

# SAE Numbering System for Wrought or Rolled Steel —SAE J402b

SAE Standard  
Editorial change November 1977

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HANDBOOK.

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# SAE NUMBERING SYSTEM FOR WROUGHT OR ROLLED STEEL—SAE J402b

## SAE Standard

Report of Iron and Steel Division approved January 1912 and last revised by Iron and Steel Technical Committee May 1969. Editorial change November 1977.

This SAE Standard is intended to supply a uniform means of designating wrought ferrous materials reported in SAE Standards and Recommended Practices.

[History of standardized automotive steels goes back to Bulletin No. 9 of the Mechanical Branch of the Association of Licensed Automobile Manufacturers, dated Dec. 23, 1905, which have ALAM Specifications Nos. 1 through 6 for steels. ALAM Bulletin No. 13 soon followed with specifications for steel and gray iron castings, notes on malleable iron castings, and a standard or arbitration bars and test specimens for the iron castings.]

In 1910 SAE took over ALAM's standardization work, setting up the SAE Standards Committee and, under it, the SAE Iron and Steel Division (now the SAE Iron and Steel Technical Committee). SAE Standards and SAE Recommended Practices developed by this group have been of such engineering and commercial value that for many years they have been used in nearly all fields of mechanical manufacture in the United States and many other countries.]

Only compositions which conform to the SAE compositions given in the current SAE Handbook should bear the prefix "SAE."

A numeral index system is used to identify the compositions of the SAE steels, which system makes possible use of numerals on shop drawings and blueprints to describe partially the composition of the material.

The first digit indicates the type to which the steel belongs, that is, "1" indicates a carbon steel; "2" a nickel steel; and "3" a nickel-chromium steel. In the case of the simple alloy steels, the second digit generally indicates an alloy or alloy combination, and sometimes the approximate percentage of the predominant alloying element. Usually the last two or three digits indicate the approximate carbon content in "points" or hundredths of one percent. Thus, "SAE 5135" indicates a chromium steel of approximately 1% chromium (0.80 to 1.05%) and 0.35% carbon (0.33 to 0.38%).

In some instances, in order to avoid confusion, it has been found necessary to depart from this system of identifying the approximate alloy composition of a steel by varying the second and third digits of the number. Instances of such departure are the steel numbers selected for several of the corrosion and heat resisting alloys and the triple alloy steels.

The basic numerals of the various types of SAE steel are given in the table.

BASIC NUMBERING SYSTEM FOR SAE STEELS

Numerals and Digits	Type of Steel and Average Chemical Contents, %	Numerals and Digits	Type of Steel and Average Chemical Contents, %	Numerals and Digits	Type of Steel and Average Chemical Contents, %
10XX	CARBON STEELS Plain Carbon (Mn 1.00% max)	43BVXX	Ni 1.82; Cr 0.50; Mo 0.12 and 0.25; V 0.03 minimum	72XX	W 1.75; Cr 0.75
11XX	Resulphurized	47XX	Ni 1.05; Cr 0.45; Mo 0.20 and 0.35	92XX	SILICON MANGANESE STEELS Si 1.40 and 2.00; Mn 0.65, 0.82 and 0.85 Cr 0.00 and 0.65
12XX	Resulphurized and Rephosphorized	81XX	Ni 0.30; Cr 0.40; Mo 0.12		
15XX	Plain Carbon (max Mn range - over 1.00 - 1.65%)	86XX	Ni 0.55; Cr 0.50; Mo 0.20	9XX	LOW ALLOY HIGH TENSILE STEELS Various
13XX	MANGANESE STEELS Mn 1.75	87XX	Ni 0.55; Cr 0.50; Mo 0.25		
23XX	NICKEL STEELS Ni 3.50	88XX	Ni 0.55; Cr 0.50; Mo 0.35	302XX	STAINLESS STEELS (Chromium-Manganese-Nickel) Cr 17.00 and 18.00; Mn 6.50 and 8.75; Ni 4.50 and 5.00
25XX	Ni 5.00	93XX	Ni 3.25; Cr 1.20; Mo 0.12	303XX	(Chromium-Nickel) Cr 8.50, 15.50, 17.00, 18.00, 19.00, 20.00, 20.50, 23.00, 25.00 Ni 7.00, 9.00, 10.00, 10.50, 11.00, 11.50, 12.00, 13.00, 13.50, 20.50 21.00, 35.00
31XX	NICKEL-CHROMIUM STEELS Ni 1.25; Cr 0.65 and 0.80	94XX	Ni 0.45; Cr 0.40; Mo 0.12	514XX	(Chromium) Cr 11.12, 12.25, 12.50, 13.00, 16.00 17.00, 20.50 and 25.00
32XX	Ni 1.75; Cr 1.07	97XX	Ni 0.55; Cr 0.20; Mo 0.20	515XX	Cr 5.00
33XX	Ni 3.50; Cr 1.50 and 1.57	98XX	Ni 1.00; Cr 0.80; Mo 0.25	XXBXX	BORON INTENSIFIED STEELS B denotes Boron Steel
34XX	Ni 3.00; Cr 0.77			XXLXX	LEADED STEELS L denotes Leaded Steel
40XX	MOLYBDENUM STEELS Mo 0.20 and 0.25	46XX	NICKEL-MOLYBDENUM STEELS Ni 0.85 and 1.82; Mo 0.20 and 0.25		
44XX	Mo 0.40 and 0.52	48XX	Ni 3.50; Mo 0.25		
41XX	CHROMIUM-MOLYBDENUM STEELS Cr 0.50, 0.80 and 0.95; Mo 0.12, 0.20, 0.25 and 0.30	50XX	CHROMIUM STEELS Cr 0.27, 0.40, 0.50 and 0.65		
43XX	NICKEL-CHROMIUM-MOLYBDENUM STEELS Ni 1.82; Cr 0.50 and 0.80; Mo 0.25	51XX	Cr 0.80, 0.87, 0.92, 0.95, 1.00 and 1.05		
		501XX	Cr 0.50		
		511XX	Cr 1.02		
		521XX	Cr 1.45		
		61XX	CHROMIUM VANADIUM STEELS Cr 0.60, 0.80 and 0.95; V 0.10 and 0.15 minimum		
		71XX	TUNGSTEN CHROMIUM STEELS W 13.50 and 16.50; Cr 3.50		

The  $\phi$  symbol is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.