

A2-50, A2-70 and A2-80 Stainless Metric Fasteners (ISO 3506 / ASTM F738M)

Material Data Sheet

ISO 3506-1 / ASTM F738M-02 Type S30400 group 304, 304L, 305 and related 18-8 grades
Austenitic stainless metric bolting, 18-8 group

The metric 304 bolt: A2 is the 18-8 austenitic group, and the number is the tensile strength in tens of MPa — A2-70 at 700 MPa cold worked is the standard stainless bolt on metric drawings.

A2-50 TENSILE	500 MPa (annealed)	A2-70 YIELD, M6–M20	450 MPa
A2-70 TENSILE	700 MPa (cold worked)	ALLOYS	304, 304L, 305 (303 on approval)
A2-80 TENSILE	800 MPa (strain hardened)	INCH EQUIVALENT	ASTM F593 Group 1

Nominal composition



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

Chemical composition — ISO 3506 Group A2 (ASTM F738M Group A1), Type 304 (UNS S30400) properties (typical)

Element	Symbol	Min %	Max %
Carbon	C	—	0.08
Manganese	Mn	—	2.00
Phosphorus	P	—	0.045
Sulfur	S	—	0.030
Silicon	Si	—	1.00
Chromium	Cr	18.0	20.0
Nickel	Ni	8.0	10.5
Copper	Cu	—	1.00

DENSITY	0.289 lb/in ³ (8.00 g/cm ³)
MODULUS OF ELASTICITY	28.0 × 10 ⁶ psi (193 GPa)
THERMAL EXPANSION (68–212 °F)	9.6 µin/in·°F
MAGNETIC	No in the annealed condition; slightly magnetic after cold work

Heat treatment

Condition AF: solution annealed at 1040 ± 30 °C after manufacture. Condition CW: cold worked from annealed stock. Condition SH: strain hardened to the specified strength. Not hardenable by heat treatment; passivated after machining.

Values per ASTM F738M-02 Table 3 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team. 304L, 305 and the other 18-8 alloys are listed in the same table. Note that ASTM F738M numbers this group A1 (markings F738A, D, G) and uses A2 for 321 and 347; ISO 3506 calls the 304 group A2.

Mechanical properties — ISO 3506 A2-50 / A2-70 / A2-80 (ASTM F738M Group A1, full-size tests)

Property class · condition · size	Tensile strength, min (MPa)	Yield strength, min (MPa)	Elongation, min (% machined specimen)	Hardness (Rockwell)	F738M marking
A2-50 · AF (annealed) · M6–M36	500	210	30	B85 max	F738A
A2-70 · CW · M6–M20	700	450	20	B96–C33	F738D
A2-70 · CW · over M20–M36	550	300	25	B83–C31	F738D
A2-80 · SH · M6–M20	800	600	12	C23–C36	F738G
A2-80 · SH · over M20–M24	700	500	15	B96–C33	F738G
A2-80 · SH · over M24–M30	650	400	20	B93–C30	F738G
A2-80 · SH · over M30–M36	600	300	28	B89–C28	F738G

Values per ASTM F738M-02 Table 2 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team. ISO 3506-1 gives the same class values; extension and torsional requirements are in the specification.

Applicable standards

ISO 3506-1	Mechanical properties of corrosion-resistant stainless steel fasteners, bolts, screws and studs
ASTM F738M	Stainless steel metric bolts, screws and studs
ISO 3506-2 / ASTM F836M	Matching stainless nuts
ASTM A967	Passivation

Forms we supply in A2 stainless (A2-70)

- Hex and heavy hex bolts and cap screws
- Studs and threaded rod
- Nuts and washers to match
- Machined specials to drawing

Typical applications

- Metric machinery and equipment in food, water and pharmaceutical service
- Architectural and marine-atmosphere hardware
- Process skids and enclosures
- General stainless bolting on metric drawings