





















Head Marking	Bolt Grade	Material	Nominal Size Range (Inch)	Rockwell Hardness Min/Max	Mechanical Properties			Application
					Min. Tensile Strength (psi)	Min. Yield Strength (psi)	Proof Load (psi)	
	Grade 1 - SAE J429	Low or medium carbon steel	1/4" - 1-1/2"	B70 / B100	60,000	36,000	33,000	Bolts, Screws,& Studs
	Grade 2 - SAE J429	Low or medium carbon steel	1/4" - 3/4" >3/4" - 1-1/2"	B80 / B100 B70 / B100	74,000 60,000	57,000 36,000	55,000 33,000	Bolts, Screws,& Studs
	Grade 5 - SAE J429	Medium carbon steel or carbon steel with additives, quenched and tempered	1/4" - 1" >1" - 1-1/2"	C25 / C34 C19 / C30	120,000 105,000	92,000 81,000	85,000 74,000	Bolts, Screws,& Studs
	Grade 5.1 - SAE J429	Low or medium carbon steel, quenched and tempered	No. 4 - 5/8"	C25 / C40	120,000	92,000	85,000	Sems
	Grade 5.2 - SAE J429	Low carbon Boron steel, quenched and tempered	1/4" - 1"	C26 / C36	120,000	92,000	85,000	Bolts, Screws,& Studs

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	Grade 8 - SAE J429	Medium carbon / alloy steel with additives, quenched and tempered	1/4" - 1-1/2"	C33 / C39	150,000	130,000	120,000	Bolts&Screws
	Grade 8.2 - SAE J429	Low carbon Boron steel, quenched and tempered	1/4" - 1"	C33 / C39	150,000	130,000	120,000	Bolts&Screws
	L9 - Grade 9	Hight strength alloy steel	1/4" - 1-1/2"	C38 / C42	180,000	155,000	145,000	Bolts, Nuts,&Washers
	ASTM A307 Grade A	Low or medium carbon steel	1/4" - 4"	B69 / B100	60,000	36,000	33,000	Bolts, Screws,&Studs (General Engineering)
	ASTM A307 Grade B	Low or medium carbon steel	1/4" - 4"	B69 / B95	60,000	36,000	33,000	Bolts, Screws,&Studs (Flanged Joints)

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	ASTM A325 Type 1	Medium carbon steel, quenched and tempered	1/2" - 1"1-1/8" - 1-1/2"	C24 / C35C19 / C31	120,000105,000	92,00081,000	85,00074,000	High strength structural bolts
	ASTM A325 Type 2	Low carbon Martensitic steel, quenched and tempered	1/2" - 1"1-1/8" - 1-1/2"	C24 / C35C19 / C31	120,000105,000	92,00081,000	85,00074,000	High strength structural bolts
	ASTM A325 Type 3	Atmospheric corrosion-resistant steel, quenched and tempered	1/2" - 1"1-1/8" - 1-1/2"	C24 / C35C19 / C31	120,000105,000	92,00081,000	85,00074,000	High strength structural bolts
	ASTM A354 Grade BB	Alloy steel, quenched and tempered	1/4" - 2-1/2"> 2-1/2" - 4"	C26 / C36C22 / C33	105,000100,000	83,00078,000	80,00075,000	Bolts&studs
	ASTM A354 Grade BC	Alloy steel, quenched and tempered	1/4" - 2-1/2"> 2-1/2" - 4"	C26 / C36C22 / C33	125,000115,000	109,00099,000	105,00095,000	Bolts&studs

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	ASTM A354 Grade BD	Alloy steel, quenched and tempered	1/4" - 2-1/2" > 2-1/2" - 4"	C33 / C39C31 / C39	150,000 140,000	130,000 120,000	120,000 105,000	Bolts, screws,& studs
	ASTM A449 Type 1	Medium carbon steel, quenched and tempered	1/4" - 1" > 1 - 1-1/2"	C25 / C34C19 / C30	120,000 105,000	81,000 58,000	85,000 74,000	Bolts, screws,& studs
	ASTM A449 Type 2	Low carbon Martensitic steel, quenched and tempered	1/4" - 1"	C25 / C34	120,000	58,000	85,000	Bolts, Screws,& studs
	ASTM A490 Type 1	Medium carbon alloy steel, quenched and tempered	1/2" - 1-1/2"	C33 / C38	150,000 min 170,000 max	130,000	120,000	High strength structural bolts
	ASTM A490 Type 2	Low carbon Martensitic steel, quenched and tempered	1/2" - 1"	C33 / C38	150,000 min 170,000 max	130,000	120,000	High strength structural bolts

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	ASTM A490 Type 3	Atmospheric corrosion-resistant steel, quenched and tempered	1/2" - 1-1/2"	C33 / C38	150,000 min 170,000 max	130,000	120,000	High strength structural bolts

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