Grade Specification and its Application

S.No.	Grade	Steel Type	Chemical properties and mechanical properties of raw material														Mechanical Properties Finish product in wire		B/Bar	Applications
			%C	%Mn	%Si	%P	%s	%Cr	%V	%Ni	%Mo	%Ti	%B	%AI	%Pb	UTS(N/mm2	UTS(N/mm2	Hardness		
1	SAE1006	General engg wire Low Carbon Steel wire	0.08max	0.50 max	0.35mx	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	390max	450 Max	70 Max	-	Cable Armour Wire
2	SAE1008		0.10max	0.30-0.60	0.35mx	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	350-420	450 Max	70 Max	-	Steel decorative product,binding wires,nails,Ubolt,J Bolt, etc
3	SAE1010		0.08-0.13	0.30-0.60	0.35mx	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	350-450	450 Max	70 Max	-	Wire conductor in transport & telegraphy, Holding & binding wires
4	SAE1020		0.18-0.23	0.30-0.60	0.35mx	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	450-530	500 Max	75 Max	-	Fencing Wire,Binding wire, Net Nails, Small shaped product,wire net, secrew, Rivets, Spokes, Mesh etc.
5	SAE1006	Cold Heading Quality Steel	0.08max	0.25-0.40	0.35mx	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	400 max	400 Max	65 Max	-	Wire Drawing & Cold upsetting
6	SAE1008		0.10max	0.50 Max	0.35mx	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	420 max	400 Max	65 Max	-	Automobiles and machines Parts, Like Screw, High Tensile Fasteners, Bush, Spline, Socket, Connecting Rod, Shaft, Gear, Quarter, Nails Rivets, etc.
7	SAE1010		0.08-0.13	0.30-0.50	0.35mx	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	440 max	420 Max	65 Max	-	
8	SAE1012		0.10-0.15	0.30-0.60	0.35mx	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	350-440	420 Max	65 Max	-	
9	SAE1015		0.13-0.18	0.30-0.60	0.35mx	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	350-450	450 Max	70 Max	-	
10	SAE1018		0.15-0.20	0.60-0.90	0.35mx	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	500 max	500 Max	80 Max	90 Min	
11	SAE1020		0.18-0.23	0.30-0.60	0.35mx	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	420-530	500 Max	80 Max	90 Min	
12	SAE10B21		0.18-0.23	0.70-1.10	0.30 max	0.04max	0.050max	0.15-0.25	-	-	-	0.030-0.045	0.0005-0.003	0.020-0.040	-	550 Max	500 Max	80 Max	-	
13	SAE15B25		0.25-0.28	0.90-1.20	0.30 max	0.04max	0.050max	0.15-0.25	-	-	-	0.030-0.045	0.0005-0.003	0.020-0.040	-	600 Max	520 Max	82 Max	-	
14	19MnB4		0.23-0.26	0.95-1.10	0.30 max	0.04max	0.050max	0.30-0.40	-	-	-	0.030-0.045	0.0005-0.003	0.020-0.040	-	600 max	520 Max	82 Max	-	
15	SAE15B41		0.36-0.44	1.35-1.65	0.05-0.35	0.04max	0.050max	0.15-0.22	-	-	-	0.030-0.045	0.0005-0.003	0.020-0.040	-	720-880	520 Max	88 Max	20-25 Rc	
16	SAE1035	Steel General applications	0.33-0.35	0.60-0.65	0.05-0.35	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	600-700	550 Max	85 Max	-	Nut Bolt,connecting rod etc.
17	SAE1038		0.35-0.42	0.60-0.90	0.05-0.35	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	600-700	550 Max	85 Max	-	Nut Bolt,connecting rod etc.
18	SAE1040		0.37-0.44	0.60-0.90	0.05-0.35	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	650-750	550 Max	85 Max	-	Chain for crain, tolift weights,binding,Suspension ropes,wire for lifts
19	SAE1541		0.36-0.44	1.35-1.65	0.05-0.35	0.04max	0.050max	-	-	-	-	-	-	0.020-0.040	-	720-880	580 Max	88 Max	-	Nut Bolt,Fasteners for automobile and Bridge Industries
20	EN8D		0.40-0.45	0.70-0.90	0.05-0.35	0.06max	0.06max	-	-	-	-	-	-	0.020-0.040	-	650-750	580 Max	88 Max	20-25 Rc	Nut Bolt,Fasteners for automobile and Bridge Industries,Axles
21	EN8A		0.33-0.38	0.70-0.90	0.05-0.35	0.06max	0.06max	0.05 max	-	0.05 max	-	-	-	0.020-0.040	-	600-700	550 Max	85 Max	20-25 Rc	Forging
22	HC 36/40	High Carbon Steel	0.36-0.40	0.60-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020-0.040	-	600-700	27-33 HRC		-	Automobiles wiper etc.
23	HC 41/45		0.41-0.45	0.70-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020-0.040	-	650-750	As per customer requirements		-	Umbrella Ribs, Cycle spokes
24	HC 46/50		0.46-0.49	0.70-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020-0.040	-	700-800			-	Wire for rope & other non critical miscellaneous wire application
25	HC 51/55		0.51-0.55	0.70-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020-0.040	-	750-850			-	Grade II Spring used in Machines tools, Forming Machines,Hydraulic
26	HC56/60		0.57-0.60	0.70-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020-0.040	-	750-850			-	Wires for rope & other non critical miscellaneous wire application
27	HC 61/65		0.61-0.65	0.70-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020-0.040	-	950-1000			-	Grade II Spring used in Machines tools, Forming Machines,Hydraulic Machines etc.
28	HC 66/70		0.67-0.70	0.70-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020-0.040	-	950-1000			-	Wires for type bead & spring application
29	HC 71/75		0.71-0.75	0.70-0.90	0.05-0.35	0.06max	0.06max	0.10 max	-	-	-	-	-	0.020 Max	-	1000-1300			-	Riope,binding & holding wires, tire cord to rainforced automobile tire conveyor belt, Pressure Hoses, Chisel etc.
30	HC 76/80		0.77-0.80	0.70-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020 Max	-	1000-1300			-	Rainforcement for railway sleepers, bridges
31	HC 81/85		0.81-0.85	0.70-0.90	0.05-0.35	0.06max	0.06max	0.15-0.20	-	-	-	-	-	0.020 Max	-	1000-1300			-	Rainforcement for railway sleepers, bridges,needle wire, etc
32	HC-77/80		0.77-0.80	0.70-0.90	0.05-0.35	0.06max	0.06max	0.15-0.20	-	-	-	-	-	0.020 Max	-	1000-1300			-	Rope,binding & holding wires, tire cord to rainforced automobile tire, conveyor belt,Pressure Hoses, chisel etc.
33	HC-66/70		0.66-0.70	0.70-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020 Max	-	965-1000			-	Wires for tyre bead & spring application
34	HC-51/55		0.51.055	0.70-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020 Max	-	700-800			-	Wires for spring application
35	HC-60/65		0.60-0.65	0.70-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020 Max	-	900-1200			-	Grade II spring used in Machines tools, Forming Machines, Hydraulic Machines, etc
36	HC-70/75		0.71-0.75	0.70-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020 Max	-	1000-1300			-	Wires for spring application
37	HC-81/85		0.82-0.86	0.60-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020 Max	-	1000-1300			-	Wires for spring application
38	HC-82/86		0.82-0.86	0.60-0.90	0.05-0.35	0.06max	0.06max	0.15-0.20	0.05-0.07	-	-	-	-	0.020 Max	-	1000-1300			-	Wires for spring application
39	HC81/85(P)		0.81-0.84	0.60-0.90	0.05-0.35	0.06max	0.06max		-	-	-	-	-	0.020 Max	-	1069-1207			-	Wires for spring application
40	16MnCr5	Alloy Steel	0.12-0.19	1.00-1.30	0.05-0.35	0.06max	0.06max	0.80-1.10	-	-	-	-	-	0.020-0.040	-	650 max		-	90 HRB Min	Case Hardening Automobile and Machines Parts Like Gear
41	20MnCr5		0.17-0.22	1.10-1.40	0.05-0.35	0.06max	0.06max	1.00-1.30	-	-	-	-	-	0.020-0.040	-	650 max		-	90 HRB Min	Case Hardening Automobile and Machines Parts Like Gear
42	SCM 415H		0.13-0.18	0.75-0.85	0.05-0.35	0.04max	0.04max	1.05-1.20	-	-	0.20-0.30	-	-	0.020-0.040	-	650 max	500 max	80 Max	-	Case Hardening Automobile and Machines Parts Like connecting rod
43	SCM 420H		0.19-0.23	0.75-0.85	0.05-0.35	0.04max	0.04max	1.05-1.20	-	-	0.20-0.30	-	-	0.020-0.040	-	650 max	500 max	80 Max	-	Case Hardening Automobile and Machines Parts Like Gear
44	SAE8620		0.18-0.23	0.70-0.90	0.05-0.35	0.04max	0.04max	0.40-0.60	-	0.40-0.70	0.15-0.25	-	-	0.020-0.040	-	500-600		-	-	Case Hardening Automobile and Machines Parts ,Pinion,crown,Wheel,Cam Shaft etc.
45	SAE4135		0.33-0.38	0.70-0.90	0.05-0.35	0.04max	0.04max	0.80-1.10	-	-	0.15-0.25	-	-	0.020-0.040	-	900-1200	600 Max	-	-	Case Hardening Automobile and Machines Parts ,Pinion,crown,Wheel,Cam Shaft etc.
46	SAE4140		0.39-0.43	0.90-1.00	0.05-0.35	0.04max	0.04max	0.80-1.10	-	-	0.15-0.25	-	-	0.020-0.040	-	1000-1400	600 Max	-	-	Case Hardening Automobile and Machines Parts ,Pinion,crown,Wheel,Cam Shaft etc.
47	40CR4		0.39-0.43	0.75-0.85	0.05-0.35	0.06max	0.04max	1.05-1.20	-	-		-	-	0.020-0.040	-	800-1000	600 Max	90 Max	-	forging
48	42CrM04		0.40-0.45	0.75-0.85	0.05-0.35	0.06max	0.04max	1.0-1.20	-	-	0.15-0.30	-	-	0.020-0.040	-	1000-1400	600 Max	-	-	
49	EQ	Welding Electrode Steel	0.08 Max	0.30-0.50	0.30 max	0.06max	0.04max	-	0.005max	-	-	0.003 max	-	0.010 max	-	420 max	-	-	-	Welding Electrode
50	SAE12L14	Free Cutting Steel	0.07-0.15	0.90-1.20	0.10 max	0.06max	0.20-0.30	-	-	-	-	-	-		0.20-0.35	450max	-	-	85 Rb Min	Machined parts like Engine shaft,connecting Rod,Spindles, Gear.Fasteners, Hydralulic Hose End Fitting Etc.
51	EN 1A		0.07-0.15	0.90-1.20	0.10 max	0.06max	0.20-0.30	-	-	-	-	-	-	0.010 max	-	450 Max	-	-	85 Rb Min	
52	EN 8M		0.35-0.45	1.00-1.30	0.25 Max	0.06max	0.12-0.20	-	-	-	-	-	-	0.010 max	-	650-750	-	-	15-25 Rc	

53	EN 15AM		0.36-0.45	1.30-1.70	0.25 max	0.06max	0.08-0.15	-	-	-	-	-	-		-	600-750	-	-	-	
54	EN 31	Ball Bearing steel	0.90-1.20	0.30-0.75	0.10-0.35	0.06max	0.06max	1.00-1.60	0.05 max	0.2 max	0.08 max	-	-	0.01-0.02	0.002	1100-1400	-	-	20 Rc Max	Bearings
55	SAE52100		0.98-1.20	0.25-0.45	0.15-0.35	0.04max	0.05max	1.30-1.60	-	-	-	-	-	0.02-0.05	-		-	-	30 Rc Max	
56	SUP7	Spring steel;	0.56-0.64	0.70-1.00	1.80-2.20	0.035 Max	0.035 Max	-	-	-	-	-	-	-	-	1000-1300	-	-	30 Rc Max	All spring automoubail applications
57	SUP9		0.52-0.60	0.65-0.95	0.15-0.35	0.035 Max	0.035 Max	0.65-0.95	-	-	-	-	-	-	-	1000-1300	-	-	30 Rc Max	
58	SUP9A		0.56-0.64	0.70-0.90	0.15-0.35	0.035 Max	0.035 Max	0.70-1.00	-	-	-	-	-	-	-	1000-1300	-	-	30 Rc Max	
59	SUP11A		0.56-0.64	0.70-1.00	0.15-0.35	0.035 Max	0.035 Max	0.70-1.00	-	-	-	-	0.0005 Min	-	-	1000-1300	-	-	30 Rc Max	
60	SUP12		0.51-0.59	0.60-0.90	1.20-1.60	0.035 Max	0.035 Max	0.60-0.90	-	-	-	-	-	-	-	1000-1300	-	-	30 Rc Max	
61	EN-9	Steel General applications	0.50-0.60	0.50-0.80	.05-0.35	0.06 Max	0.06 Max	0.15-0.25	-	-	-	-	-	-	-	700-800	750-900	95 Max	20-25 Rc	All automoubail applications
62	FE410		0.23 Max	0.90 Max	-	0.055 Max	0.055 Max	-	-	-	-	-	-	-	-	450-550	600-700	-	90 Min	Machinning and forging application for automobil sector
63	C-20		0.15-0.25	0.60-0.90	0.05-0.35	0.055 Max	0.055 Max	-	-	-	-	-	-	-	-	450-550	600-700	-	90Min	Machinning and forging application for automobil sector
64	EN-18		0.35-0.45	0.60-0.95	0.10-0.35	0.050 Max	0.050 Max	0.85-1.15												