

High-Silicon Bronze C65500 — Material Data Sheet

ASTM F468 / F467 fasteners · ASTM B98 rod · UNS C65500 · High-silicon bronze A (Alloy 655, Everdur)
Copper with 3 percent silicon and manganese — the general-purpose wrought silicon bronze

The strongest common silicon bronze in bar form, 90 ksi in hard temper and 100 ksi extra-hard in small rod — for machined marine fasteners, valve stems and pump parts.

TENSILE, F468 FULL SIZE	50–80 ksi	NUT PROOF STRESS, F467	50 ksi hex · 54 heavy hex
YIELD, F468	20 ksi min	BAR, H04 HARD (¼–1 IN.)	90 ksi min
HARDNESS, F468	60–80 HRB	MAGNETIC	No

Nominal composition

Cu balance ~ 94.3%
 Si ~ 3.30%
 Mn ~ 0.90%
 Zn ~ 0.75%
 Fe, Ni, Pb trace

Midpoints of the specification ranges, for orientation only. Limits are in the table.

Chemical composition — C65500 per ASTM B98 Table 1

Element	Symbol	Min %	Max %
Copper	Cu	balance	—
Silicon	Si	2.8	3.8
Manganese	Mn	0.50	1.3
Iron	Fe	—	0.8
Zinc	Zn	—	1.5
Nickel	Ni	—	0.6
Lead	Pb	—	0.05

Values per ASTM B98/B98M-13(2019) Table 1 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team.

Physical properties (typical)

DENSITY	0.308 lb/in³
MAGNETIC	No
SPARKING	Non-sparking

Heat treatment

Not heat treatable. Supplied in the B98 temper ordered; half-hard is standard for machined fasteners.

Fastener mechanical properties per ASTM F468 Table 2 (marking F468L)

Nominal diameter (in.)	Hardness	Full-size tensile (ksi)	Full-size yield, min (ksi)	Machined tensile, min (ksi)	Machined yield, min (ksi)	Elongation in 4D, min (%)
All sizes	60–80 HRB	50–80	20	50	15	20

Values per ASTM F468-23 Table 2 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team. Full-size tensile range and yield; machined-specimen minimums in the last three columns.

Nut requirements per ASTM F467 Table 2 (marking F467L)

Nut style	Hardness, min	Proof stress, min (ksi)
Hex and hex flange	60 HRB	50
Heavy hex, large hex flange and thick	60 HRB	54

Values per ASTM F467-24 Table 2 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team.

Bar and rod properties per ASTM B98 Table 2 (C65500 rod and square bar)

Temper and size (in.)	Tensile strength, min (ksi)	Yield strength at 0.5 % extension, min (ksi)	Elongation, min (%)
O60 soft anneal — all sizes	52	15	35
H01 quarter-hard — all sizes	55	24	25
H02 half-hard — to 2	70	38	20
H04 hard — to ¼	90	55	8
H04 hard — over ¼ to 1	90	52	13
H04 hard — over 1 to 1½	80	43	15
H04 hard — over 1½ to 3	70	38	17
H06 extra-hard — to ½	100	55	7

Values per ASTM B98/B98M-13(2019) Table 2 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team.

Applicable standards

ASTM F468 / F468M	Nonferrous bolts, cap screws and studs (Cu 655, F468L)
ASTM F467 / F467M	Nonferrous nuts (Cu 655, F467L)
ASTM B98 / B98M	Copper-silicon alloy rod, bar and shapes
ASTM B96	Copper-silicon alloy plate and sheet for pressure vessels

Forms we supply in C65500 Silicon Bronze

- Machined hex bolts, studs and cap screws to F468
- Hex and heavy hex nuts to F467
- Valve stems, pump shafts and marine components to print
- Certified B98 rod and bar in the temper ordered

Typical applications

- Marine hardware, shafting and fasteners
- Chemical and pulp-mill process equipment
- Water treatment and hydraulic structures
- Pressure-vessel and tank fittings
- Architectural and sculpture hardware