

INCH-POUND

WW-P-460F  
 1 November 2015  
 SUPERSEDING  
 WW-P-460E  
 15 December 2009

## FEDERAL SPECIFICATION

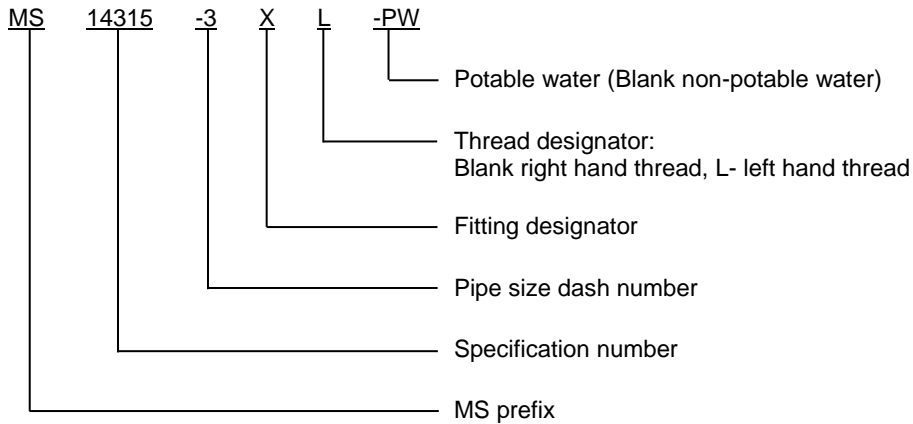
PIPE FITTINGS; BRASS OR BRONZE (THREADED),  
 CLASSES 125 AND 250 POUND

The General Services Administration has authorized the use of this federal specification, by all Federal agencies.

## 1. SCOPE

1.1 Scope. This specification covers pipe fittings; brass or bronze (threaded), classes 125 and 250 pound. Certain requirements also pertain to wrought or cast plugs, bushings, couplings, and caps.

1.2 Part or Identifying Number (PIN): Part or Identifying Number (PIN). The PIN consists of the MS prefix, specification number, dash number for size, fitting designator, right hand thread designator (Blank), non-potable water (Blank) or potable water dash letters (-PW). When left-hand threads are required, add the letter "L" to the PIN.



Comments, suggestions, or questions on this document should be addressed to: DLA Land and Maritime, Columbus, Attn: VAI, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to [FluidFlow@dla.mil](mailto:FluidFlow@dla.mil). Since contact information can change you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

AMSC N/A

FSC 4730



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## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 or 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 or 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

## DEPARTMENT OF DEFENSE SPECIFICATIONS

(See supplement 1 for list of specification sheets.)

(Copies of these documents are available online at <http://quicksearch.dla.mil>.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

## ENVIRONMENTAL PROTECTION AGENCY

## Reduction of Lead in Drinking Water Act

(Copies of this document are available online at <http://www.gpo.gov/>.)

2.3 Non-Government publications. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

American Society of Mechanical Engineers (ASME)

ASME B16.15 - Cast Copper Alloy Threaded Fittings Classes 125 and 250

(Copies of this document are available online at <http://www.asme.org> or from the ASME International, Three Park Avenue, New York, NY 10016-5990.)

## ASTM INTERNATIONAL

ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications

(Copies of this document are available online at <http://www.astm.org> or from the ASTM International, P.O. Box C700, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

## COPPER DEVELOPMENT ASSOCIATION (CDA)

C89550 - Cast, Brasses Copper-Bismuth and Copper-Bismuth-Selenium Alloys.

(Copies of this document are available online at <http://www.copper.org/> or from the Copper Development Association Inc, 260 Madison Avenue fl16, New York, NY 10016-2403.)

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## INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 17025 - General requirements for the competence of testing and calibration laboratories

(Copies of this document are available online at <http://www.ncsli.org> or from NCSL International 2995 Wilderness Place, Suite 107 Boulder, Colorado 80301-5404.)

## NCSL INTERNATIONAL

NCSL Z540.3 - Requirements for the Calibration of Measuring and Test Equipment

(Copies of this document are available online at <http://www.ncsli.org> or from NCSL International 2995 Wilderness Place, Suite 107 Boulder, Colorado 80301-5404)

## NSF International

NSF/ANSI Standard 61 - Drinking Water System Components - Health Effects  
NSF/ANSI Standard 372 - Drinking Water System Components - Lead Content

(Copies of these documents are available online at <http://www.nsf.org> or from NSF International, 789 North Dixboro Road, P.O. Box 130140, Ann Arbor, Michigan 48113-0140.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 3. REQUIREMENTS

3.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheets.

3.2 Requirements. Fittings shall be furnished in the size and pressure rating designated by the applicable detail specification sheets, MS14305, MS14306, MS14307, MS14308, MS14309, MS14310, MS14311, MS14312, MS14314, MS14315, MS51845, and MS51952, (see 1.2 and 6.2), and shall meet the applicable requirements of ASME B16.15, except as specified herein.

3.3 First article. When specified in the contract or purchase order, a sample shall be subjected to first article inspection (see 4.4 and 6.2).

3.4 Materials. Materials shall be as specified herein and shall conform to all applicable specification sheets.

- a. Non-potable water fittings shall be brass alloys (lead) in accordance with ASME B16.15.
- b. Potable water fittings shall be brass alloys in accordance with C89510 or C89520 in accordance with ASTM B584 or C89550 in accordance with Copper Development Association Inc.

NOTE: Brass fittings for potable water use may be substituted for non-potable water brass fittings. Non-potable brass fittings shall not be substituted for potable water fittings.

3.4.1 Recycled, recovered, environmentally preferable or biobased materials. Recycled, recovered, environmentally preferable, or biobased materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.5 Pressure-temperature ratings. Pressure-temperature ratings shall be in accordance with ASME B16.15.

3.6 Air pressure test (see 4.6.2). The fitting shall not leak air at any part of the surface.

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3.7 Hydrostatic strength (see 4.6.3). Fittings shall be capable of withstanding, without rupture or any leakage or sweat, at any part of the surface, an internal hydrostatic pressure of two times the pressure rating for a period of one minute.

3.8 Size. Size and dimensions shall be in accordance with ASME B16.15.

3.9 Tolerances. Tolerances shall be in accordance with ASME B16.15.

3.10 Threading. Threading shall be in accordance with ASME B16.15.

3.11 Marking. Marking shall be in accordance with ASME B16.15, additional marking for potable water fittings shall be as described in 3.12.

3.12 Brass fittings for potable water systems. Brass fittings for potable water systems shall be certified and marked as specified:

Many State plumbing codes require the use of products that are in compliance with NSF/ANSI standards 61 and 372. NSF/ANSI Standard 372 is a certification process by which independent laboratories verify that the plumbing product is in compliance with the requirements of the 2011 Reduction of Lead in Drinking Water Act. Products will bear the mark of the laboratory that has independently certified that the product meets the standard. EPA published a brochure to assist the public with identifying the various marks that indicate a product has been certified as lead free to the new requirement of the Act: "How to Identify Lead-Free Certification Marks for Drinking Water System & Plumbing Materials." You can access the document at <http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P100LVYK.txt>.

3.12.1 Tagging non-potable water brass fittings. Brass fittings for non-potable water systems shall be tagged:

NOT FOR USE IN POTABLE WATER SYSTEMS.

3.12.2 Removable tag. The tag shall be removable by the end item user.

3.13 Workmanship. Workmanship shall be in accordance with ASME-B16.15.

#### 4. VERIFICATION

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the government. The government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Classification of inspection. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.4).
- b. Conformance inspection (see 4.5).

4.3 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality, and quantity to permit performance of the required inspection shall be established and maintained or identified by the contractor. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment shall be in accordance with ISO 17025 and NCSL Z540.3 as applicable.

4.4 First article inspection. First article inspection, if not done by the manufacturer, shall be performed at a laboratory acceptable to the procuring activity on sample units produced with equipment and procedures used in production.

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4.4.1 Samples for first article. The samples shall be representative of the construction, workmanship, components, and materials to be used during production. When a manufacturer is in continuous production of fittings from one contract to another or has demonstrated within the past 3 years the capability to meet the requirements of this specification, inspection of additional first article samples for a new contract may be waived at the discretion of the acquiring activity (see 6.2). Approval of the first article samples or the waiving of first article inspection does not preclude the requirements for performing conformance inspection. First article samples shall be furnished to the Government as directed by the contracting officer (see 6.2)

4.4.2 Inspection routine. From each lot presented for inspection four samples (4 total) shall be randomly selected, see 4.4.2.1. If only one lot is presented the sample size shall be 4. The 4 samples shall be subjected to the first article inspections specified in table I.

4.4.2.1 Lot. A lot shall consist of all fittings of the same type, size, material, and manufactured under essentially the same conditions and submitted for acceptance at one time.

TABLE I. First article testing.

| Inspection                   | Requirement paragraph         | Test paragraph |
|------------------------------|-------------------------------|----------------|
| Dimensions                   | 3.8, 3.9, 3.10, 3.11 and 3.13 | 4.6.1          |
| Marking                      | 3.12 or 3.12.1 as applicable  | 4.6.1          |
| Air pressure test 1/         | 3.6                           | 4.6.2          |
| Hydrostatic strength test 1/ | 3.7                           | 4.6.3          |
| Lead content 2/              | 3.12                          | 4.6.4          |

1/ Manufacturer may chose either test for first article testing.

2/ Potable brass fittings only, certification from an independent laboratory or testing required, see 6.2.g.

4.4.3 Waivers or deviations to specification requirements. All waivers or deviations to specification requirements shall be coordinated through the preparing activity; DLA Land and Maritime, Attn: VAI, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to [Fluidflow@dla.mil](mailto:Fluidflow@dla.mil).

4.4.4 Failures. All samples shall meet all of the contract requirements. Failure of a sample unit to pass any test shall be cause for rejection of the entire lot and refusal to grant first article approval.

4.4.5 First article information. Upon completion of first article inspection, the Government activity responsible for conducting the inspection program (see 6.2), shall report the results of the inspection, with appropriate recommendation, to the contracting officer. Approval of the first article samples or the waiving of first article inspection does not preclude the requirements for performing conformance inspection.

4.4.6 Disposition of samples. First article samples shall be furnished to the Government as directed by the contracting officer (see 6.2). The samples shall be representative of the construction, workmanship, components, and materials to be used during production. When a manufacturer is in continuous production of fittings from one contract to another, submission of additional first article samples for a new contract may be waived at the discretion of the acquiring activity (see 6.2).

#### 4.5 Conformance inspection.

4.5.1 Inspection of product for delivery. For manufacturers that have successfully passed first article inspections and are continuously producing fittings to this specification, ongoing inspections shall consist of individual inspections (see table II). If first article is waived due to prior successful first article inspection the individual inspections and sampling and periodic inspections shall be the manufactures in house inspection procedures.

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TABLE II. Individual inspections.

| Inspection      | Requirement paragraph          | Test paragraph |
|-----------------|--------------------------------|----------------|
| Dimensions      | 3.8, 3.9, 3.10, 3.11, and 3.13 | 4.6.1          |
| Lead content 1/ | 3.12                           | 4.6.4          |

1/ Potable brass fittings only, when required certification from an independent laboratory or testing required, see 6.2.d.

4.5.2 Sampling for individual inspections. Fittings for sampling shall be selected from a production lot (see 4.5.3) and shall be subjected to the individual inspections. The sampling size shall be 4 fittings.

4.5.3 Production lot. A production lot shall consist of all fittings of the same PIN which have been manufactured under the same conditions and on the same continuous run.

4.5.4 Periodic inspections. Unless otherwise specified periodic inspections shall be performed every year, see 4.5.6. Periodic inspections shall consist of the testing specified in table III.

TABLE III. Periodic inspection.

| Inspection                   | Requirement paragraph        | Test paragraph |
|------------------------------|------------------------------|----------------|
| Marking                      | 3.12 or 3.12.1 as applicable | 4.6.1          |
| Air pressure test 1/         | 3.6                          | 4.6.2          |
| Hydrostatic strength test 1/ | 3.7                          | 4.6.3          |

1/ Manufacturer may chose either test for periodic inspection.

4.5.5 Production samples. The production samples shall be a product selected at random from the production lot without regard to quality and shall be the sample size specified in table IV.

TABLE IV. Lot and sample size.

| Production lot size | Sample size |
|---------------------|-------------|
| 1 to 90             | 8           |
| 91 to 150           | 12          |
| 151 to 280          | 19          |
| 281 to 500          | 21          |
| 501 to 1200         | 27          |
| 1201 to 3200        | 35          |
| 3201 to 10,000      | 38          |
| 10,001 to 35,000    | 46          |

4.5.6 Periodic test frequency. If the manufacturer can demonstrate that periodic tests have been performed for two consecutive years with zero failures, then the frequency of the periodic test, with the approval of the contracting officer, can be performed every fourth year.

4.5.7 Lot records. Manufacturers shall keep lot records for 3 years minimum. Manufacturers shall monitor for compliance to the prescribed procedures, and observe that satisfactory manufacturing conditions and records on lots are maintained for these hooks. The records, including as a minimum, an attributes summary of all quality conformance inspections conducted on each lot, shall be available to review by customers at all times.

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4.6 Test methods.

4.6.1 Examination. Each fitting shall be examined for compliance with the requirements in paragraphs 3.8, 3.9, 3.10, 3.11 and 3.12 or 3.12.1 as applicable. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirements or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

4.6.2 Air pressure test (see 3.6). The first article shall be subjected to an air-pressure test of not less than 60 pounds per square inch gage (415 kilopascal) while the fitting is under water. The fitting shall meet the requirements of 3.6.

4.6.3 Hydrostatic strength test (see 3.7). As an alternate test, the fitting shall be subjected to an internal hydrostatic pressure of two times the pressure rating for a period of one minute. The fitting shall meet the requirements of 3.7.

4.6.4 Lead content (see 3.12). When requested by the contracting officer potable brass fittings shall be tested to meet the requirements of NSF/ANSI Standard 372. The amount of lead on the wetted surfaces shall meet a weighted average lead content of  $\leq 0.25\%$ .

## 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the Military Service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The pipe fittings are intended for use as outlined below:

6.1.1 Class 125 fittings. Class 125 pipe fittings are generally used for saturated steam service with pressure/temperature ratings as required for class 125 fittings in ASME B16.15.

6.1.2 Class 250 fittings. Class 250 pipe fittings are normally used for saturated steam service with pressure/temperature ratings as required for Class 250 fittings in ASME B16.15.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. PIN required (see 1.2 and 3.1).
- c. First article (see 4.4) or whether first article inspection is waived ( see 6.3.1).
- d. Name and address of the first article inspection test facility to which first article samples are to be forwarded (see 4.4.4) and the name and address of the Government activity responsible for conducting the first article inspection program (see 6.3).
- e. Disposition of test samples, see 4.4.1.
- f. Name and address of the Government activity responsible for receiving a production sample (see 4.4.1).
- g. When specified manufacturer required certification or lead content test (see 4.6.4).
- h. Packing requirements (see 5.1).

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6.3 First article. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results, and disposition of first article samples. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.3.1 Defense Logistics Agency (DLA) waiver of first article test. A waiver of a first article testing will only be considered by DLA when the contractor has delivered the same item within the last three years, has no unfavorable quality history, has not changed processes, or changed any subcontractors. DLA will not accept first article testing results outside the stated requirements.

6.4 Subject term (key word) listing.

Bushings  
Caps  
Couplings  
Crosses  
Elbows  
Lead  
Non-potable  
Plugs  
Potable  
Reducers  
Return Bends  
Tees  
Y-Branches

6.5 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. As of the dating of this document, the U.S. Environmental Protection Agency (EPA) is focusing efforts on reducing 31 priority chemicals. The list of chemicals and additional information is available on their website at <http://www.epa.gov/osw/hazard/wastemin/priority.htm>. Included in the list of 31 priority chemicals are cadmium, lead, and mercury. Use of these materials should be minimized or eliminated unless needed to meet the requirements specified herein (see Section 3).

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

## CONCLUDING MATERIAL

Custodians:  
Army - CR4  
Navy - YD  
Air Force - 99  
DLA - CC

Preparing activity:  
DLA - CC

(Project 4730-2015-059)

Review activities:  
Army - AR, CE, EA  
Navy - CG, MC, SA  
Air Force - 71

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