

ASTM A307 Grade A and B Bolts (60 ksi) — Material Data Sheet

ASTM A307 · SAE J429 Grade 2 equivalent · Low-carbon steel

Low-carbon steel bolting, 60 ksi

The general-purpose carbon steel bolt: 60 ksi tensile, not heat treated, weldable and galvanizable — Grade A for general use, Grade B for flanged pipe joints with a 100 ksi cap.

TENSILE, GRADE A	60 ksi min	HARDNESS, GRADE B	69–95 HRB
TENSILE, GRADE B	60–100 ksi	HEAT TREATMENT	None
HARDNESS, GRADE A	69–100 HRB	MATCHING NUT	ASTM A563 Grade A

Nominal composition

■ Fe balance ~ 99.1% ■ Mn ~ 0.60% ■ C, P, S, S trace

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

Chemical composition — ASTM A307 Grades A and B (heat analysis)

Element	Symbol	Min %	Max %
Carbon	C	—	0.29
Manganese	Mn	—	1.20
Phosphorus	P	—	0.04
Sulfur, Grade A	S	—	0.15
Sulfur, Grade B	S	—	0.05

Values per ASTM A307-14 Table 1 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team. Grade A permits resulfurized steel to 0.15 % S; Grade B is limited to 0.05 % S.

Physical properties (typical)

DENSITY	0.284 lb/in ³ (7.85 g/cm ³)
MODULUS OF ELASTICITY	29.0 × 10 ⁶ psi (200 GPa)
THERMAL EXPANSION (68–212 °F)	6.5 µin/in·°F
MAGNETIC	Yes

Heat treatment

None; supplied as machined or cold formed. Bolts may be stress relieved at the manufacturer's option.

Mechanical properties — ASTM A307 (machined specimens) and hardness

Grade / condition and size	Tensile strength, min (ksi)	Yield or proof, min (ksi)	Elongation, min (%)	Reduction of area, min (%)	Hardness
Grade A — all sizes	60	—	18	—	69–100 HRB (121–241 HBW)
Grade B — all sizes	60 (100 max)	—	18	—	69–95 HRB (121–212 HBW)

Values per ASTM A307-14 Tables 2 and 4 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team. Full-size tensile loads by thread size are in Table 3 of the specification.

Applicable standards

ASTM A307	Carbon steel bolts, studs and threaded rod, 60 000 psi tensile strength
SAE J429 GRADE 2	Comparable low-carbon bolt grade
ASTM A563 GRADE A	Matching nuts
ASME B18.2.1 / B18.31.3	Bolt and threaded-rod dimensions

Forms we supply in A307 A / B

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

Typical applications

- General-purpose bolting, brackets and guards
- Cast-iron flanged pipe joints (Grade B)
- Threaded rod and hanger rod
- Galvanized hardware for outdoor structures
- Low-load anchor and tie-down bolting