

Reli-A-Pak® Bolt, Nut, & Gasket Sets by Reliable Fasteners, Inc.

ASTM A193

The ASTM A193 specification covers alloy steel and stainless steel bolting material for pressure vessels, valves, flanges, and fittings for high temperature or high-pressure service, or other special purpose applications. A193 bolting meets ASME/ ANSI B18.2.1 dimensions. The standard thread pitch for A193 bolting with a diameter of 1" or smaller is coarse threaded (UNC Series Class 2A). For diameters larger than 1", the standard thread pitch is 8 threads per inch (UN Series Class 2A), but coarse thread is also available. The following is a partial list of some of the most common grades:

Grades	
B7	AISI 4140, 4142, or 4145 Alloy Steel (CrMo) / Quenched and Tempered
B16	Chromium-Molybdenum-Vanadium Alloy Steel (CrMoVa) / Quenched and Tempered
B8 Class 1	AISI 304 Stainless Steel / Carbide Solution Treated
B8M Class 1	AISI 316 Stainless Steel / Carbide Solution Treated
B8 Class 2	AISI 304 Stainless Steel / Carbide Solution Treated / Strain Hardened
B8M Class 2	AISI 316 Stainless Steel / Carbide Solution Treated / Strain Hardened

Mechanical Properties							
Grade	Size	Tensile psi, min	Yield, psi, min	Elong, %, min	RA, %, min	Hardness Max	
						Brinell	Rockwell
B7	Up to 2-1/2"	125,000	105,000	16	50	321	C35
	2-5/8" – 4"	115,000	95,000	16	50	321	C35
	4-1/8" – 7"	100,000	75,000	18	50	321	C35
B16	Up to 2-1/2"	125,000	105,000	18	50	321	C35
	2-5/8" – 4"	110,000	95,000	17	45	321	C35
	4-1/8" – 7"	100,000	85,000	16	45	321	C35
B8 Class 1	All	75,000	30,000	30	50	223	B96
B8M Class 1	All	75,000	30,000	30	50	223	B96
B8 Class 2	Up to 3/4"	125,000	100,000	12	35	321	C35
	7/8" – 1"	115,000	80,000	15	35	321	C35
	1-1/8" - 1-1/4"	105,000	65,000	20	35	321	C35
	1-3/8" - 1-1/2"	100,000	50,000	28	45	321	C35
B8M Class 2	Up to 3/4"	110,000	95,000	15	45	321	C35
	7/8" – 1"	100,000	80,000	20	45	321	C35
	1-1/8" - 1-1/4"	95,000	65,000	25	45	321	C35
	1-3/8" - 1-1/2"	90,000	50,000	30	45	321	C35

Tensile Strength: The maximum load in tension (pulling apart) that a material can withstand before breaking or fracturing.

Yield Strength: The maximum load at which a material exhibits a specific permanent deformation

Proof Load: An axial tensile load that the product must withstand without evidence of any permanent set.

Elong, %, min stands for Elongation in 2", min, % **RA, %, min** stands for reduction of area, min, %

Recommended Nuts & Flat Washers	Nuts	Washers
B7	A194 Gr. 2H	F436
B16	A194 Gr.4	F436
B8 Class 1	A194 Gr. 8	304-SS
B8M Class 1	A194 Gr. 8M	316-SS
B8 Class 2	A194 Gr. 8 / Strain Hardened	304-SS
B8M Class 2	A194 Gr. 8M / Strain Hardened	316-SS

This is only a partial description of this specification, and should not be used as the only source of data. For complete and up to date information, consult the current version of this specification.

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