

STANDARD SPECIFICATION
SECTION 15220 COPPER PIPE AND TUBE

PART 1 - GENERAL

1.01 DESCRIPTION

This section includes materials, installation, and testing of copper pipe, tube, and fittings.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Standard Drawings.
- B. Record Drawings and Submittals: STD SPEC 01300.
- C. Trenching, Backfilling, and Compacting: STD SPEC 02223.
- D. General Piping Requirements: STD SPEC 15050.
- E. Disinfection of Piping: STD SPEC 15141.
- F. Pressure Testing of Piping: STD SPEC 15144.

1.03 SUBMITTALS

- A. Submit submittal packages in accordance with Standard Specification Section 01300.
- B. Submit manufacturer's catalog data and descriptive literature for copper pipe, tube, fittings, miscellaneous piping materials, and solder. Show dimensions and materials of construction by specification reference and grade.

PART 2 - MATERIALS

2.01 COPPER WATER TUBE

Copper water tube shall conform to ASTM B 88. Tubing located above ground, in vaults and structures shall be Type K, drawn temper (hard). Buried tubing shall be Type K, annealed temper (soft), except 3-inch tube shall be Type K, drawn temper (hard).

2.02 PIPE AND NIPPLES

Pipe and short threaded nipples shall be brass conforming to ASTM B 43 or copper conforming to ASTM B 42, regular wall thickness, except that pipe and nipples of sizes 1-inch and smaller shall be extra strong. Threads shall conform to ASME B1.20.1, NPT.

2.03 SOLDER JOINT FITTINGS

- A. Wrought copper solder joint seamless fittings shall be designed for use with copper water tube and conform to ASTM B 75 and ASME B16.22. Material shall be UNS C10200, C12000, or C12200.

- B. Cast copper solder joint pressure fitting shall be designed for use with copper water tube and conform to ASME B16.18.
- C. Use solder joint fittings for working pressures of 300 psi or less.

2.04 THREADED FITTINGS

Cast bronze threaded fittings shall be designed for use with brass or copper pipe and nipples and conform to ASME B16.15, Class 125 and 250. Use Class 125 fittings for working pressures of 200 psi or less. Use Class 250 fittings for working pressures greater than 200 psi, but less than 400 psi.

2.05 FLANGES AND FLANGED FITTINGS

Cast bronze pipe flanges and flanged fittings shall conform to ASME B16.24, Class 150 or Class 300. Use Class 150 flanged fittings for working pressures of 225 psi or less. Use Class 300 flanged fittings for working pressures greater than 225 psi; but less than 500 psi. Provide flat faced flanges. Use solder joint or threaded end companion flanges. Companion flanges with solder joint or threaded end shall be limited to the pressure rating of the pipe connection and not the flanged joint.

2.06 SOLDER

Solder shall be 95-5 (95-percent tin and 5-percent antimony) conforming to ASTM B 32, Alloy Grade Sb5 or silver solder conforming to AMS 4773C. Do not use lead or cored solder.

2.07 SOLDERING FLUX

Soldering flux shall comply with ASTM B 813.

2.08 BOLTS, NUTS AND GASKETS FOR FLANGES

See Standard Specification Section 15050.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install pipe and tube without springing, forcing, or stressing the pipe, tube, or any connecting valves.
- B. Provide pipe hangers and supports for pipe and tube where installed above ground, in vaults and structures.
- C. Use soldered joints and fittings with copper water tube in buried and exposed service.
- D. Use threaded joints and fittings with brass or copper piping in buried and exposed service.

3.02 INSTALLATION

- A. Tube cutters shall always be sharp. Do not take too deep a cut with each turn of the cutter or back and forth motion of a saw blade.
- B. Cut tubing square and remove burrs. Use a sizing ring on the ends of soft copper tubing, and bring to true dimension and roundness. Clean the surfaces to be soldered with fine emery cloth, cleaning pads, or special wire brushes. Rub hard enough to remove the surface film of oil, grease, heavy oxide, and soil, but not hard enough to remove metal. Coat clean surfaces with a thin film of non-toxic and non-corrosive flux, assemble joint full depth, and remove excess flux before soldering.
- C. Make soldered joints in accordance with ASTM B 828. Solder shall penetrate to the full depth of the cup in joints and fittings. Solderers shall comply with ASME B31.3, paragraph 333.
- D. Bends in soft copper tubing shall be long sweep. Shape bends with shaping tools. Form bends without flattening, buckling, or thinning the tubing wall at any point.
- E. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to male pipe threads before mating threaded joint. Joints shall be watertight.
- F. Install flanged joints per the installation instructions in Standard Specification Section 15050.

3.03 INSTALLING BURIED TUBING

- A. See Standard Specification Section 02223 for earthwork requirements.
- B. Remove foreign matter and dirt from inside of tubing and keep clean during and after laying.
- C. Handle tubing in a manner to avoid any damage to the tubing.
- D. Grade the bottom of the trench to the line and grade to which the tubing is to be laid. Remove hard spots that would prevent a uniform thickness of pipe base material (imported sand). Before laying the tubing, check the grade and correct any irregularities found.

3.04 PRESSURE TESTING

Test copper pipe, tube, and fittings at the same time that the connecting pipelines are pressure tested. See Standard Specification Section 15144 for pressure testing requirements. Repair leaks in piping and retest.

3.05 DISINFECTION

See Standard Specification Section 15141 for chlorination requirements.

END OF SECTION