

NATIONAL STEEL SYMBOL SPECIFICATION

ASTM, SAE, AISI Code for Steel

ASTM American Society for Testing and Materials

SAE Society of Automotive Engineers

AISI American Iron and Steel Institute

1. Structural Steel

Generally expressed in four digits, and each means as below :

Digit 1	Steel Type	Digit 2	Class
1	Carbon steel	0	Carbon steel
		1	Free cutting carbon steel
		3	Mn structural steel
2	Ni steel		$1 / 100 \times \text{Digit 2} = \text{Ni } \%$
3	Ni-Cr steel		
4	Mo steel	0,4,5	different Mo content
		1	Cr-Mo steel
		3,7	Ni-Cr-Mo steel
		6,8	Ni-Mn steel
5	Cr steel		$1 / 100 \times \text{Digit 2} = \text{Cr } \%$
61	Cr-V steel		
8	Low Ni-Cr steel	1	Mo 0.08~0.15 %
		6	Mo 0.15~0.25 %
		7	Mo 0.20~0.30 %
		8	Mo 0.30~0.40 %
92	Si-Mn steel		
93	Cr-Ni-Mo steel		
94			
97			
98			

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Steel Type	Code	Steel Type	Code
Carbon steel	1xxx	heat resistant steel	30xxx
Normal carbon steel	10xx	Mo Steel	4xxx
Free cutting carbon steel (sulfurized)	11xx	Cr(0.7%)	41xx
Mn steel	13xx	Ni-Cr	43xx
Ni steel	2xxx	Ni(1.75%)	46xx
0.50%Ni	20xx	Cr steel	5xxx
1.50%Ni	21xx	Cr(1.0%)	51xx
3.50%Ni	23xx	Cr(1.5%)	52xx
Ni-Cr steel	3xxx	Cr-V steel	6xxx
1.25%Ni	31xx	W steel	7xxx
0.6%Cr			
1.75%Ni	32xx	Ni-Cr-Mo steel	8xxx
1.0%Cr			
3.50%Ni	33xx	Si-Mn steel	9xxx
1.5%Cr			

Digit 1 : Steel type (2 : Ni steel ; 7 : W steel)

Digit 2 : Content rate % of main alloy element

Digit 0 : no any other element)

Digit 3 & 4 : Carbon content % (Digit 3, 4, or even 5)

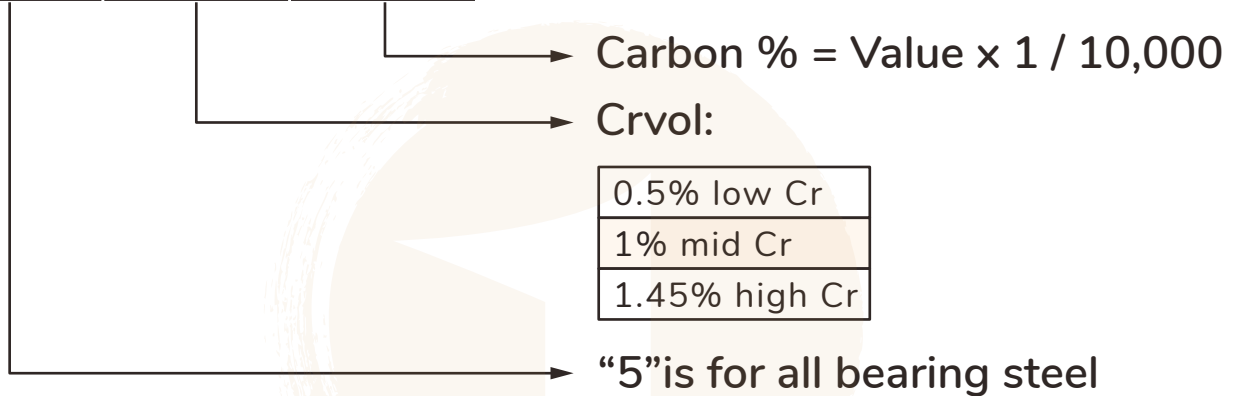
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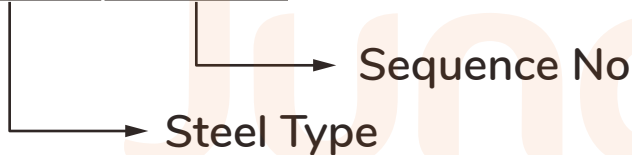
2. Cr Bearing Steel

5 1 100



3. Tool Steel

M 2



A	air-cooled mid-hardened alloy cold working tool steel
D	high carbon Cr cold working steel
F	C-W tool steel
H1	Mid carbon high Cr hot die steel
H2	W series hot die steel
H4	Mo series hot die steel
L	Low alloy tool steel for special purpose
M	Mo series high speed tool steel
O	oil-hardening tool steel
P	low carbon tool steel
S	impact resistant tool steel
T	W series high speed tool steel
W	water-hardening steel

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4. Stainless Steel & Heat Resistant Steel

3 **16**

Sequence No
Steel Type

hardened stainless steel
Cr-Mn-Ni-N Austenite stainless steel
Cr-Ni Austenite stainless steel
High Cr Martensite stainless steel Low C high Cr Ferrite stainless steel
Low Cr Martensite stainless steel

5. Cast Steel

(A) Gray Cast Iron

20 **A**

Sample Sizes : A. B. C. S
Minimum Tensile Strength. 1,000Psi / Unit

(B) Ductile Iron

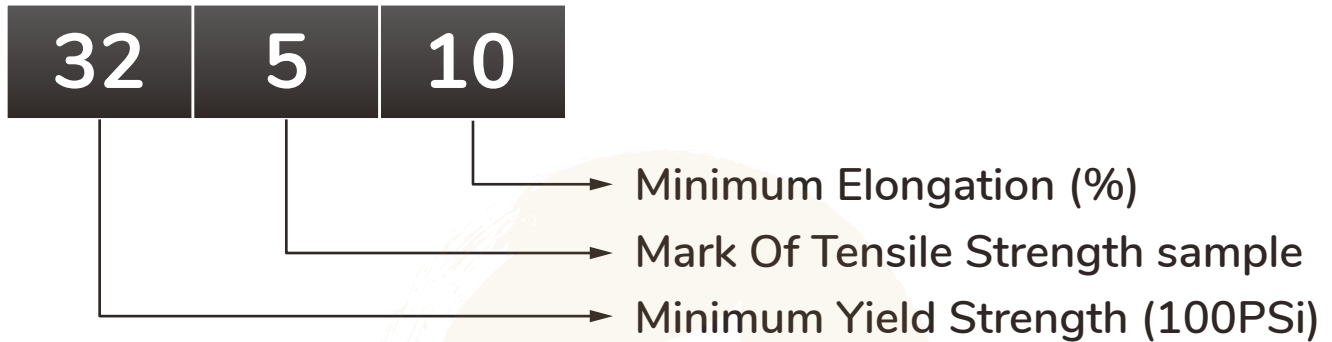
80 **55** **06**

Minimum elongation (%)
Minimum yield strength (100PSi)
Minimum yield strength (100PSi)

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(C) Malleable Cast Iron



ASTM & ASME

ASTM is a very widely adopted material specification that is characterized primarily by the attributes and performance of the product.

ASTM is presented by letter + code and supplemented by age. ASME has adopted many regulations from ASTM and it alphabet S laid in the front.

ASTM Denotation:

First Alphabet	Denotation
A	Iron / Steel
B	Non-metal
C	Normal Test Approach

EX: ASTM A36-77a → A36-77a