

expanded in the boiler without crack or flaw. When tested, iron or steel tubes must show a tensile strength of not less than 55,000 lbs. per square inch, and a ductility of not less than 15 per cent.

*Tubes of Brass or Copper; Brass and Copper Pipes.*—Tubes of brass or copper to be of uniform circumferential thickness and solid drawn; to be perfectly round. A piece 30 inches long, annealed and filled with rosin, must withstand being doubled until the extremities touch each other without showing defects. A piece 30 inches long, not annealed, filled with rosin, and placed on supports 20 inches apart, must withstand bending to a deflection of 3 inches without showing defects.

*Bar Iron.*—All bar iron (flats, rounds, and squares) must be capable of sustaining an ultimate tensile stress of 50,000 lbs. per square inch, with an elastic limit of 25,000 lbs., and a minimum ductility, measured by elongation or reduction of area, of 20 per cent.