



KJ INTERNATIONAL

**Village Kingran Choe Wala, Tehsil Bhogpur,
Jalandhar, Punjab, India (144201)**

www.kjsteels.com

INTRODUCTION

KJ Steels is situated in North India near Delhi. It is 20 years old group **ISO / TS16949** certification approved organization. We are manufacturers of All types of Alloy Steels, Special Steels, Flat, Round, Hex RCS, Bright Bars, Annealed Peeled Bar and we are giving to all OEM India and International

India: TATA, Mahindra, Ashok Leyland, Isuzu, Bharat Leyland, Eicher.

International: Malaysia, Vietnam, Taiwan, Bangladesh, USA, Mexico, Canada, Spain, Sri Lanka, Tunisia

BEARING STEELS



SIZES AND CONDITION OF SUPPLY

No.	SIZE (mm)	SHAPE	SUPPLY CONDITION
1	15 to 160 dia.	Straight Length Round	Hot Rolled, Annealed
2	12 to 60 dia.	Straight Length Round	Stress Relief / Spherodised Annealed
3	10 to 56 dia.	Straight Length Round	Spherodised Annealed, Peeled and Ground
4	5.5 to 38 dia.	Wire Rod Rounds	Spherodised Annealed

INTERNATIONAL SPECIFICATIONS OF BALL BEARING STEELS

No.	Country	Grade		Chemistry					
				C	Mn	Si	P	S	Cr
		00	Min Max	0.98 1.10	0.25 0.45	0.15 0.30	- 0.025	- 0.025	1.30 1.60
2	Germany	100Cr6	Min Max	0.95 1.10	0.25 0.45	0.15 0.30	- 0.030	- 0.030	1.30 1.60
3	India	103Cr2	Min Max	0.95 1.10	0.25 0.45	0.15 0.35	- 0.025	- 0.025	1.40 1.60
4	Japan	SUJ 2	Min Max	0.95 1.10	0.50 Max	0.15 0.35	- 0.025	- 0.025	1.30 1.60
5	Britain	EN31	Min Max	0.90 1.20	0.30 0.75	0.10 0.35	- 0.050	- 0.050	1.00 1.60

COLD FORGING

QUALITY STEELS



CHEMICAL COMPOSITIONS OF TYPICAL COLD FORGING QUALITY GRADES :

CARBON STEELS

Sr.	Grade	C%	Si%	Mn%	S% Max	P% Max	Cr%	B%	Mo%	Pb%	Ni%	Others
1	AISI 1006	0.06 Max	0.10 max	0.25- 0.40	0.050	0.040						
2	AISI 1008	0.10 max	0.10 max	0.30- 0.50	0.050	0.040						
3	AISI 1010	0.08- 0.13	0.10 max	0.30 0.60	0.050	0.040						
4	VS 14250	0.10- 0.14	0.13 max	0.21- 0.45	0.040	0.030						
5	VS 13111	0.07- 0.11	0.07 max	0.20- 0.40	0.040	0.030						
6	AISI 1015	0.13- 0.18	0.15 max	0.30- 0.60	0.050	0.040						
7	AISI 1018	0.15- 0.20	0.05- 0.10	0.60- 0.90	0.050	0.040						
8	EN1APb	0.08- 0.15	0.10 max	0.85- 1.15	0.26- 0.35	0.040 0.090				0.15- 0.35		
9	EN1A	0.07- 0.15	0.10 max	0.80- 1.20	0.20- 0.30	0.060 max						

BORON STEELS

Sr.	Grade	C%	Si%	Mn%	S% Max	P% Max	Cr%	B%	Mo%	Pb%	Ni%	Others
1	SAE/AISI 10B21	0.18- 0.23	0.30 max	0.80- 1.10	0.030	0.030	0.10- 0.20	0.0005- 0.003				
2	AISI 15B25	0.23- 0.28	0.30 max	0.90- 1.30	0.030	0.030	0.10- 0.20	0.0005- 0.003				
3	19MnB4M	0.20- 0.25	0.15- 0.30	0.80- 1.10	0.030	0.030	0.30- 0.40	0.0008- 0.003				
4	SAE/AISI 15B41	0.36- 0.44	0.15- 0.30	1.35- 1.65	0.030	0.030	0.10- 0.20	0.0005- 0.003				
5	AISI 10B36M	0.34- 0.39	0.15- 0.30	0.80- 1.10	0.030	0.030	0.20- 0.40	0.0006- 0.003				
6	DIN 36CrB4	0.34- 0.38	0.10 max	0.60- 0.90	0.015	0.015	0.90- 1.20	0.0015- 0.005				
7	51B37	0.35- 0.40	0.20- 0.35	0.35- 0.45	0.025	0.025	0.95- 1.15	0.0005- 0.003	0.040 max		0.10 max	

ALLOY STEELS

Sr.	Grade	C%	Si%	Mn%	S% Max	P% Max	Cr%	B%	Mo%	Pb%	Ni%	Others
1	SCM 415 H	0.12- 0.18	0.15- 0.35	0.55- 0.90	0.03	0.03	0.85- 1.25		0.15- 0.35		0.25 max	
2	SCM 435	0.32- 0.39	0.15- 0.30	0.55- 0.90	0.03	0.03	0.80- 1.25		0.15- 0.35		0.25 max	
3	AISI 4135	0.33- 0.38	0.15- 0.30	0.70- 0.90	0.04	0.035	0.80- 1.10		0.15- 0.25		0.25 max	
4	AISI 4140	0.38- 0.43	0.15- 0.30	0.75- 1.00	0.04	0.035	0.80- 1.10		0.15- 0.25			
5	AISI 5140	0.38- 0.43	0.15- 0.30	0.70- 0.90	0.04	0.035	0.70- 0.90					
6	AISI 1541	0.36- 0.44	0.15- 0.30	1.35- 1.65	0.05	0.04						

FORGING QUALITY STEELS



TYPICAL FORGING QUALITY STEEL GRADES

Classification	IS	EN	DIN	AISI / SAE	JIS
Plain Carbon	15C8, 35C8 45C8	EN-8, EN-9 EN-32 B	CK-15, CK-30 CK-45, C35 Pb K C15 Pb K, CK-35 CK-60	1015, 1026 1030, 1135, 1040 1045, 1050 1055, 1060, 1080	S43C, S45C S48C, S55C, S35C, S53C
Carbon Manganese	47Mn6, 37Mn6, 37Mn2, 37C15, 20Mn2	EN-14A, EN-14B EN-15, EN-15B	40Mn4, 28Mn6, 27Mn2	1524, 1526, 1541, 1041F	SMn420H, SMn430H SMn433H, SMn435H SMn 443H
Plain Chrome	40Cr1, 50Cr4	EN-18 EN-207	34Cr4, 37Cr4 41Cr4	5120, 5140 5145, 5150 5160	SCr 420H, SCr415
Chrome Manganese	16Mn5Cr4 20Mn5Cr5	-	16MnCr5, 20Mn5Cr5	-	-
Chrome Moly	40Cr1Mo28	EN-19	42CrMo4	4118, 4130, 4135, 4140, 4145, 4150 A182 F12 C1 II	SCM 415, SCM 420H SCM 435H, SCM 440H
Chrome Nickel	40CrNi6 16Ni3Cr2	EN-36A EN-36B	15CrNi6, 16CrNi4 18CrNi8, 20CrNi4	- -	-
Chrome Nickel Moly	20NiCr2Mo2	EN-353, EN-354, EN-355, EN-36C EN-24, 845H17, 822H17	17CrNiMo6 30CrNiMo3 34CrNiMo6	4340, 8620 8640, 8627 8615, 8617	SNCM220H SNCM420H
Moly-Manganese	35Mn6Mo3 35Mn6Mo4	EN-16 EN-17	-	4027H 4037H	-
Ball Bearing	103Cr2	EN-31	100Cr6	SAE52100	SUJ2
Micro Alloyed	38MnSiV5	-	-	-	-

AGRICULTURE STEELS SPRING STEELS



DIMENSIONAL TOLERANCES

Flats :

Width Range (mm)	Thickness Range (mm)	Tolerance (mm)	
		Concavity (+max) for	
40 to 250	6 to 50	T ≤ 10	T > 10
		0.15	0.15
		0.15	0.20
		0.20	0.20
		0.30	0.40

ROUNDS (HOT ROLLED)

Size (mm Dia)		Tolerance (mm)	
Over	Upto & Including	Tolerance (Dia)	Tolerance (Out of Round)
-	12	± 0.18	0.25
12	15	± 0.18	0.25
15	22	± 0.20	0.30
22	25	± 0.24	0.35
25	28	± 0.25	0.40
28	31	± 0.28	0.45
31	34	± 0.30	0.50
34	38	± 0.36	0.60
38	50	± 0.40	0.60
50	64	+ 0.8/-0	0.80
64	80	+ 1.20/-0	0.80
80	89	+ 1.20/-0	0.80
89	100	+ 1.60/-0	1.20

ROUNDS (BRIGHT BARS):

Size (mm Dia)		Tolerance on Dia (mm)		
Over	Upto & Including	Cold Drawn	Peeled / Turned	Centreless Ground
-	10	+ 0/- 0.09	—	+ 0/- 0.036
10	18	+ 0/- 0.11	+0/- 0.11	+ 0/- 0.043
18	30	+ 0/- 0.13	+ 0/- 0.13	+ 0/- 0.052
30	50	+ 0/- 0.16	+0/- 0.16	+ 0/- 0.062

CHEMICAL COMPOSITION OF TYPICAL SPRING STEEL OF VARIOUS INTERNATIONAL STANDARDS

Grade	C H E M I S T R Y												
	C	Mn	P	S	Si	Cu	Cr	Ni	Mo	V	Al	B	Nb
DIN													
50CrV4	0.47-0.55	0.70-1.10	0.035 Max	0.035 Max	0.15-0.40	0.25 Max	0.90-1.20	-	-	0.10-0.20	0.040 Max	-	-
51CrMoV4	0.48-0.56	0.70-1.10	0.030 Max	0.030 Max	0.15-0.40	0.25 Max	0.90-1.20	-	0.15-0.25	0.07-0.12	0.040 Max	-	-
51CrV4	0.48-0.55	0.85-1.10	0.020 Max	0.020 Max	0.25-0.40	0.25 Max	0.95-1.20	0.20 Max	0.06 Max	0.10-0.20	0.015-0.040	-	-
51CrV4-Nb	0.50-0.55	0.90-1.10	0.015 Max	0.015 Max	0.15-0.40	0.25 Max	0.95-1.20	0.40 Max	0.06 Max	0.07-0.14	0.015-0.025	-	0.0600
5 Cr4Mo2V	0.48-0.56	0.70-1.10	0.025 Max	0.025 Max	0.15-0.40	-	0.90-1.20	-	0.15-0.25	0.07-0.12	-	-	-
52CrMoV4	0.48-0.56	0.70-1.10	0.015 Max	0.015 Max	0.15-0.40	-	0.90-1.20	-	0.15-0.25	0.07-0.12	-	-	-
55Cr3	0.50-0.60	0.60-0.80	0.035 Max	0.035 Max	0.10-0.35	0.25 Max	0.60-0.80	-	-	-	0.040 Max	-	-
55Si7	0.50-0.60	0.80-1.00	0.025 Max	0.025 Max	1.50-2.00	0.25 Max	0.25 Max	-	-	-	-	-	-
60Si7	0.55-0.65	0.80-1.00	0.025 Max	0.025 Max	1.50-2.00	0.25 Max	0.25 Max	-	-	-	-	-	-
60SiCr7	0.55-0.65	0.70-1.00	0.045 Max	0.045 Max	1.50-1.80	0.25 Max	0.20-0.40	-	-	-	0.40 Max	-	-
65Si7	0.60-0.70	0.80-1.00	0.025 Max	0.025 Max	1.50-2.00	-	0.25 Max	-	-	-	-	-	-
54SiCr6	0.50-0.59	0.50-0.80	0.03 Max	0.030 Max	1.20-1.60		0.50-0.80	-	-				0.1000
BS													
EN45A	0.55-0.65	0.70-1.00	0.050 Max	0.050 Max	1.70-2.00		0.25 Max	-	-			-	-
ASTM						0.25 Max				-	0.040 Max	-	-
SAE5160	0.56-0.64	0.75-1.00	0.035 Max	0.040 Max	0.15-0.30		0.70-0.90	-	-	-		-	-
SAE5160H	0.55-0.65	0.65-1.10	0.035 Max	0.035 Max	0.15-0.30	0.25 Max	0.60-1.00	-	-	-	0.040 Max	-	-
SAE51B60H	0.55-0.65	0.65-1.10	0.035 Max	0.040 Max	0.15-0.30	0.25 Max	0.60-1.00	-	-	-	0.040 Max	0.0005 Min	-
SAE9254	0.51-0.59	0.60-0.80	0.035 Max	0.040 Max	1.20-1.60	0.25 Max	0.60-0.80	-	-	-	0.040 Max	-	-
SAE9261B(M)	0.55-0.65	0.70-1.00	0.050 Max	0.050 Max	1.80-2.20	0.25 Max	0.10-0.25	0.35 Max	0.10 Max	-	0.040 Max	-	-
JIS						0.35 Max				0.10 Max			
SUP6	0.56-0.64	0.70-1.00	0.035 Max	0.035 Max	1.50-1.80	0.25 Max	0.25 Max	-	-	-	0.040 Max	-	-
SUP7	0.55-0.65	0.70-1.10	0.035 Max	0.035 Max	1.80-2.20	0.25 Max	0.25 Max	-	-	-	0.040 Max	-	-
SUP7C	0.58-0.64	0.80-1.00	0.030 Max	0.030 Max	1.90-2.20	0.25 Max	0.10-0.20	-	-	-	0.040 Max	-	-
SUP7N	0.58-0.63	0.80-1.00	0.035 Max	0.035 Max	1.90-2.20	-	0.10-0.20	-	-	-	-	-	-
SUP9	0.52-0.60	0.65-0.95	0.035Max	0.035Max	0.15-0.35	0.15 Max	0.65-0.95	-	-	-	-	-	-
SUP9A	0.56-0.64	0.65-0.95	0.035 Max	0.035 Max	0.15-0.35	0.25 Max	0.70-1.00	-	-	-	0.040 Max	-	-
SUP9H	0.52-0.60	0.65-0.95	0.035 Max	0.035 Max	0.15-0.35	0.25 Max	0.65-0.95	-	-	-	0.040 Max	-	-
SUP9M	0.55-0.60	0.75-0.90	0.030 Max	0.030 Max	0.15-0.35	0.30 Max	0.75-0.90	-	-	-	0.020 Min	-	-
SUP9N	0.56-0.60	0.80-1.00	0.030 Max	0.030 Max	0.15-0.35	0.25 Max	0.80-1.00	-	-	-	0.040 Max	-	-
SUP11A	0.56-0.64	0.70-1.00	0.035 Max	0.035 Max	0.15-0.35		0.70-1.00	-	-	-		0.0005 Min	-
SUP12	0.51-0.59	0.60-0.90	0.030 Max	0.030 Max	1.20-1.60	0.25 Max	0.60-0.90	-	-	-	0.040 Min	-	-