ANSI H35.2-2017
Revision of H35.2-2013

American National Standard Dimensional Tolerances for Aluminum Mill Products

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Secretariat

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Foreword

This Standard is a revision of "American National Standard Dimensional Tolerances for Aluminum Mill Products" issued in 2013 (ANSI H35.2-2013).

The tolerances included in this Standard were developed by the Technical Committee of The Aluminum Association. They are broadly accepted both within the aluminum industry itself and by users of the metal. They are the basis of the dimensional tolerances specified in U.S. government, technical society, and other specifications for aluminum products. They represent the maximum deviation from specified dimensions that may be expected in any individual piece. For most pieces the deviation from specified dimensions will be less than the tolerance shown.

Work on the tolerances began in the Aluminum Association in 1949, five years before its Technical Committee was established. In that year a special committee was appointed by the Association's Extruded Products Division to develop drafting standards for these products. One of the committee's assignments was to develop standard tolerances for aluminum extrusions. The committee completed its work later in 1949, and the Association issued the first edition of its *Drafting Standards for Extruded and Tubular Products*, including the tolerances, in October of that year.

By 1954, the Association's technical activities had grown to the point that a standing Technical Committee was needed. One of the first jobs undertaken by this committee was the compilation of mechanical property data for commonly used aluminum alloys and dimensional tolerances for other aluminum mill products. This work was completed later in 1954, and the resulting data were published in the first edition of the Association's "Standards for Aluminum Mill Products" in June 1955. Successive editions of the "Standards for Aluminum Mill Products" have been revised to include new data and to keep the manual abreast of industry advances. In 1968 the title was changed to "Aluminum Standards and Data" to reflect the adoption of a revised format.

Many refinements have been made in the tolerances as experience was gained in their use. In addition, tolerances have been developed for products not covered initially, and the data have been extended to embrace the larger sizes now being produced. All of these additions and refinements have been incorporated into this Standard. Included also are definitions of the various products as given in "Aluminum Standards and Data" published by the Aluminum Association, and standard limits for expressing the tolerances.

This Standard was originally developed and subsequently revised using the "canvass" method and published under the proprietary sponsorship of the Aluminum Association. At the request of the Aluminum Association, the establishment of Standards Committee H35 on Aluminum and Aluminum Alloys was authorized by the American National Standards Institute on 17 February 1970, with the Association serving as Secretariat.

The 1971 revision of ANSI H35.2 was the first revision developed by Standards Committee H35, under the "Standards Committee" procedures, and the 1972, 1975, 1978, and 1982 revisions were developed under the auspices of that Committee.

Standards Committee H35 was transferred to an Accredited Standards Committee on December 28, 1983, and this revision was developed under the Accredited Standards Committee method.

This latest (2017) revision consists of updated illustrations, removal of footnote 1, changes to the list of definitions, the addition of the definition of applicable limits, edits to the definition of mean wall thickness, editorial corrections and clarifications to table headings and footnotes. These changes are indicated by highlights in the text.

Errata: A typographical error was corrected in Col. 4 of Table 11.2 Cross-Sectional Dimension Tolerances—Profiles. Column 4 heading was changed from "At Dimensioned Points 0.250-**0.642** inches from Base of Leg" to "At Dimensioned Points 0.250-**0.624** inches from Base of Leg."

Dimensional Tolerances for Aluminum Mill Products

1. Definitions

Bar—A solid wrought product that is long in relation to its cross section which is square or rectangular (excluding plate and flattened wire) with sharp or rounded corners or edges, or is a regular hexagon or octagon, that is typically supplied in straight lengths and in which at least one perpendicular distance between parallel faces is 0.375 inch or greater. In North America, below this limit the product is called "Wire." In Europe, bar is supplied in straight lengths; if supplied in coiled form, the product is called "Wire."

Fin Stock—Coiled sheet or foil suitable and intended for manufacture of fins for heat-exchanger applications.

Foil—Generally, a rolled product rectangular in cross section of thickness equal to or less than 0.0079 inch (Formerly 0.006 inch, changed to 0.0079 inch for international harmonization). There is an overlap in the thickness range 0.006-0.0079 inch defined for foil and sheet. Foil products in this thickness range are supplied to foil product specifications.

Forging Stock—A solid product, typically ingot, rod, bar for profile, intended and suitable for forging. Forging stock is typically a cast product or an extruded product.

Pipe—Tube in standardized combinations of outside diameter and wall thickness. Pipe is commonly designated by "Nominal Pipe Sizes" and "ANSI Schedule Numbers."

Plate—A rolled product that is rectangular in cross section and with thickness not less than 0.250 inch with sheared or sawed edges.

Tread Plate—Plate (or sheet) upon which a pattern has been impressed on one side, by rolling using a specially prepared roll with an appropriate pattern, to provide improved traction.

Profile—A wrought product that is long in relation to its cross-sectional dimensions which is of a form other than that of sheet, plate, rod, bar, tube, wire or foil. For profiles sometimes the term "Shape" or "Section" is used; however; the term "Shape" is no longer recommended.

Structural Profile—A profile, rolled or extruded, commonly used for structural purposes such as angles, channels, H-beams, I-beams, tees, and zees.

Rod—A solid wrought product of circular cross section that is long in relation to its diameter, typically supplied in straight lengths. In North America, the minimum diameter of a rod is 0.375 inch; below this limit, the product is called "Wire." In Europe, rod is supplied in straight lengths and is often called "Round Bar"; if supplied in coiled form, the product is called "Wire."

Shape—This term is no longer recommended. The term "Profile" is preferred. See "Profile."

Sheet—Generally, a rolled product that is rectangular in cross section with thickness greater than 0.006 inch and less than 0.250 inch with slit, sheared or sawed edges. There is an overlap in the thickness range of 0.006-0.0079 inch defined for foil and sheet. Sheet products in this thickness range are supplied to sheet product specifications.

Alclad Sheet—A composite aluminum sheet having an aluminum core and a metallurgically bonded aluminum layer or layers anodic to the core, on one or both sides, thus electrolytically protecting the core against corrosion. If only one side is clad, the product is often named "Alclad One Side Sheet."

Brazing Sheet—Sheet of a low melting temperature alloy used for brazing or a clad sheet product having a bonded layer or layers of a low melting temperature alloy used for brazing.

Duct Sheet—Coiled or flat sheet suitable for duct applications.

Tube—A hollow wrought product of uniform cross-section with only one enclosed void and with a uniform wall thickness, supplied in straight lengths or in coiled form. Cross-sections are in the shape of circles, ovals, squares, rectangles, equilateral triangles or regular polygons and can have corners rounded, provided the inner and outer cross-sections are concentric and have the same form and orientation. Tube can be formed by extrusion or by forming and joining of sheet.

Heat-Exchanger Tube—A tube used in an apparatus in which fluid inside the tube will be heated or cooled by fluid outside the tube, but the term is typically not applied to coiled tube or to tube for use in refrigerators or radiators.

Welded Tube—A tube produced by longitudinal seam-welding, typically of formed sheet. Welded tube can be fabricated by arc-welding with or without welding wire, high frequency seam welding, or any other type of welding.

Wire—A solid wrought product that is long in relation to its cross section, which is square or rectangular with sharp or rounded corners or edges, or is round,