

SAE International (Society of Automotive Engineers) is a standards development organization with fastener specifications that apply to the aerospace, automotive, and commercial vehicle industries. SAE bolts are also used in machinery, equipment, and OEM applications.

SAE J429 Mechanical and material requirements for externally threaded fasteners.

SAE J429 covers the mechanical and material requirements for inch series fasteners used in automotive and related industries in sizes to 1-1/2" inclusive.

Below is a basic summary the most common grades. SAE J429 covers a number of other grades and grade variations not covered in this summary, including 4, 5.1, 5.2, 8.1, and 8.2.

J429 Mechanical Properties

Grade	Nominal Size, inches	Full Size Proofload, psi	Yield Strength, min, psi	Tensile Strength, min, psi	Elong, min, %	RA, min, %	Core Hardness, Rockwell	Tempering Temperature, min
1	1/4 thru 1-1/2	33,000	36,000	60,000	18	35	B7 to B100	N/A
2	1/4 thru 3/4	55,000	57,000	74,000	18	35	B80 to B100	N/A
	Over 3/4 thru 1-1/2	33,000	36,000	60,000	18	35	B70 to B100	
5	1/4 thru 1	85,000	92,000	120,000	14	35	C25 to C34	800F
	Over 1 thru 1-1/2	74,000	81,000	105,000	14	35	C19 to C30	
8	1/4 thru 1-1/2	120,000	130,000	150,000	12	35	C33 to C39	800F

Grade 2 requirements for sizes 1/4" thru 3/4" apply only to bolts 6" and shorter, and to studs of all lengths. For bolts longer than 6", Grade 1 requirements shall apply.

J429 Chemical Requirements

Grade	Material	Carbon, %	Phosphorus, %	Sulfur, %	Grade Marking
1	Low or Medium Carbon Steel	0.55 max	0.030 max	0.050 max	None
2	Low or Medium Carbon Steel	0.15 - 0.55	0.030 max	0.050 max	None
5	Medium Carbon Steel	0.28 - 0.55	0.030 max	0.050 max	
8	Medium Carbon Alloy Steel	0.28 - 0.55	0.030 max	0.050 max	

J429 Recommended Hardware

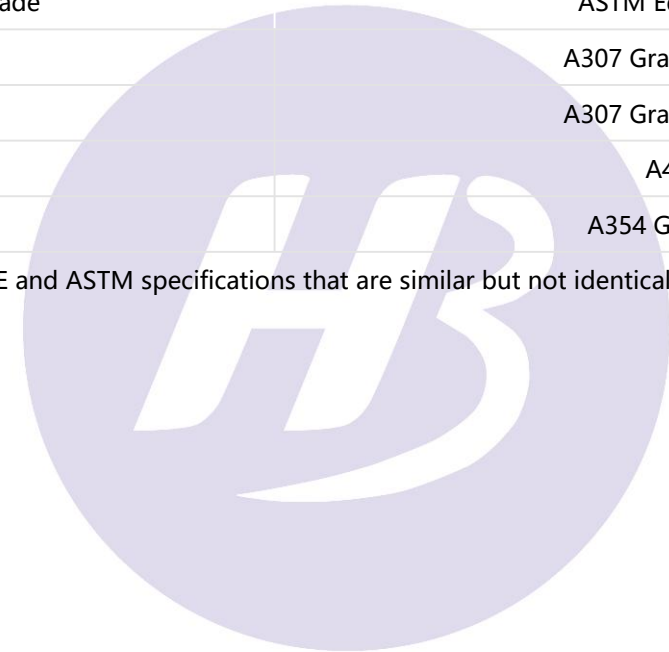
Nuts	Washers
J995	N/A

Alternate Grades

For fasteners larger than 1-1/2" in diameter, the following ASTM grades should be considered.

SAE J429 Grade	ASTM Equivalent
Grade 1	A307 Grades A or B
Grade 2	A307 Grades A or B
Grade 5	A449
Grade 8	A354 Grade BD

This chart compares SAE and ASTM specifications that are similar but not identical in diameters through 1½".



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