

WW-T-799F  
August 20, 1979  
SUPERSEDING  
WW-T-799E  
October 10, 1974

## FEDERAL SPECIFICATION

### TUBE, COPPER, SEAMLESS, WATER (FOR USE WITH SOLDER- FLARED- OR COMPRESSION-TYPE FITTINGS)

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

#### 1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers seamless copper water tubing in sizes suitable for general plumbing, commonly used with solder, flared, or compression type fittings.

1.2 Classification. Seamless copper tubing shall be of the following types and forms, as specified (see 6.2):

Type K - For solder-type, flared, or compression fittings.

Type L - For solder-type, flared, or compression fittings.

Type M - For solder type fittings only.

Form A - Straight length.

Form B - Coiled length.

#### 2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

##### Military Specification:

MIL-C-3993 - Copper and Copper-Base Alloy Mill Products; Packaging of.

(Copies of Military Specifications and Standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

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American Society for Testing and Materials (ASTM) Standards:

- E88 - Seamless Copper Water Tube.
- E243 - Electromagnetic (Eddy Current) Testing of Seamless Copper and Copper-Alloy Heat Exchanger and Condenser Tubes.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19102.)

3. REQUIREMENTS

3.1 General. Except as otherwise specified herein, copper water tubing furnished under this specification shall conform to the requirements of ASTM B88.

3.2 First article. When specified (see 6.2), the contractor shall furnish a tubing of the types and forms as required for first article inspection and approval (see 4.2 and 6.6).

3.3 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this specification unless otherwise specifically specified.

3.3.1 Chemical composition. Material shall contain not less than 99.9 percent copper (silver being counted as copper) and not more than 0.04 percent phosphorus.

3.4 Dimensions.

3.4.1 Diameter and wall thickness. The diameter and wall thickness of the tubing shall be in accordance with the standard dimensions and tolerances for copper water tubing given in ASTM B88, when examined in accordance with 4.4.1.

3.4.1.1 Size. The size of the tubing required shall be the standard copper water tubing as specified (see 6.2 and 6.3.1).

3.4.2 Lengths. The length of the tubing shall be as specified (see 6.2), or as given in ASTM B88.

3.4.3 All other physical features shall be in accordance with ASTM B88.

3.5 Identification marking. Unless otherwise specified (see 6.2), item identification marking shall be in accordance with ASTM B88.

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3.6 Workmanship. The tube shall be clean, smooth, round, straight, (when applicable), of proper dimensions, and free of grooving, indentations, cracks, flaws, and other defects of a nature that would interfere with normal applications. Normal incised marking is acceptable.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier 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 supplies and services conform to prescribed requirements.

4.2 First article inspection. First article inspection shall be performed on one complete tube when a first article sample is required (see 3.2, 6.2, and 6.6). This inspection shall include the examination of 4.4.1 and the tests of 4.4.2 and 4.4.3. This first article may be a standard production item from the supplier's current inventory, provided the tube meets the requirements of this specification and is representative of the design, construction, and manufacturing technique applicable to the remaining tubes to be furnished under the contract.

4.3 Inspection lot. For purposes of inspection, a lot shall consist of 5,000 pounds (2,270 kilograms) or fraction thereof, and tubing shall be of the same size, type, and form. The unit of product shall be one tube for straight lengths and one coil for coiled lengths.

#### 4.4 Sampling.

4.4.1 Sampling, examination, and testing. Unless otherwise specified (see 6.2), sampling, examination, and testing of the tubing shall be in accordance with ASTM B88.

4.4.2 Nondestructive testing. Each tube having an outside diameter up to and including 3-1/8 inches (79.38 millimeters) shall be subjected to an eddy current test. Testing shall follow the procedures of ASTM E243.

4.4.3 Internal-pressure test. When specified (see 6.2), in lieu of the eddy current test (see 4.4.2), the internal-pressure test shall be performed on tubing selected in accordance with 4.4.1. The test shall be in accordance with ASTM B88.

4.5 Inspection of preparation for delivery. The packaging, packing, and marking of the tubing shall be examined to determine conformance to the requirements of section 5.

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## 5. PREPARATION FOR DELIVERY

5.1 Packaging, packing, and marking. Unless otherwise specified (see 6.2), the tubing shall be packaged, packed, and marked in accordance with MIL-C-3993. The level of packaging and level of packing shall be as specified (see 6.2).

## 6. NOTES

### 6.1 Intended use.

6.1.1 Type K. Typical uses are applications, such as underground water services, plumbing, heating, steam, gas, oil, oxygen, and industrial piping where codes, installation, and service conditions necessitate the use of a heavy wall tube. Type K is commonly used with solder-type, flared, and compression fittings.

6.1.2 Type L. Typical uses are applications, such as interior plumbing, heating air-conditioning, steam, gas, and oil piping and for underground drainage lines. Type L is commonly used with solder-type, flared, and compression fittings.

6.1.3 Type M. Typical uses are applications, such as interior heating and pressure lines when suggested by engineering design. Type M is commonly used with solder-type fittings.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Type and forms required (see 1.2).
- (c) When first article inspection and approval is required (see 3.2, 4.2, and 6.6).
- (d) Standard size of tubing required (see 3.4.1.1).
- (e) Length of tube required (see 3.4.2).
- (f) Tube identification marking, if different (see 3.5).
- (g) If sampling, examination, and testing is other than specified (see 4.4.1).
- (h) Internal-pressure test, when required, in lieu of eddy current test (see 4.4.3).
- (i) If packaging, packing, and marking is other than specified (see 5.1).
- (j) Level of packaging and level of packing required (see 5.1).

6.3 Seamless copper tube for refrigeration service, formerly covered by this specification, is now covered by WW-T-775 in which the standard sizes and their corresponding outside diameter are the same.

6.3.1 Seamless copper water tube covered by WW-T-775, commonly called standard water tube has an outside diameter 1/8 inch (0.125) larger than the standard size by which designated.

6.4 In accordance with ASTM B88, the coiled length of tube from which a test segment is cut shall be accepted as a unit of product for shipment.

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6.5 Metric equivalents. The metric equivalents to dimensional requirements are for information only, and are not intended to be used for determining acceptance or rejection of items otherwise conforming to the requirements of this specification.

6.6 First article. When a first article is required, it shall be tested and approved under the appropriate provisions of paragraph 7-104.55 of the Defense Acquisition Regulation. The first article should be a first production item consisting of one complete tube, or it may be a standard production item from the supplier's current inventory as specified in 4.2. The contracting officer should include specific instructions in all procurement instruments, regarding arrangement for examinations, test, and approval of the first article.

MILITARY CUSTODIANS:

Army - ME  
Navy - YD

Review activity:

Army - AR

User activities:

Navy - CG, MC  
Air Force - 99

CIVIL AGENCY COORDINATING ACTIVITIES:

DOT - FIS  
GSA - FSS, PCD  
HEW - FEC  
NASA - JFK

Preparing activity:

Navy - YD  
Project No. 4710-0369

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Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.