

Naval Brass C46400 — Material Data Sheet

ASTM F468 / F467 fasteners · ASTM B21 rod and bar · UNS C46400 · Naval brass (Alloy 464, 60 Cu – 39 Zn – 1 Sn)
Tin-bearing alpha-beta brass with dezincification resistance

The marine brass — 1 percent tin for seawater resistance — and the ASTM F468 structural brass fastener alloy (F468D).

TENSILE, F468 FULL SIZE	50–80 ksi	NUT PROOF STRESS, F467	50 ksi hex · 54 heavy hex
YIELD, F468	15 ksi min	TIN	0.50–1.0 %
HARDNESS, F468	55–75 HRB	MAGNETIC	No

Nominal composition

■ Cu balance ~ 99.1% ■ Sn ~ 0.75% ■ Pb, Fe trace

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

Chemical composition — C46400 per ASTM B21 Table 1 and F468 Table 1

Element	Symbol	Min %	Max %
Copper	Cu	59.0	62.0
Tin	Sn	0.50	1.0
Lead	Pb	—	0.20
Iron	Fe	—	0.10
Zinc	Zn	balance	—

Values per ASTM B21/B21M-20 Table 1 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team.

Physical properties (typical)

DENSITY	0.304 lb/in ³
MAGNETIC	No
SPARKING	Non-sparking

Heat treatment

Not heat treatable. Supplied in the B21 temper ordered; half-hard is standard for machined fasteners.

Fastener mechanical properties per ASTM F468 Table 2 (marking F468D)

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	55–75 HRB	50–80	15	50	15	25

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 F467D)

Nut style	Hardness, min	Proof stress, min (ksi)
Hex and hex flange	55 HRB	50
Heavy hex, large hex flange and thick	55 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 B21 Table 2 (C46400 rod and bar)

Temper and size (in.)	Tensile strength, min (ksi)	Yield strength at 0.5 % extension, min (ksi)	Elongation, min (%)
O60 soft anneal — 1 and under	54	20	30
H02 half-hard — ½ and under	60	27	22
H02 half-hard — over ½ to 1	60	27	25
H02 half-hard — over 1 to 2	58	26	25
H02 half-hard — over 2 to 3	54	25	25
H04 hard — 1 and under	67	45	13
H04 hard — over 1 to 2	62	37	18

Values per ASTM B21/B21M-20 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 464, F468D)
ASTM F467 / F467M	Nonferrous nuts (Cu 464, F467D)
ASTM B21 / B21M	Naval brass rod, bar and shapes
ASTM B171	Naval brass plate for condensers

Forms we supply in C46400 Naval Brass

- Hex bolts, studs and cap screws to F468
- Hex and heavy hex nuts to F467
- Marine hardware and valve components machined to print
- Certified B21 rod and bar

Typical applications

- Marine hardware, deck fittings and fasteners
- Condenser tube sheets and supports
- Propeller shafts and marine valve stems
- Aircraft turnbuckle barrels
- Structural brass bolting where a non-sparking, non-magnetic fastener is needed