



ASTM A354 Bolts

Quenched & tempered alloy steel · through 4" · Grades BC and BD



Grade BC
≈ A325



Grade BD
≈ Grade 8 / A490

Heads are marked with the manufacturer's symbol and "A354" together with the grade (BC or BD). Grade BD is equal in strength to A490; unlike A490, A354 is unrestricted in configuration and size.

Mechanical properties

Grade	Size Range	Tensile, min	Yield, min	Elong	RA	Hardness
Grade BC	1/4" thru 2-1/2"	125,000 psi	109,000 psi	16%	50%	26–36 HRC
	Over 2-3/4" thru 4"	115,000 psi	99,000 psi	16%	45%	22–33 HRC
Grade BD	1/4" thru 4"	150,000–173,000 psi	130,000 psi	14%	40%	33–38 HRC

Grade BD carries a tensile range. For BD over 2-1/4", the standard adds a Charpy impact requirement (20 ft-lb min at –4°F) and cross-sectional hardness testing.

Chemical requirements

Element	BC (all) & BD ≤ 2-1/4"	BD over 2-1/4"
Carbon	0.30–0.53%	0.35–0.53%
Manganese, min	0.60%	0.60%
Phosphorus, max	0.035%	0.035%
Sulfur, max	0.040%	0.040%
Boron, max	0.003%	0.003%
Nickel, min	—	0.40%
Chromium, min	—	0.40%
Molybdenum, min	—	0.15%

Larger-diameter BD needs the added Ni/Cr/Mo to develop full strength through the section.

Recommended hardware

Grade	Finish	Nut	Washer
Grade BC	Plain	A563 Grade C heavy hex	F436
Grade BC	Galvanized	A563 DH heavy hex	F436
Grade BD	All finishes	A563 DH heavy hex	F436

Nuts of other grades and styles with greater proof-load stresses are also acceptable.