
















































Identification Grade Mark	Specification	Fastener Description	Material	Nominal Size Range (in.)	Mechanical Properties			
					Proof Load (psi)	Yield Strength Min (psi)	Tensile Strength Min (psi)	
 No Grade Mark	SAE J429 Grade 1	Bolts, Screws, Studs	Low or Medium Carbon Steel	1/4 thru 1-1/2	33,000	36,000	60,000	
	ASTM A307 Grades A&B		Low Carbon Steel	1/4 thru 4	--	--		
	SAE J429 Grade 2		Low or Medium Carbon Steel	1/4 thru 3/4 Over 3/4 to 1-1/2	55,000 33,000	57,000 36,000	74,000 60,000	
 No Grade Mark	SAE J429 Grade 4	Studs	Medium Carbon Cold Drawn Steel	1/4 thru 1-1/2	--	100,000	115,000	
 B5	ASTM A193 Grade B5		AISI 501	1/4 Thru 4	--	80,000	100,000	
 B6	ASTM A193 Grade B6		AISI 410			85,000	110,000	
 B7	ASTM A193 Grade B7		AISI 4140, 4142, OR 4105	1/4 thru 2-1/2 Over 2-1/2 thru 4 Over 4 thru 7	-- -- --	105,000 95,000 75,000	125,000 115,000 100,000	
 B16	ASTM A193 Grade B16		CrMoVa Alloy Steel			105,000 95,000 85,000	125,000 115,000 100,000	
 B8	ASTM A193 Grade B8		AISI 304	1/4 and larger	--	30,000	75,000	
 B8C	ASTM A193 Grade B8C		AISI 347					
 B8M	ASTM A193 Grade B8M		AISI 316					
 B8T	ASTM A193 Grade B8T		AISI 321	1/4 and larger	--	30,000	75,000	
 B8	ASTM A193 Grade B8		Bolts,	AISI 304 Strain Hardened			100,000 80,000 65,000	125,000 115,000 105,000

 B8C	ASTM A193 Grade B8C	Screws, Studs for High- Temperature Service	AISI 347 Strain Hardened	1/4 thr 3/4 Over 3/4 thru 1 Over 1 thru 1-1/4 Over 1-1/4 thru 1-1/2	-- -- -- --	50,000	100,000
 B8M	ASTM A193 Grade B8M		AISI 316 Strain Hardened			95,000 80,000 65,000 50,000	110,000 100,000 95,000 90,000
 B8T	ASTM A193 Grade B8T		AISI 321 Strain Hardened			100,000 80,000 65,000 50,000	125,000 115,000 105,000 100,000
 L7	ASTM A320 Grade L7	Bolts, Screws, Studs for Low- Temperature Service	AISI 4140, 4142 or 4145	1/4 thru 2- 1/2	--	105,000	125,000
 L7A	ASTM A320 Grade L7A		AISI 4037				
 L7B	ASTM A320 Grade L7B		AISI 4137				
 L7C	ASTM A320 Grade LC7		AISI 8740				
 L43	ASTM A320 Grade L43		AISI 4340				
 B8	ASTM A320 Grade B8	Bolts, Screws, Studs for Low- Temperature Service	AISI 304	1/4 and larger	--	30,000	75,000
 B8C	ASTM A320 Grade B8C		AISI 347				
 B8T	ASTM A320 Grade B8T		AISI 321				
 B8F	ASTM A320 Grade B8F		AISI 303 or 303Se				
 B8M	ASTM A320 Grade B8M		AISI 316				
 B8	ASTM A320 Grade B8		AISI 304				

 B8C	ASTM A320 Grade B8C		AISI 347				
 B8F	ASTM A320 Grade B8F		AISI 303 or 303Se	1/4 thru 3/4	--	100,000	100,000
 B8M	ASTM A320 Grade B8M		AISI 316	Over 3/4 thru 1	--	80,000	80,000
 B8T	ASTM A320 Grade B8T		AISI 321	Over 1 thru 1-1/4	--	65,00	65,00
				Over 1-1/4 thru 1-1/2	--	50,00	50,00
	SAE J429 Grade 5	Bolts, Screws, Studs	Medium Carbon Steel, Quenched and Tempered	1/4 thru 1	85,000	92,000	120,000
	ASTM A449			Over 1 to 1-1/2	74,000	81,000	105,000
				1/4 thru 1	85,000	92,000	120,000
				Over 1 to 1-1/2	74,000	81,000	105,000
				Over 1-1/2 thru 3	55,000	58,000	90,000
	SAE J429 Grade 5.1	Sems	Low or Medium Carbon Steel, Quenched and Tempered	No. 6 thru 3/8	85,000	--	120,000
	SAE J429 Grade 5.2	Bolts, Screws, Studs	Low Carbon Martensitic Steel, Quenched and Tempered	1/4 thru 1	85,000	92,000	120,000
	ASTM A325 Type 1	High Strength Structural Bolts	Medium Carbon Steel, Quenched and Tempered	1/2 thru 1	85,000	92,000	120,000
	ASTM A325 Type 2		Low Carbon Martensitic Steel, Quenched and Tempered	1-1/8 thru 1-1/2	74,000	81,000	105,000
	ASTM A325 Type 3		Atmospheric Corrosion Resisting Steel, Quenched and Tempered	1/2 thru 1	85,000	92,000	120,000
				1-1/8 thru 1-1/2	74,000	81,000	105,000
	ASTM A354 Grade BB	Bolts, Studs	Alloy Steel, Quenched and Tempered	1/4 thru 2- 1/2	80,000	83,000	105,000
	ASTM A354 Grade BC			2-3/4 thru 4	75,000	78,000	100,000
					105,000	109,000	125,000
					95,000	99,000	115,000
	SAE J429	Bolts,	Medium Carbon Alloy Steel,	1/4 thru 1-	105,000	115,000	133,000

	Grade 7	Screws,	Quenched and Tempered <sup>4</sup>	1/2				
	SAE J429 Grade 8	Bolts, Screws, Studs	Medium Carbon Alloy Steel, Quenched and Tempered	1/4 thru 1-1/2	120,000	130,000	150,000	
	ASTM A354 Grade BD		Alloy Steel, Quenched and Tempered <sup>4</sup>					
 No Grade Mark	SAE J429 Grade 8.1	Studs	Medium Carbon Alloy or SAE 1041 Modified Elevated Temperature Drawn Steel	1/4 thru 1-1/2	120,000	130,000	150,000	
 A490	ASTM A490	High Strength Structural Bolts	Alloy Steel, Quenched and Tempered	1/2 thru 1-1/2	120,000	130,000	150,000 min 170,000 max	
 No Grade Mark	ISO R898 Class 4.6	Bolts, Screws, Studs	Medium Carbon Steel, Quenched and Tempered	All Sizes thru 1-1/2	33,000	36,000	60,000	
 No Grade Mark	ISO R898 Class 5.8				55,000	57,000	74,000	
8.8  or  88	ISO R898 Class 8.8				85,000	92,000	120,000	
10.9  or  109	ISO R898 Class 10.9		120,000		130,000	150,000		
			Alloy Steel, Quenched and Tempered					