from the columns headed “Second Choice” or “Third Choice.” Lengths should be selected from the preferred list.

4 BASIS OF TABLES

The sizes in this Standard are derived from a list of preferred metric sizes in which each number is approximately 60% greater than the number preceding it [ANSI B4.2 (Preferred Metric Limits and Fits) or ISO 497 (Guide to the choice of series of preferred numbers and series containing more rounded values of preferred numbers) Series R5']. Second Choice sizes are in increments of 25% (Series R10') and Third Choice sizes in increments of 12% (Series R20'). Some deviations from this principle occur as the result of minor rounding. The selected sizes also reflect standard material sizes in ISO and national standards in traditional metric countries.

5 TOLERANCES

Material product tolerances are shown in applicable international or national product standards. Normal tolerances shown in international standards are generally larger and could be up to twice as large for metric material compared with customary inch tolerances used in the U.S. Only a few major product groups will be covered by this Standard, and they are specified in paras. 5.1 through 5.8.