

Super Duplex 2507 Stainless (UNS S32750) — Material Data Sheet

ASTM A1082 bolting · ASTM A276 / A479 bar · ASTM A182 F53 · UNS S32750 · 2507 super duplex (25 Cr – 7 Ni – 4 Mo – N)
Ferritic-austenitic super duplex stainless steel, solution annealed and water quenched

25 Cr super duplex with a PREN above 40 — 116 ksi tensile and 80 ksi yield for the most aggressive seawater, sour and chloride bolting.

TENSILE (<=2 IN.)	116 ksi min	SOLUTION ANNEAL	1880–2060 °F, water quench
YIELD (<=2 IN.)	80 ksi min	PREN	>= 41 (A276 / A479 bar; A1082 sets no PREN for S32750)
HARDNESS	33 HRC / 310 HBW max	MAGNETIC	Yes

Nominal composition



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

Chemical composition — S32750 (2507) per ASTM A1082 Table 1

Element	Symbol	Min %	Max %
Carbon	C	—	0.030
Manganese	Mn	—	1.20
Phosphorus	P	—	0.035
Sulfur	S	—	0.020
Silicon	Si	—	0.80
Chromium	Cr	24.0	26.0
Nickel	Ni	6.0	8.0
Molybdenum	Mo	3.0	5.0
Nitrogen	N	0.24	0.32
Copper	Cu	—	0.50

Values per ASTM A1082/A1082M-16(2021) Tables 1 and 4 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team.

Physical properties (typical)

DENSITY	0.281 lb/in ³ (7.80 g/cm ³)
MODULUS OF ELASTICITY	29.0 × 10 ⁶ psi (200 GPa)
MAGNETIC	Yes

Heat treatment

Solution annealed at 1880–2060 °F (1025–1125 °C) and water quenched. Not hardenable by heat treatment; avoid the 700–1800 °F range where intermetallic phases form.

Mechanical properties — 2507 super duplex bolting per ASTM A1082 Table 4

Size	Tensile strength, min (ksi)	Yield strength, min (ksi)	Elongation, min (%)	Hardness, max
2 in. and under	116	80	15	33 HRC / 310 HBW
Over 2 in.	110	75	15	33 HRC / 310 HBW

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Applicable standards

ASTM A1082 / A1082M	High strength precipitation hardening and duplex stainless steel bolting
ASTM A276 / A479	S32750 bar stock
ASTM A182 GRADE F53	Forged super duplex flanges and fittings
NACE MR0175 / ISO 15156	Super duplex for sour service within its limits
NORSOK M-630 / MDS D55	Offshore super duplex requirement

Forms we supply in Super Duplex 2507

- 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

- Subsea manifold, tree and connector bolting
- Seawater lift, injection and firewater pumps
- Hot sour production and gas-lift systems
- Desalination and reverse-osmosis plants
- Flue-gas scrubbers and chloride-bearing chemical service