

Materila List

F: (as cast)
 A: (annealing)
 N: (normalizing)
 S: (solution treatment)
 QT: (quenching & tempering)

classification	standard		chemical component						mechanical properties			
	JIS	foreign standard	C	Si	Mn	Ni	Cr	Mo	heat treatment	tensile strength (N/mm ²)	elongation (%)	hardness (HRB, C)
carbon steel and low alloy steel	S15C	AISI 1016	0.13~0.18	0.20~0.80	0.30~0.60				A	≥360	≥20	HRB85
	S45C	AISI 1045	0.42~0.48	0.30~0.80	0.60~0.90				A	≥530	≥9	HRB94
	S55C		0.52~0.58	0.30~0.80	0.60~0.90				A	≥530	≥9	HRB94
	SCM 415		0.13~0.18	0.20~0.80	0.60~0.85		0.90~1.20	0.15~0.30	A	≥600	≥13	HRB90
	SCM 435	AISI 4135	0.33~0.38	0.30~0.80	0.60~0.85		0.90~1.20	0.15~0.30	QT	≥980	13	HRC30
	SCM 440	AISI 4140	0.38~0.43	0.30~0.80	0.60~0.85		0.90~1.20	0.15~0.30	QT	≥1,070	≥11	HRC33
	SNCM 220	AISI 8620	0.17~0.23	0.20~0.80	0.60~0.90	0.40~0.70	0.40~0.65	0.15~0.30	A	≥800	≥9	HRB90
	SNC 415		0.12~0.18	0.20~0.80	0.30~0.70	2.00~2.50	0.20~0.50		A			HRB90
	SUJ 2	AISI 52100	0.95~1.10	0.35~0.80	≤0.50		1.30~1.60		A			HRC25
stainless steel and heat resisting steel	SUS303	AISI 303	≤0.15	≤2.00	≤2.00	8.00~10.00	17.0~19.0	P≤0.20 S≤0.15~	S	≥440	≥30	HRB90
	SUS304 (SCS 13)	AISI 304	≤0.08	≤2.00	≤2.00	8.00~11.00	18.0~21.0		S	≥440	≥30	HRB90
	SUS316 (SCS 14)	AISI 316	≤0.08	≤1.50	≤2.00	10.0~14.0	17.0~20.0	2.00~3.00	S	≥440	≥30	HRB90
	SUS 420J2	AISI 420	0.26~0.40	≤1.00	≤1.00	≤0.60	12.0~14.0		A	≥520	≥18	
	SCH 13	AISI 309	0.20~0.50	≤2.00	≤2.00	11.0~14.0	24.0~28.0		F	≥490	≥8	
	SCH 22	AISI 314	0.35~0.45	≤1.75	≤1.50	19.0~22.0	23.0~27.0		F	≥490	≥8	
tool steel	SK 5		0.80~0.90	≤0.80	≤0.50				A			HRC15
	SKS 3		0.90~1.00	≤0.80	0.90~1.20		0.50~1.00	W0.50~1.00	A			HRC20
	SKS 11		1.00~1.10	≤0.80	≤1.00		0.20~0.50	V0.10~0.30 W3.00~4.00	QT			HRC63
	SKH 51		0.80~0.90	≤0.60	≤0.60		3.804.50	4.50~5.50 W5.50~6.70 V1.60~2.20	QT			HRC62

classification	JIS	chemical component (%)												mechanical properties			
		Si	Fe	Cu	Mn	Mg	Zn	Ni	Ti	Pb	Sn	Cr	Al	heat treatment	tensile strength (N/m ²)	elongation (%)	hardness (HB)
aluminum alloy casting steel	AC4A	8.0 ~ 10.0	≦ 0.55	≦ 0.25	0.30 ~ 0.60	0.30 ~ 0.60	≦ 0.25	≦ 0.10	≦ 0.20	≦ 0.10	≦ 0.05	≦ 0.15	other	T6	≧220	-	80
	AC4C	6.5 ~ 7.5	≦ 0.55	≦ 0.25	≦ 0.35	0.25 ~ 0.45	≦ 0.35	≦ 0.10	≦ 0.20	≦ 0.10	≦ 0.05	≦ 0.10	other	T6	200	≧2	75
	AC7A	≦ 0.20	≦ 0.30	≦ 0.1	≦ 0.60	3.50 ~ 5.50	≦ 0.15	≦ 0.05	≦ 0.20	≦ 0.05	≦ 0.05	≦ 0.15	other	F	≧140	≧6	50

standard tolerance

	dimensional range	general tolerance	limit tolerance
dimensional tolerance	0~25mm	± 0.25	± 0.13
	25~50mm	± 0.35	± 0.25
	50~75mm	± 0.60	± 0.40
	75~100mm	± 0.75	± 0.5
	100mm~	$\pm 100\%$	$\pm 0.50\%$
angle	-	$\pm 1^\circ$	$\pm 5^\circ$
flatness	~25mm	± 0.2	± 0.1
	~50mm	± 0.4	± 0.2
	~100mm	± 0.7	± 0.3
	~150mm	± 0.8	± 0.4