Proposed Revision of:

Cast Copper
Alloy Solder
Joint Pressure
Fittings

Draft Date 06/2021
CAST COPPER ALLOY SOLDER JOINT PRESSURE FITTINGS

1 SCOPE

This Standard for cast copper alloy solder joint pressure fittings designed for use with copper water tube establishes requirements for:

(a) pressure–temperature ratings
(b) abbreviations for end connections
(c) sizes and method of designating openings of fittings
(d) marking
(e) material
(f) dimensions and tolerances
(g) tests

The internal pressure–temperature rating of the system shall be the lowest of the values shown in Table 3.1-1, the solder joint, and those of the tube, valves, or appurtenances.

The maximum recommended pressure–temperature ratings for solder joints using the dimensions of Table 8.2-2, made with typical commercial solders, are given in Nonmandatory Appendix A.

3.2 Bursting Strength

Burst strength at 73°F ± 5°F (23°C ± 2°C) shall be not less than 4 times the 100°F (38°C) internal working-pressure rating shown in Table 3.1-1. For reducing fittings, the applicable internal working pressure shall be that of the largest size of end connection.

2 GENERAL

2.1 Relevant Units

This Standard states values in both SI (Metric) and U.S. Customary units. These systems of units are to be regarded separately as standard. Within the text, the SI units are shown in parentheses. The values stated in each system are not exact equivalents; therefore, it is required that each system of units be used independently of the other. Combining values from the two systems constitutes nonconformance with the Standard.

2.2 References

Standards and specifications adopted by reference in this Standard are shown in Mandatory Appendix I, 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 reference is identified in Mandatory Appendix I.

2.3 Quality System

Requirements relating to the product manufacturer’s quality system programs are described in Nonmandatory Appendix C.

3 PRESSURE–TEMPERATURE RATINGS

3.1 Rating of Fitting and of Joint

The internal pressure–temperature ratings of the fittings are shown in Table 3.1-1.

The internal pressure–temperature rating for a solder joint fitting is dependent not only on fitting and tube strength, but also on the composition of the solder used for the joint and selection of valves and appurtenances.

Fittings manufactured from cast copper alloys containing silicon shall be permanently marked with the designation Si.

Fittings manufactured from cast copper alloys containing bismuth shall be permanently marked with the designation B or Bi.
CAST COPPER ALLOY SOLDER-JOINT PRESSURE FITTINGS

1 SCOPE

This Standard establishes requirements for cast copper alloy solder joint pressure fittings designed for use by soldering or brazing with seamless copper water tube conforming to ASTM B88. Fittings made in accordance with this standard are intended to be assembled with soldering materials conforming to ASTM B32, brazing materials conforming to AWS A5.8, or tapered pipe thread conforming to ASME B1.20.1.

This Standard is allied to ASME B16.22 for wrought copper alloy pressure fittings and ASME B16.50 which covers wrought pressure fittings for brazing only.

This Standard provides requirements for fitting ends of suitable depth to achieve required pressure ratings when joined by either soldering or brazing. It establishes requirements for:

(a) pressure-temperature ratings
(b) abbreviations for end connections
(c) size and method of designating openings of fittings
(d) marking
(e) material
(f) dimensions and tolerances
(g) tests
The following is a list of publications referenced in this Standard. Unless otherwise specified, the latest edition of ASME publications shall apply. Materials manufactured to other editions of the referenced ASTM standard shall be permitted to be used to manufacture fittings meeting the requirements of this Standard as long as the fitting manufacturer verifies the material meets the requirements of the referenced edition.

ANSI/ASME B1.20.1, Pipe Threads, General Purpose (Inch)
ASME B16.3, Malleable Iron Threaded Fittings, Classes 150 and 300
ASME B16.15, Cast Copper Alloy Threaded Fittings, Classes 125 and 250
Publisher: The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016-5990 (www.asme.org)

ASTM B32-08 (R2014), Standard Specification for Solder Metal
ASTM B62-17, Standard Specification for Composition Bronze or Ounce Metal Castings
ASTM B88-16, Standard Specification for Seamless Copper Water Tube
ASTM B584-14, Standard Specification for Copper Alloy Sand Castings for General Applications
ASTM B828-16, Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings
ASTM E29-13, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
Publisher: ASTM International (ASTM), 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959 (www.astm.org)

ISO 9000:2015, Quality management systems — Fundamentals and vocabulary
ISO 9001:2015, Quality management systems — Requirements
ISO 9004:2009, Managing for the sustained success of an organization — A quality management approach
Publisher: International Organization for Standardization (ISO), Central Secretariat, Chemin de Blandonnet 8, Case Postale 401, 1214 Vernier, Geneva, Switzerland (www.iso.org)

MSS SP-25-2013, Standard Practice Marking System for Valves, Fittings, Flanges and Unions
Publisher: Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS), 127 Park Street, NE, Vienna, VA 22180 (www.msshq.org)

May also be obtained from the American National Standards Institute (ANSI), 25 West 43rd Street, New York, NY 10036.
MANDATORY APPENDIX I
REFERENCES

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ASTM B32-08(R2014), Standard Specification for Solder Metal
ASTM B62-17, Standard Specification for Composition Bronze or Ounce Metal Castings
ASTM B88-L620, Standard Specification for Seamless Copper Water Tube
ASTM B584-14, Standard Specification for Copper Alloy Sand Castings for General Applications

ASTM B828-16, Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings
ASTM E29-13(2019), Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
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