Designation: B881 – 09

Standard Terminology Relating to Aluminum- and Magnesium-Alloy Products[1]

This standard is issued under the fixed designation B881; 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.

1. Scope*

1.1 This terminology covers the principal terms and definitions relating to aluminum- and magnesium-alloy products. It is published to encourage uniformity of terminology throughout Committee B07 product specifications.

1.2 Certain definitions and definitions of terms specific to a standard will remain in the individual standards and will not be included in this terminology (see 3.4).

2. Referenced Documents

2.1 *ASTM Standards:*[2]

B26/B26M Specification for Aluminum-Alloy Sand Castings
B80 Specification for Magnesium-Alloy Sand Castings
B85 Specification for Aluminum-Alloy Die Castings
B90/B90M Specification for Magnesium-Alloy Sheet and Plate
B91 Specification for Magnesium-Alloy Forgings
B92/B92M Specification for Unalloyed Magnesium Ingot and Stick For Remelting
B93/B93M Specification for Magnesium Alloys in Ingot Form for Sand Castings, Permanent Mold Castings, and Die Castings
B94 Specification for Magnesium-Alloy Die Castings
B107/B107M Specification for Magnesium-Alloy Extruded Bars, Rods, Profiles, Tubes, and Wire
B108 Specification for Aluminum-Alloy Permanent Mold Castings
B179 Specification for Aluminum Alloys in Ingot and Molten Forms for Castings from All Casting Processes
B199 Specification for Magnesium-Alloy Permanent Mold Castings
B209 Specification for Aluminum and Aluminum-Alloy Sheet and Plate
B210 Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes
B211 Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire
B221 Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
B234 Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes for Condensers and Heat Exchangers
B236 Specification for Aluminum Bars for Electrical Purposes (Bus Bars)
B241/B241M Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube
B247 Specification for Aluminum and Aluminum-Alloy Die Forgings, Hand Forgings, and Rolled Ring Forgings
B308/B308M Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles
B313/B313M Specification for Aluminum and Aluminum-Alloy Round Welded Tubes
B316/B316M Specification for Aluminum and Aluminum-Alloy Rivet and Cold-Heading Wire and Rods
B317/B317M Specification for Aluminum-Alloy Extruded Bar, Rod, Tube, Pipe, Structural Profiles, and Profiles for Electrical Purposes (Bus Conductor)
B345/B345M Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube for Gas and Oil Transmission and Distribution Piping Systems
B361 Specification for Factory-Made Wrought Aluminum and Aluminum-Alloy Welding Fittings
B373 Specification for Aluminum Foil for Capacitors (Withdrawn 2015)[3]
B403 Specification for Magnesium-Alloy Investment Castings
B404/B404M Specification for Aluminum and Aluminum-Alloy Seamless Condenser and Heat-Exchanger Tubes with Integral Fins (Withdrawn 2006)[3]
B429/B429M Specification for Aluminum-Alloy Extruded Structural Pipe and Tube
B479 Specification for Annealed Aluminum and Aluminum-Alloy Foil for Flexible Barrier, Food Contact, and Other Applications (Withdrawn 2015)[3]

[1] This terminology is under the jurisdiction of ASTM Committee B07 on Light Metals and Alloys and is the direct responsibility of Subcommittee B07.03 on Aluminum Alloy Wrought Products.

Current edition approved June 1, 2009. Published July 2009. Originally approved in 1998. Last previous edition approved in 2005 as B881 – 05. DOI: 10.1520/B0881-09.

[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.

[3] The last approved version of this historical standard is referenced on www.astm.org.

***A Summary of Changes section appears at the end of this standard**

B483/B483M Specification for Aluminum and Aluminum-Alloy Drawn Tube and Drawn Pipe for General Purpose Applications
B491/B491M Specification for Aluminum and Aluminum-Alloy Extruded Round Tubes for General-Purpose Applications
B547/B547M Specification for Aluminum and Aluminum-Alloy Formed and Arc-Welded Round Tube
B594 Practice for Ultrasonic Inspection of Aluminum-Alloy Wrought Products
B618 Specification for Aluminum-Alloy Investment Castings
B632/B632M Specification for Aluminum-Alloy Rolled Tread Plate
B646 Practice for Fracture Toughness Testing of Aluminum Alloys
B660 Practices for Packaging/Packing of Aluminum and Magnesium Products
B666/B666M Practice for Identification Marking of Aluminum and Magnesium Products
B686 Specification for Aluminum Alloy Castings, High-Strength
B736 Specification for Aluminum, Aluminum Alloy and Aluminum-Clad Steel Cable Shielding Stock (Withdrawn 2015)[3]
B744/B744M Specification for Aluminum Alloy Sheet for Corrugated Aluminum Pipe
B745/B745M Specification for Corrugated Aluminum Pipe for Sewers and Drains
B746/B746M Specification for Corrugated Aluminum Alloy Structural Plate for Field-Bolted Pipe, Pipe-Arches, and Arches
B807/B807M Practice for Extrusion Press Solution Heat Treatment for Aluminum Alloys
B917/B917M Practice for Heat Treatment of Aluminum-Alloy Castings from All Processes
B918 Practice for Heat Treatment of Wrought Aluminum Alloys
B928/B928M Specification for High Magnesium Aluminum-Alloy Sheet and Plate for Marine Service and Similar Environments
B945 Practice for Aluminum Alloy Extrusions Press Cooled from an Elevated Temperature Shaping Process for Production of T1, T2, T5 and T10–Type Tempers
B947 Practice for Hot Rolling Mill Solution Heat Treatment for Aluminum Alloy Plate
B955/B955M Specification for Aluminum-Alloy Centrifugal Castings

3. Terminology

3.1 *Definitions*—The definitions are grouped by subject and listed in alphabetical order.

Alclad, *adj*—having an aluminum or aluminum-alloy coating that is metallurgically bonded to either one side or both surfaces of an aluminum alloy product, and that is anodic to the alloy to which it is bonded, thus electrolytically protecting the core alloy against corrosion. (See also individual product type such as *Alclad plate*, *Alclad sheet*, and so forth). **B209, B210, B211, B221, B234, B241/B241M, B313/B313M, B345/B345M, B404/B404M, B547/B547M**

bar, *n*—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, typically supplied in straight length

NOTE 1: In North America, the minimum perpendicular distance between at least one set of parallel faces of a bar is 0.375 in. or >10 mm; below this limit the product is called "wire".

NOTE 2: In Europe, a bar is supplied in straight length; if supplied in coiled form, the product is called "wire". **B107/B107M, B211, B221, B236, B317/B317M, B594, B666/B666M**

bus bar, n— rigid electric conductor in the form of a bar. **B236, B317/B317M, B666/B666M**

extruded bar, n—bar brought to final dimensions by extruding. **B107/B107M, B221, B236, B317/B317M**

rolled bar, n—bar brought to final dimensions by hot rolling. **B211, B236**

saw-plate bar, n—bar brought to final thickness by hot or cold rolling and to final width by sawing. **B236**

bus conductor, *n*—rigid electric conductor of any cross section. **B236, B317/B317M**

casting, *n*—product at or near finished shape, formed by solidification of the metal in a mold or a die. **B666/B666M, B686**

centrifugal casting, n—casting produced by introducing molten metal into a rotating mold and allowing it to solidify as the mold is spun about a horizontal, inclined or vertical axis. **B955/B955M**

centrifuged casting, n—a casting produced in a mold, a number of which may be mounted around a central sprue. The molds are rotated, in a vertical position, about a central axis concentric with the central sprue, **B955/B955M**

die casting, n—casting produced by introducing molten metal under substantial pressure into a metal die and characterized by a high degree of fidelity to the die cavity. The term "pressure die casting" or "high pressure die casting" is often used for this concept. **B85, B94**

investment casting, n—precision casting formed by a three step process comprising:

a) fabrication of a ceramic mold around a wax or thermoplastic pattern with a refractory slurry that sets at room temperature;

b) removal of the pattern through the use of heat;

c) pouring metal into this mold and allowing it to solidify. **B403, B618**

permanent mold casting, n—casting produced by introducing molten metal by gravity or low pressure into a mold constructed of durable material, usually iron or steel, and allowing it to solidify.

NOTE: permanent mold casting where the metal solidifies in

a metal mold under low pressure (typically less than 1 bar above atmospheric pressure) is also referred to as "low pressure die casting". **B108, B199**

precision casting, n—casting which fulfils special requirements concerning tolerances on form and dimensions.

Precision castings can be produced by different casting processes.

sand casting, n—casting produced by pouring molten metal into a sand mold and allowing it to solidify. **B26/B26M, B80**

semi-permanent mold casting, n—permanent mold casting which is made using an expendable core such as sand. **B108, B199**

circle, *n*—circular blank fabricated from plate, sheet, or foil. **B666/B666M**

extrudate, *n*—material exiting an extrusion die subject to further processing (quenching, stretching, cutting), to become an extruded profile. **B807/B807M**

extrusion billet, *n*—extrusion ingot cut to length and used as the final length of material charged into the extrusion press cylinder. It is usually a cast product but may be a wrought product or sintered from powder compact. **B807/B807M**

extrusion ingot, *n*—ingot, intended and suitable for extruding, typically of solid circular cross-section, sometimes with a central hollow or a flattened cross-section. **B807/B807M**

extrusion log, *n*—extrusion ingot not cut to length. Extrusion log is usually produced in lengths from which shorter extrusion billets are cut. **B807/B807M**

foil, *n*—flat rolled product of rectangular cross-section with uniform thickness equal to or less than 0.0079 in. (0.20 mm [200 microns]). In the USA there is an overlap in the thickness range 0.006-0.0079 in. (0.15-0.20 mm) defined for foil and sheet. Foil products in this gage range are supplied to foil product specifications. **B373, B479, B666/B666M**

bright two-side foil, n—foil having a uniform bright specular finish on both sides. **B373, B479**

matte one-side foil, n—foil having a diffuse reflecting finish on one side and a bright specular finish on the other. (Also called pack rolled foil.) **B373, B479**

forging, *n*—wrought product formed by hammering or pressing, typically when hot, between open dies (hand forging) or closed dies (drop or die forging). **B91, B247, B666/B666M**

blocker-type forging, n—forging made in a single set of impressions to the general contour of a finished part. **B247**

die forging, n—forging shaped by working in closed dies. **B91, B247, B594, B666/B666M**

hammer forging, n—forging produced by repeated blows of a forging hammer. **B91**

hand forging, n—forging worked between flat or simply shaped dies by repeated strokes or blows and manipulation of the piece, intending to convert the metallurgical structure from cast to wrought prior to machining into a final part. **B247, B594, B666/B666M**

rolled ring forging, n—cylindrical product of relatively short height, circumferentially rolled from a hollow section. **B247, B594**

forging stock, *n*—solid product, typically ingot, rod, bar or profile, intended and suitable for forging. Forging stock is typically a cast product or an extruded product. **B247**

ingot, *n*—cast product intended and suitable for remelting or forming by hot or cold working. **B92/B92M, B93/B93M, B179, B666/B666M**

mill finish, *adj*—having a naturally occurring finish after rolling which may vary from piece to piece and within a piece, and which may not be entirely free of stains or oil. See also *mill finish sheet & mill finish plate* . **B209, B632/B632M**

parent coil, *n*—coil processed to final temper as a single unit, intended to be slit and/or cut into smaller coils or into individual sheets or plates. (Also known as master coil) **B209**

parent plate, *n*—plate processed to final temper as a single unit, intended to be cut into smaller plates. **B209**

pipe, *n*—tube in standardized combination of outside diameter and wall thickness, commonly designated by "Nominal Pipe Sizes" and "ANSI Schedule Numbers." **B241/B241M, B317/B317M, B345/B345M, B429/B429M, B666/B666M**

drawn pipe, n—pipe brought to final dimensions by drawing through a die. **B241/B241M, B345/B345M**

extruded pipe, n—pipe formed by hot extruding. **B241/B241M, B317/B317M, B345/B345M, B429/B429M**

seamless pipe, n—extruded or drawn pipe which does not contain any line junctures resulting from the method of manufacture. **B241/B241M, B345/B345M**

structural pipe, n—pipe commonly used for structural purposes. **B429/B429M**

plate, *n*—rolled product that is rectangular in cross section, with thickness not less than 0.250 in. (6.30 mm) and sheared or sawed edges. **B90/B90M, B209, B632/B632M, B660, B666/B666M, B928/B928M**

Alclad plate, n—plate having on one or both surfaces a metallurgically bonded aluminum coating that is anodic to the core, thus electrolytically protecting the core against corrosion. If on one side only is clad, the product is often named "Alclad One Side Plate." **B209, B547/B547M**

mill finish plate, n—plate having a finish defined by the actual roll grinding and rolling conditions, without further specification from a customer or a standard. The finish of mill finish plate can vary from plate to plate or within one plate. **B209, B632/B632M, B928/B928M**

tread plate, n—sheet or plate 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. **B632/B632M, B666/B666M**

producer, *n*—primary manufacturer of the material. **B107/B107M, B209, B210, B211, B221, B234, B241/B241M, B308/**