

AL-6XN (UNS N08367) — Material Data Sheet

ASTM B691 bar · UNS N08367 · AL-6XN® (6 % Mo super austenitic)
6 percent molybdenum, nitrogen-bearing super austenitic alloy, annealed

The 6 % Mo super austenitic in nickel-alloy classification — PREN above 45 for seawater, brine and chlorinated water — with 95 ksi tensile in the annealed bar.

TENSILE, B691 ANNEALED	95 ksi min	MOLYBDENUM / NITROGEN	6–7 / 0.18–0.25 %
YIELD, B691 ANNEALED	45 ksi min	PREN	~ 43 at the B691 minimum composition (about 45 typical)
ELONGATION	30 % min	MAGNETIC	No

Nominal composition



■ Fe balance ~ 45.9% ■ Ni ~ 24.50% ■ Cr ~ 21.00% ■ Mo ~ 6.50% ■ Mn ~ 1.00% ■ Si ~ 0.50% ■ N, Cu, C, P, S trace

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

Chemical composition — AL-6XN (N08367) per ASTM B691 Table 1

Element	Symbol	Min %	Max %
Nickel	Ni	23.50	25.50
Chromium	Cr	20.00	22.00
Molybdenum	Mo	6.00	7.00
Nitrogen	N	0.18	0.25
Copper	Cu	—	0.75
Manganese	Mn	—	2.00
Silicon	Si	—	1.00
Carbon	C	—	0.030
Phosphorus	P	—	0.040
Sulfur	S	—	0.030
Iron	Fe	balance	—

Values per ASTM B691-18 Table 1 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team.

Physical properties (typical)

DENSITY	0.291 lb/in ³ (8.06 g/cm ³)
MODULUS OF ELASTICITY	28.3 × 10 ⁶ psi (195 GPa)
MAGNETIC	No

Heat treatment

Not age hardenable. Solution annealed and water quenched.

Bar properties — AL-6XN per ASTM B691 Table 2, annealed

Condition and size	Tensile strength, min (ksi)	Yield strength 0.2%, min (ksi)	Elongation, min (%)
Cold or hot finished, annealed — all sizes	95	45	30

Values per ASTM B691-18 Table 2 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team.

Applicable standards

ASTM B691	Iron-nickel-chromium-molybdenum alloy rod and bar (N08367)
ASME SB-691	Boiler and Pressure Vessel Code equivalent
ASTM B688	AL-6XN plate, sheet and strip
ASTM A194 GRADE 9C	AL-6XN nuts to A194
NACE MR0175 / ISO 15156	N08367 for sour service

Forms we supply in AL-6XN

- Full-thread studs and stud bolts
- Hex and heavy hex bolts
- Socket head cap screws
- Hex nuts in the same alloy
- Threaded rod
- Machined components from certified bar

Typical applications

- Seawater piping, condensers and desalination
- Offshore and coastal process bolting
- Chlorinated cooling-water systems
- Flue-gas scrubbers and pollution control
- Pharmaceutical and food equipment