

ASTM - SPECIFIED PLATE STEELS

ASTM Number	Content
A36	Carbon steel: Plates and other structural steel products melted and rolled to give 36,000 lb/in ² yield strength minimum. Composition: 0.26 C, 0.80 - 1.20 Mn plus silicon and copper, if specified.
A131	Carbon steel: Twelve grades, compositions and properties of which coincide with those listed in steel specs of the American Bureau of Shipping. Ordinary-strength grades (A, B, CS, D, DS, and E) offer yield points, minimum, of 34,000 lb/in ² plates for structural uses, and 30,000 lb/in ² , plates to be riveted or cold-flanged. Higher-strength grades provide minimum yield strengths of 46,000 lb/in ² (Grades AH32, DH32 and EH32) and 51,000 lb/in ² (Grades AH36, DH36, and EH36). Impact and bend testing required. Steels contain carbon, manganese, and silicon; grain-size control comes from aluminum, for low-strength grades, plus columbium and vanadium, for high strength grade.
A242	High-strength low-alloy (hsla) steel: Two types; four times the resistance to atmospheric corrosion of carbon steels. Yield strengths, minimum; 42,000 and 50,000 lb/in ² . Composition: 0.15 - 0.20 C, 1.00 - 1.35 Mn, 0.20 Cu min.
A283	Carbon steel: Four grades for plates, shapes and bars. Yield strengths, minimum (lb/in ²) — 24,000 (Grade A), 27,000 (B), 30,000 (D). No carbon, manganese, or silicon specs.
A284	Carbon steel: Two grades with yield strengths, minimum (lb/in ²) of 30,000 (Grade C) and 33,000 (D). Carbon contents, maximum, vary from 0.24 percent, for plates less than 1 in. thick, to 0.36 percent, for plates from 8 to 12 in. thick.
A514	Alloy steel: Sixteen grades quenched and tempered to yield strengths, minimum of 90,000 and 100,000 lb/in ² , depending on thickness (to 6 in.). Composition: 0.12 - 0.21 C max., plus varying amounts of Mn, Ni, Cr, Mo, V, Ti, Zr, Cu, and B, added for strength, grain-size control, and corrosion resistance. A517 lists pressure-vessel specs for these steels.
A529	Carbon steel: One grade - 42,000 lb/in ² yield strength, minimum. Composition: 0.27 C max., 1.20 Mn max., 0.20 Cu min.
A572	Hsla steel: Four grades containing columbium, vanadium, and nitrogen, singly and together, for grain-size control. Yield strengths, minimum, are 42,000 (Grade 42), 50,000 (50), 60,000 (60), and 65,000 lb/in ² (65).
A573	Carbon steel: Three grades. Tensile strength ranges, lb/in ² , are 58,000 - 72,000 (Grade 58), 65,000 - 77,000 (65), and 70,000 - 90,000 (70). Composition: 0.23 - 0.28 C, 0.60 - 1.20 Mn, 0.10 - 0.40 Si, depending on grade. Bend tests verify ductility and toughness.
A588	Hsla steel: Nine grades containing copper to raise resistance to atmospheric corrosion to four times that of conventional carbon grades - known as weathering steels. Tensile strengths and minimums vary with thickness, from 70,000 lb/in ² (thicknesses under 4 inches) to 63,000 lb/in ² (5 to 8 inches). Composition: 0.11 - 0.20 C max plus varying amounts of Mn, Si, Ni, Cr, Mo, Cu, V, Cb, and Ti for strength, corrosion resistance and grain-size control.
A633	Hsla steel: Four grades, normalized to improve low-temperature toughness, to - 50 F. Yield strengths, minimum lb/in ² - 42,000 (Grade A); 46,000 and 50,000, depending on thickness to 6 in. (Grades C and D); and 55,000 and 60,000 (Grade E, depending on thickness). Composition: 0.18 to 0.22 C max, 1.00 to 1.50 Mn, 0.15 to 0.50 Si, plus copper and varying amounts of grain-refining elements.
A656	Hsla steel: Seven types featuring formability for forming of shapes. Composition, varying with types (1 - 7): 0.18 C max, 1.65 Mn max, 0.30 to 0.90 Si, depending on type, plus varying amounts of V, N, Ti, Cb, Zr, Mo, Cr, and B, singly and together. Yield strengths, minimum (lb/in ²) - 50,000 (Grade 50), 60,000 (60), 70,000 (70), and 80,000 (80).
A678	Carbon and hsla steels: Four grades, quenched and tempered to yield strengths, minimum (lb/in ²) of 50,000 (Grade A), 60,000 (B), 65,000 to 75,000, depending on thickness - to 2 in. (C), and 75,000 to 3 in. (D). Composition: 0.16 - 0.22 C max, 0.90 - 1.50 Mn, 0.15 - 0.50 Si, 0.20 Cu min (when specified), 0.15 - 0.50 V - Grade D also contains Cb, N, and B when specified.
A709	Carbon and hsla steels: Twenty-one grades for bridge applications, listed in ASTM 36, A514, A572, and A588 - compositions and properties. A709 adds specs covering fine-grain practice, tension testing, notch-toughness testing, proof of resistance to atmospheric corrosion, ultrasonic inspection, and the need for freedom from mill-made weld repairs.
A808	Hsla steel: One grade containing columbium and vanadium for grain-size control. Yield strengths, minimum (lb/in ²) - 50,000 to 1 - ½ in. thick, 46,000 over 1 - ½ to 2 in., 42,000 over 2 to 2 - ½ in. Notch toughness to -50 F; bend and impact testing required.
A829	Alloy steel: AISI grades 1330 - 1345 (4 grades), 4118 - 4145 (7), 4340, 4615 - 4620 (3), 5160, 6150, 8615 - 8655 (10), and 8742. Supplied to AISI-specified compositions; mechanical properties may be specified.
A830	Carbon steel: AISI grades 1006 to 1095 (51 grades), 1524 to 1552 (6). Generally furnished to AISI-specified compositions; mechanical properties may be specified.
A852	Hsla steel: One grade, quenched and tempered to a yield strength, minimum, of 70,000 lb/in ² in plate to 4 in. thick. Composition: 0.19 C max, 0.80 - 1.35 Mn, 0.20 - 0.65 Si, 0.40 - 0.70 Cr, 0.20 - 0.40 Cu, 0.02 - 0.10 V. Impact testing required - 20 ft-lb min at 40 F.
A871	Hsla steel: Two grades, as-rolled, normalized, or quenched-and-tempered to yield strengths, minimum (lb/in ²) of 60,000 (Grade 60) or 65,000 (65). Composition (max): 0.20 C, 1.50 Mn, 0.90 Si, 1.25 Ni, 0.90 Cr, 0.25 Mo, 1.00 Cu, 0.10 V, 0.15 Zr, 0.05 Cb, 0.05 Ti. Impact testing required - 15 ft-lb min at 0 F to 1/2 in. thick, at -20 F over 1/2 in.