



Standard Specification for Copper and Copper Alloy Clad Steel Plate¹

This standard is issued under the fixed designation B432; 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 specification establishes the requirements for plate of a carbon steel or low-alloy steel base to which is integrally and continuously bonded on one or both sides a layer of copper or copper-base alloy. The material is generally intended for pressure vessel use but may be used in other structural applications where corrosion resistance or conductivity of the alloy is of prime importance.

1.2 *Units*—The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

2. Referenced Documents

2.1 ASTM Standards:²

A6/A6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling

A20/A20M Specification for General Requirements for Steel Plates for Pressure Vessels

A578/A578M Specification for Straight-Beam Ultrasonic Examination of Rolled Steel Plates for Special Applications

B96/B96M Specification for Copper-Silicon Alloy Plate, Sheet, Strip, and Rolled Bar for General Purposes and Pressure Vessels

B152/B152M Specification for Copper Sheet, Strip, Plate, and Rolled Bar

B171/B171M Specification for Copper-Alloy Plate and Sheet for Pressure Vessels, Condensers, and Heat Exchangers

B846 Terminology for Copper and Copper Alloys

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

¹ This specification is under the jurisdiction of ASTM Committee B05 on Copper and Copper Alloys and is the direct responsibility of Subcommittee B05.01 on Plate, Sheet, and Strip.

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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.

2.2 ASME Code:³

Boiler and Pressure Vessel Code, Section VIII

Boiler and Pressure Vessel Code, Section IX

3. Terminology

3.1 For definitions of terms related to copper and copper alloys, refer to Terminology B846.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *base metal (backing steel)*, *n*—component to which the cladding metal is applied, usually the greater percentage of the composite plate and usually consisting of carbon or low-alloy steel.

3.2.2 *blind flange*, *n*—same as a cover.

3.2.3 *bonding*, *n*—adhesion of one surface to another without the use of an adhesive as a bonding agent.

3.2.4 *cladding metal*, *n*—the copper or copper-base alloy component of the composite plate.

3.2.5 *cover*, *n*—a component with similar features to a tubesheet which is used as a closure and which typically requires surface machining over part of the face while maintaining minimum specified minimum thickness.

3.2.6 *double-clad*, *n*—material is considered as double-clad when both sides of the steel base metal are covered with copper cladding.

3.2.7 *interface*, *n*—of the clad product, is that region of the thickness in which the product transitions from essentially 100 % base metal to 100 % cladding metal, also referred to as the bond or bondzone.

3.2.8 *integrally and continuously bonded*, *adv*—a condition in which the cladding metal and base metal are brought together to form a metallurgical bond at essentially the entire interface of the two metals by means other than those processes that do not produce a homogeneous composite plate.

3.2.9 *plate*, *n*—the term plate as used in this specification applies to material 0.188 in. (4.78 mm) and over in thickness, and over 10 in. (254 mm) in width.

³ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, <http://www.asme.org>.

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