

Carbon steel bar, wire elements and wire compliant with JIS standards

Steel bar and wire elements			
Standard No.	Standard name	Symbol	Primary usage
G 3101	Rolled steel material for general structure	SS	Bolts, nuts and pins
G 4051	Carbon steel materials for machine structure	S-C	Nuts, bolts, shafts and automobile components
G 3108	General steel materials for cold finished steel bar	SGD	Nuts, shafts and automobile components
G 4804	Sulfur and sulfur composite free-cutting steel materials	SUM	Components of precision equipment such as clocks and cameras and automobile components
G 4401	Carbon tool steel materials	SK	Cutting tools, set files, chisel and engraving
G 3112	Steel bar for reinforced concrete	SR and SD	Reinforcing bar for concrete
G 3123	Cold finished steel bar	SGD-D	Nuts, shafts and automobile components
G 3104	Round steel for rivet	SV	Rivet
G 3105	Round steel for chain	SBC	Chain
G 3109	PC steel bar	SBPR	For prestressed concrete

Wire elements			Wire			
Standard No.	Standard name	Symbol	Standard No.	Standard name	Symbol	Usage examples
G 3505	Mild steel wire elements	SWRM	G 3532	Iron wire { Normal iron wire Annealed iron wire Iron wire for nails	SWM-B SWM-A SWM-N SWMA	General and for metal mesh General and for metal mesh For nails Various metal mesh
G 3506	Hard steel wire elements	SWRH	G 3521	Hard steel wire	SW	Various wire springs, wire rope, steel cord, bead wire and spoke wire
			G 3538	PC hard steel wire	SWCR SWCD	Prestressed concrete tank and pipe
			G 3525	Wire rope		Wire rope
			G 3560	Oil temper wire for spring	SWO-A and B	Various wire spring
			G 3537	Zinc plated stranded steel wire		Overhead earth wire, counterpoise and catenary wire
G 3502	Piano wire elements	SWRS	G 3544	Hot-dip aluminum plated iron wire and steel wire	SWHA	Overhead earth wire, catenary wire and core wire for ACSR
			G 3522	Piano wire	SWP	Valve spring, music wire, high-class rope and steel cord
			G 3536	PC steel wire and PC stranded steel wire	SWPR SWPD	Prestressed concrete
			G 3561	Oil temper wire for valve spring	SWO-V	Valve spring
G 3507	Carbon steel wire elements for cold forging	SWRCH	G 3544	Hot-dip aluminum plated iron wire and steel wire	SWHA	Overhead earth wire, catenary wire and core wire for ACSR
			G 3539	Carbon steel wire for cold forging	SWCH	Bolts, nuts, small screws and rivets
G 3503	Wire elements for core wire of film arc welding bar	SWRY	G 3523	Core wire of film arc welding bar	SWY	Core wire for welding bar

Excerpted from JSME's Mechanical Engineers' Handbook

Main types and mechanical properties of iron and steel materials

Material name	Symbol	Tensile Strength (N/mm ²)	Yield point (N/mm ²)	Hardness	Extension (%)
Rolled steel material for general structure	SS330	330 - 430	195 or above	—	26 or above
	SS400	400 - 510	235 or above	—	21 or above
	SS490	490 - 610	275 or above	—	19 or above
Hot-rolled mild steel plate and steel strip	SPHC	270 or above	—	—	27 - 31 or above
	SPHD	270 or above	—	—	30 - 39 or above
	SPHE	270 or above	—	—	31 - 41 or above
Cold-rolled steel plate and steel strip	SPCC	(270 or above)	—	1/8 hardness: 50 - 71HRB, 95 - 130HV	(32 - 39 or above)
	SPCD	270 or above	—	1/4 hardness: 65 - 80HRB, 115 - 150HV	34 - 41 or above
	SPCE	270 or above	—	1/2 hardness: 74 - 89HRB, 135 - 185HV Rigid: 85HRB or above and 170HV or above	36 - 43 or above
Carbon steel materials for machine structure	S25C-N	440 or above	265 or above	123 - 183HB	27 or above
	S35C-N	305 or above	305 or above	149 - 207HB	23 or above
	S35C-H	390 or above	390 or above	167 - 235HB	22 or above
	S45C-N	570 or above	345 or above	167 - 229HB	20 or above
	S45C-H	690 or above	490 or above	201 - 269HB	17 or above
Chrome steel materials	SCr430	780 or above	635 or above	229 - 293HB	18 or above
	SCr435	880 or above	735 or above	255 - 321HB	15 or above
Chromium-molybdenum steel materials	SCr440	930 or above	785 or above	269 - 331HB	13 or above
	SCM430	830 or above	685 or above	241 - 302HB	18 or above
Carbon tool steel materials	SCM435	930 or above	785 or above	269 - 331HB	15 or above
	SCM440	980 or above	835 or above	285 - 352HB	12 or above
SK3	—	—	212HB or above for annealing 63HRC or above for quenching and tempering	—	
High carbon chrome bearing steel materials	SUJ2	—	—	201HB or less for spheroidizing annealing 94HRB or less for spheroidizing annealing	—
	SUJ3	—	—	207HB or less for spheroidizing annealing 95HRB or less for spheroidizing annealing	—
Carbon steel forgings	SF340A	340 - 440	175 or above	90HB or above	27 or above
	SF440A	440 - 540	225 or above	121HB or above	24 or above
	SF540A	540 - 640	275 or above	152HB or above	20 or above
Carbon steel castings	SC360	360 or above	175 or above	—	23 or above
	SC410	410 or above	205 or above	—	21 or above
	SC450	450 or above	225 or above	—	19 or above
	SC480	480 or above	245 or above	—	17 or above
Gray cast iron	FC150	150 or above	—	212HB or less (diameter of as-cast sample: 30mm)	—
	FC200	200 or above	—	223HB or less (diameter of as-cast sample: 30mm)	—
	FC250	250 or above	—	241HB or less (diameter of as-cast sample: 30mm)	—
	FC300	300 or above	—	262HB or less (diameter of as-cast sample: 30mm)	—
Nodular graphite cast iron	FCD400	400 or above	250 or above	201HB or less	15 or above
	FCD450	450 or above	280 or above	143 - 217HB	10 or above
	FCD500	500 or above	320 or above	170 - 241HB	7 or above
	FCD600	600 or above	370 or above	192 - 269HB	3 or above
Stainless steel bar	SUS303	520 or above	—	187HB or less	40 or above
	SUS304	520 or above	—	187HB or less	40 or above
	SUS410	540 or above	—	159HB or above	25 or above
	SUS416	540 or above	—	159HB or above	25 or above
	SUS440C	780 or above	—	56HRC or above	15 or less

•The values in the above table are representative values and may vary depending on steel thickness and heat treatment.