

GRADE 2 AND ASTM A 307 BOLTING

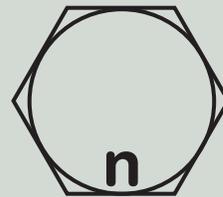
NUCOR FASTENER

TECHNICAL DATA SHEET

Grade 2 and A307A (A307 Grade A) Fasteners are both relatively low strength, non-heat treated carbon steel fasteners which have similar strength and hardness requirements. Both are manufactured from carbon steel which, although not heat treated after forming, achieves its strength from cold working during the cold forming operation. Grade 2 Fasteners are manufactured in accordance with the SAE J429 Standard and A307A Fasteners are manufactured in accordance with the ASTM A307 Standard. Both Grade 2 and A307A Fasteners are widely used for general purpose bolting. Our

Grade 2 and A307A Fasteners are 100% Made in the U.S.A. from American Steel. They are formed on precision high speed cold formers, utilizing in-process quality systems and have full traceability from raw material to each container we ship. Chemical and physical certifications are provided with every shipment. Nucor Fastener is TS16949 and ISO9001 Registered and our laboratory is A2LA Accredited.

BOLT IDENTIFICATION AND GRADE MARKINGS:



SAE J429 Grade 2



ASTM A307 Grade A

SAE J429 Grade 2

Grade 2 Cap Screws are manufactured in accordance with SAE J429 and must meet hardness requirements of 80-100 HRb for diameters up to and including 3/4" and 70-100 HRb for sizes over 3/4" diameter. The wedge tensile strength requirements are 74,000 psi minimum for diameters up to and including 3/4" and 60,000 psi minimum for sizes over 3/4" diameter. There is no grade identification required for Grade 2 Cap Screws, but the manufacturer's identification symbol is required on the top of the head. Dimensional requirements are contained in ANSI B.18.2.1, "Square and Hex Head Bolts and Screws Inch Series".

ASTM A307 Grade A

A307A Cap Screws are manufactured in accordance with ASTM A307 and must meet hardness requirements of 69-100 HRb for all diameters. For sizes long enough to tensile test (typically greater than 3 x dia.), the only hardness requirement is 100 HRb maximum. The wedge tensile strength requirement for all diameters is 60,000 psi minimum. In 1987, head marking requirements changed from requiring no grade identification to requiring a '307A' marking on the head in addition to the manufacturer's identification. The dimensional requirements are contained in ANSI B18.2.1, "Square and Hex Head Bolts and Screws Inch Series".

Interchangeability of Grade 2 and A307A Fasteners

In general, since the minimum strength requirement of a Grade 2 is greater than that of an A307A, a Grade 2 can be successfully utilized in applications where an A307A is specified, as approved by the "Engineer of Record". Conversely, because of the lower minimum strength specified for an A307A, caution should be exercised when substituting an A307A in an application in place of a Grade 2. Since the overall strength ranges of the Grade 2 and A307A overlap, it has been common for substitutions of either grade to occur. Since 1987, when the '307A' head marking became a mandatory requirement, users have been more discerning to the differences between Grade 2 and A307A because they now have different head marks.

Grade 2 and A307A Certification

At Nucor Fastener, we manufacture both Grade 2 and A307A Fasteners from the same grades of steel, utilizing the same manufacturing processes, resulting in the same mechanical properties for each grade. Because we test the mechanical properties of each lot of fasteners we produce, we can verify that our A307A Fasteners also meet the Grade 2 mechanical requirements as well, making the case for allowing substitution of grades much easier. This dual information is noted on our certified material test report, which is supplied at no charge on each lot with every shipment. The certified material test report lists results of both mechanical and chemical properties for the fasteners.

Mechanical Properties of Grade 2 and A307A Fasteners

GRADE	SIZE	HARDNESS (MIN.-MAX.)	WEDGE TENSILE STRENGTH (PSI)
Grade 2	To 3/4"	80-100 HRb	74,000 psi Min.
	Over 3/4"	70-100 HRb	60,000 psi Min.
A307A	Less Than 3D	69-100 HRb	60,000 psi Min.
	3D and Longer	100 HRb Max.	60,000 psi Min.
A307B	All Sizes	69-95 HRb	60-100,000 psi Min.-Max.

Nucor Fastener has the equipment, quality, systems, expertise, sources, and people to supply your Grade 2 or A307 Fastener needs!

TODAY, THAT LITTLE "n" MEANS BIG THINGS!

This Technical Data Sheet is subject to change without prior notification.

