

WEIGHT OF STEEL BARS (KG/AMTR.)

Size mm	ROUNDS	SQUARE	HEXAGONAL	Size mm	ROUNDS	SQUARE	HEXAGONAL
3	0.055	0.071	0.061	41	10.364	13.196	11.428
4	0.098	0.126	0.109	42	10.876	13.847	11.992
5	0.154	0.196	0.170	43	11.400	14.515	12.570
6	0.222	0.283	0.245	44	11.936	15.198	13.162
7	0.302	0.385	0.335	45	12.485	15.896	13.767
8	0.395	0.502	0.435	46	13.046	16.611	14.385
9	0.499	0.636	0.551	47	13.619	17.341	15.017
10	0.617	0.785	0.680	48	14.205	18.086	15.663
11	0.746	0.950	0.823	49	14.803	18.847	16.323
12	0.888	1.130	0.979	50	15.414	19.625	16.996
13	1.042	1.327	1.149	51	16.048	20.418	17.682
14	1.208	1.539	1.332	52	16.683	21.226	18.383
15	1.387	1.766	1.530	53	17.319	22.051	19.098
16	1.578	2.010	1.740	54	17.978	22.891	19.824
17	1.782	2.269	1.965	55	18.650	23.746	20.570
18	1.998	2.543	2.203	56	19.335	24.618	21.319
19	2.226	2.834	2.454	57	20.031	25.505	22.088
20	2.466	3.140	2.719	58	20.740	26.407	22.869
21	2.719	3.462	2.998	59	21.462	27.326	23.665
22	2.984	3.799	3.290	60	22.195	28.260	24.474
23	3.261	4.153	3.596	61	22.958	29.210	25.296
24	3.551	4.522	3.916	62	23.700	30.175	26.133
25	3.853	4.906	4.249	63	24.489	31.157	26.982
26	4.163	5.307	4.596	64	25.253	32.154	27.846
27	4.495	5.723	4.956	65	26.05	33.17	28.72
28	4.837	6.154	5.330	66	26.86	34.20	29.61
29	5.189	6.602	5.717	67	27.697	35.24	30.52
30	5.553	7.065	6.118	68	28.51	36.30	31.46
31	5.925	7.544	6.534	69	29.375	37.37	32.37
32	6.313	8.038	6.961	70	30.21	38.46	33.31
33	6.714	8.549	7.403	71	31.102	39.57	34.27
34	7.127	9.075	7.859	72	31.96	40.69	35.24
35	7.553	9.616	8.328	73	32.88	41.83	36.23
36	7.990	10.174	8.811	74	33.76	42.99	37.23
37	8.440	10.747	9.307	75	34.68	44.16	38.24
38	8.903	11.34	9.817	76	35.61	45.34	39.27
39	9.378	11.940	10.340	77	36.58	46.54	40.31
40	9.865	12.560	10.877	78	37.51	47.76	41.36
				79	38.50	48.99	42.43

Size mm	ROUNDS	SQUARE	HEXAGONAL
80	39.49	50.24	43.51
81	40.48	51.50	44.60
82	41.46	52.78	45.71
83	42.50	54.08	46.84
84	43.50	55.39	47.98
85	44.55	56.72	49.13
86	45.63	58.06	50.29
87	46.70	59.42	51.46
88	47.75	60.79	52.65
89	48.87	62.18	53.86
90	49.94	63.58	55.08
91	51.09	65.01	56.31
92	52.22	66.44	57.55
93	53.36	67.90	58.81
94	54.51	69.36	60.08
95	55.68	70.85	61.37
96	56.86	72.35	62.66
97	58.05	73.86	63.98
98	59.25	75.39	65.30
99	60.47	76.94	66.64
100	61.65	78.50	68.00
105	68.024	86.546	74.970
110	74.657	94.985	82.280
115	81.598	103.816	89.930
116	83.024	105.630	91.501
120	88.848	113.040	97.920
125	96.406	122.656	106.250
130	104.273	132.665	114.920
135	112.448	143.066	123.930
140	120.932	153.860	133.280
150	138.825	176.625	153.000
160	157.952	200.960	174.080
170	178.313	226.865	196.520
180	199.908	254.340	220.320
190	222.737	283.385	245.480
200	246.800	314.000	272.000
210	272.097	346.185	299.880
220	298.628	379.940	329.120

WEIGHT OF FLATS IN MM (KG / MTR)

Width Thick	20	25	32	40	50	65	75	100	125	150	200	250	300	350
6	0.942	1.178	1.507	1.884	2.355	3.062	3.533	4.71	5.9	7.1	9.4	11.8	14.1	16.5
8	1.256	1.570	2.010	2.512	3.14	4.082	4.71	6.28	7.9	9.4	12.6	15.7	18.8	22.0
10	1.57	1.963	2.512	3.140	3.925	5.103	5.888	7.85	9.8	11.8	15.7	19.6	23.6	27.5
12	1.884	2.355	3.014	3.768	4.71	6.123	7.065	9.42	11.8	14.1	18.8	23.6	28.3	33.0
16	2.512	3.14	4.019	5.024	6.28	8.164	9.42	12.56	15.7	18.8	25.1	31.4	37.7	44.0
20	3.14	3.925	5.024	6.280	7.85	10.205	11.775	15.7	19.6	23.6	31.4	39.3	47.1	55.0
25	3.925	4.906	6.280	7.850	9.81	12.756	14.719	19.625	24.5	29.4	39.3	49.1	58.9	68.7
32	5.024	6.28	8.038	10.048	12.56	16.328	18.84	25.12	31.4	37.7	50.2	62.8	75.4	87.9
40	6.28	7.85	10.048	12.560	15.7	20.410	23.55	31.4	39.3	47.1	62.8	78.5	94.2	109.9
50	7.85	9.813	12.560	15.7	19.626	25.513	29.438	39.25	49.1	58.9	78.5	98.1	117.8	137.4
65	10.21	12.756	16.328	20.41	25.513	33.166	38.269	51.025	63.8	76.5	102.1	127.6	153.1	178.6
80	12.56	15.7	20.096	25.12	31.4	40.82	47.1	62.8	78.5	94.2	125.6	157.0	188.4	219.8

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WEIGHT OF FLATS IN INCHES (Kg/Mtr)								
THICKNESS								
Width Thick	¾"	1"	1¼"	1½"	2"	2½"	3"	4"
¼"	0.950	1.266	1.583	1.899	2.532	3.165	3.798	5.065
3/8"	1.424	1.898	2.370	2.849	3.796	4.748	5.698	7.593
½"	1.899	2.532	3.165	3.798	5.065	6.331	7.597	10.129
5/8"	2.374	3.165	3.957	4.748	6.331	7.913	9.496	12.661
¾"	2.849	3.798	4.748	5.698	7.597	9.496	11.395	15.194
1"	3.798	5.065	6.331	7.597	10.129	12.661	15.194	20.258
1¼"	4.748	6.331	7.913	9.496	12.661	15.827	18.992	25.323
1½"	5.698	7.597	9.496	11.395	15.194	18.992	22.79	30.387

WEIGHT OF EQUAL ANGLES (Kg/Mtr.)										
Thickness Size mm	3	4	5	6	8	10	12	16	20	
25 x 25	1.1	1.4	1.8							
35 x 35	1.6	2.1	2.6	3.0						
40 x 40	1.8	2.4	3.0	3.5						
50 x 50	2.3	3.0	3.8	4.5						
65 x 65				5.8	7.7	9.4				
75 x 75				6.8	8.9	11.0				
90 x 90				8.2	10.8	13.4	15.8			
100 x 100				9.2	12.1	14.9	17.7			
110 x 110					13.4	16.5	19.6			
130 x 130					15.9	19.7	23.4	28.9		
150 x 150						22.8	27.2	35.8	39.9	

WEIGHT OF I.S.M.B (Kg/Mtr.)		
S.No.	Size mm	kg/mtr
1	100 x 50	8.34
2.	100 x 70	11.50
3.	125 x 70	13.20
4	150 x 75	15.00
5.	200 x 100	25.40
6.	250 x 125	38.10
7.	300 x 140	45.10
8.	350 x 140	52.90
9.	400 x 140	62.60
10.	450 x 150	73.10
11.	500 x 180	87.70
12	600 x 210	122.60

WEIGHT OF I.S.M.C (Kg/Mtr.)		
S.No.	Size mm	kg/mtr
1	75 x 40	7.10
2.	100 x 50	9.60
3.	125 x 65	13.70
4	150 x 75	16.80
5.	175 x 75	19.60
6.	200 x 75	22.30
7.	250 x 80	30.50
8.	250 x 82	34.20
9.	300 x 90	36.30
10.	400 x 100	50.10

CHEMICAL COMPOSITION

Specification	C%		Mn%		Si%		P%		S%		Cr%		Ni%		Mo%		
	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	
MILD STEELS																	
IS	IS2062 Gr-A	-	0.23	-	1.50	-	0.40	-	0.045	-	0.045	-	-	-	-	-	-
	IS2062 Gr-B	-	0.22	-	1.50	-	0.40	-	0.045	-	0.045	-	-	-	-	-	-
	IS2062 Gr-C	-	0.20	-	1.50	-	0.40	-	0.040	-	0.040	-	-	-	-	-	-
	15C8	0.10	0.20	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	20C8	0.15	0.25	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	25C8	0.20	0.30	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	Class-I	0.10	0.20	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	Class-II	0.15	0.25	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	C-10	-	0.15	0.30	0.60	0.05	0.35	-	0.035	-	0.050	-	-	-	-	-	-
	10C4	-	0.15	0.30	0.60	0.15	0.35	-	0.045	-	0.045	-	-	-	-	-	-
	C-20	0.15	0.25	0.60	0.90	0.05	0.35	-	0.055	-	0.055	-	-	-	-	-	-
	IS2830	0.12	0.23	0.30	1.50	-	0.40	-	0.050	-	0.050	-	-	-	-	-	-
	BS	EN 3A	0.15	0.25	0.40	0.90	0.05	0.35	-	0.060	-	0.060	-	-	-	-	-
EN 3B		-	0.25	-	1.00	-	0.35	-	0.060	-	0.060	-	-	-	-	-	-
EN 3C		0.17	0.23	0.60	1.00	0.05	0.35	-	0.050	-	0.050	-	-	-	-	-	-
EN 3D		0.15	0.25	0.60	1.00	0.05	0.35	-	0.060	-	0.060	-	-	-	-	-	-
EN 32B		0.10	0.18	0.60	1.00	0.05	0.35	-	0.050	-	0.070	-	-	-	-	-	-
DIN	C10	0.07	0.13	0.30	0.60	0.15	0.35	-	0.045	-	0.045	-	-	-	-	-	-
	C15	0.12	0.18	0.30	0.60	0.15	0.35	-	0.045	-	0.045	-	-	-	-	-	-
	C22	0.18	0.25	0.30	0.60	0.15	0.35	-	0.045	-	0.045	-	-	-	-	-	-
AISI/SAE	SAE 1010	0.08	0.13	0.30	0.60	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	SAE 1015	0.13	0.18	0.30	0.60	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	SAE 1018	0.15	0.20	0.60	0.90	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	SAE 1020	0.18	0.23	0.30	0.60	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	SAE 1025	0.22	0.28	0.30	0.60	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	ASTM A105	-	0.35	0.60	1.05	0.10	0.35	-	0.035	-	0.040	-	-	-	-	-	-
JIS	S10C	0.08	0.13	0.30	0.60	0.15	0.35	-	0.030	-	0.035	-	-	-	-	-	-
	S15C	0.13	0.18	0.30	0.60	0.15	0.35	-	0.030	-	0.035	-	-	-	-	-	-
	S20C	0.18	0.23	0.30	0.60	0.15	0.35	-	0.030	-	0.035	-	-	-	-	-	-

CHEMICAL COMPOSITION

Specification		C%		Mn%		Si%		P%		S%		Cr%		Ni%		Mo%	
		Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max
IS	30C8	0.25	0.35	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	35C8	0.30	0.40	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	45C8	0.40	0.50	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	55C8	0.50	0.60	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	CI-III	0.25	0.35	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	CI-III A	0.30	0.40	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	CI-IV	0.40	0.50	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	CI-V	0.50	0.60	0.60	0.90	0.15	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	C30	0.25	0.35	0.60	0.90	0.05	0.35	-	0.055	-	0.055	-	-	-	-	-	-
	C40	0.35	0.45	0.60	0.90	0.05	0.35	-	0.055	-	0.055	-	-	-	-	-	-
	C45	0.40	0.50	0.60	0.90	0.05	0.35	-	0.055	-	0.055	-	-	-	-	-	-
	C55Mn75	0.50	0.60	0.60	0.90	0.05	0.35	-	0.055	-	0.055	-	-	-	-	-	-
BS	EN8	0.35	0.45	0.60	1.00	0.05	0.35	-	0.060	-	0.060	-	-	-	-	-	-
	EN8A	0.33	0.38	0.70	0.90	0.05	0.35	-	0.060	-	0.060	-	-	-	-	-	-
	EN8D	0.40	0.45	0.70	0.90	0.05	0.35	-	0.060	-	0.060	-	-	-	-	-	-
	EN9	0.50	0.60	0.50	0.80	0.05	0.35	-	0.060	-	0.060	-	-	-	-	-	-
DIN	CK35	0.32	0.39	0.50	0.80	0.15	0.35	-	0.035	-	0.035	-	-	-	-	-	-
	CK45	0.42	0.50	0.50	0.80	0.15	0.35	-	0.035	-	0.035	-	-	-	-	-	-
	CK55	0.52	0.60	0.60	0.90	0.15	0.35	-	0.035	-	0.035	-	-	-	-	-	-
	CK60	0.57	0.65	0.60	0.90	0.15	0.35	-	0.035	-	0.035	-	-	-	-	-	-
AISI/ SAE	SAE 1030	0.28	0.34	0.60	0.90	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	SAE 1035	0.32	0.38	0.60	0.90	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	SAE 1040	0.37	0.44	0.60	0.90	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	SAE 1045	0.43	0.50	0.60	0.90	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	SAE 1050	0.48	0.55	0.60	0.90	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	SAE 1055	0.50	0.60	0.60	0.90	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	SAE 1060	0.55	0.65	0.60	0.90	-	-	-	0.040	-	0.050	-	-	-	-	-	-
JIS	S30C	0.27	0.33	0.60	0.90	0.15	0.35	-	0.030	-	0.035	-	-	-	-	-	-
	S35C	0.32	0.38	0.60	0.90	0.15	0.35	-	0.030	-	0.035	-	-	-	-	-	-
	S40C	0.37	0.43	0.60	0.90	0.15	0.35	-	0.030	-	0.035	-	-	-	-	-	-
	S45C	0.42	0.48	0.60	0.90	0.15	0.35	-	0.030	-	0.035	-	-	-	-	-	-
	S50C	0.47	0.53	0.60	0.90	0.15	0.35	-	0.030	-	0.035	-	-	-	-	-	-
	S55C	0.52	0.58	0.60	0.90	0.15	0.35	-	0.030	-	0.035	-	-	-	-	-	-

CHEMICAL COMPOSITION

Specification		C%		Mn%		Si%		P%		S%		Cr%		Ni%		Mo%	
		Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max
IS	55Si7	0.50	0.60	0.80	1.00	1.50	2.00	-	0.050	-	0.050	-	-	-	-	-	-
	60Si7	0.55	0.65	0.80	1.00	1.50	2.00	-	0.050	-	0.050	-	-	-	-	-	-
BS	EN 42	0.70	0.85	0.55	0.75	0.10	0.40	-	0.050	-	0.050	-	-	-	-	-	-
	EN 42J	0.75	0.90	0.60	0.90	-	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	EN 45	0.55	0.60	0.70	1.00	1.50	2.00	-	0.050	-	0.050	-	-	-	-	-	-
	EN 45A	0.55	0.65	0.70	1.00	1.70	2.00	-	0.050	-	0.050	-	-	-	-	-	-
	EN 47	0.45	0.55	0.50	0.80	-	0.50	-	0.050	-	0.050	0.80	1.20	(V=0.15% min)			
DIN	51Si7	0.47	0.55	0.50	0.80	1.50	1.80	-	0.045	-	0.045	-	-	-	-	-	-
	55Cr3	0.52	0.59	0.70	1.00	0.15	0.40	-	0.035	-	0.035	0.60	0.90	-	-	-	-
AISI/ SAE	SAE 5155	0.51	0.59	0.70	0.90	0.15	0.30	-	0.035	-	0.040	0.70	0.90	-	-	-	-
	SAE 5160	0.56	0.64	0.75	1.00	0.15	0.30	-	0.035	-	0.040	0.70	0.90	-	-	-	-
	SAE 9260	0.56	0.64	0.75	1.00	1.80	2.20	-	0.035	-	0.040	-	-	-	-	-	-
JIS	SUP-3	0.75	0.90	0.30	0.60	0.15	0.35	-	0.035	-	0.035	-	-	-	-	-	-
	SUP-9	0.52	0.60	0.65	0.95	0.15	0.35	-	0.035	-	0.035	0.65	0.95	-	-	-	-
	SUP-9A	0.56	0.64	0.70	1.00	0.15	0.35	-	0.035	-	0.035	0.70	1.00	-	-	-	-
	SUP-10	0.47	0.55	0.65	0.95	0.15	0.35	-	0.035	-	0.035	0.80	1.00	(V=0.15 to 0.25 %)			

CHEMICAL COMPOSITION

Specification		C%		Mn%		Si%		P%		S%		Cr%		Ni%		Mo%	
		Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max
IS	20 C15	0.16	0.24	1.30	1.70	0.10	0.35	-	-	-	-	-	-	-	-	-	-
	27 C15	0.22	0.32	1.30	1.70	0.10	0.35	-	-	-	-	-	-	-	-	-	-
	37 C15	0.32	0.42	1.30	1.70	0.10	0.35	-	-	-	-	-	-	-	-	-	-
	C18 HMn	0.15	0.20	1.15	1.40	0.15	0.35		0.04		0.04						
BS	EN 15	0.30	0.40	1.30	1.70	0.10	0.35	-	0.050	-	0.050	-	-	-	-	-	-
	EN 15B	0.35	0.40	1.10	1.30	0.05	0.35	-	0.060	-	0.060	-	-	-	-	-	-
DIN	ST 52.3	-	0.24	-	1.6	0.10	0.35	-	0.35	-	0.35	-	-	-	-	-	-
AISI/ SAE	SAE 1524	0.19	0.25	1.35	1.65	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	SAE 1536	0.30	0.37	1.20	1.50	-	-	-	0.040	-	0.050	-	-	-	-	-	-
	SAE 1541	0.36	0.44	1.35	1.65	-	-	-	0.040	-	0.050	-	-	-	-	-	-
JIS	SMn438H	0.34	0.41	1.30	1.70	0.15	0.35	-	0.030	-	0.030	-	-	-	-	-	-



CHEMICAL COMPOSITION																	
Specification		C%		Mn%		Si%		P%		S%		Cr%		Ni%		Mo%	
CHROME - MANGANESE STEELS		Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max
IS	17Mn1Cr95	0.14	0.19	1.00	1.30	0.10	0.35	-	0.035	-	0.050	0.80	1.10	-	-	-	-
	20MnCr1	0.17	0.22	1.00	1.40	0.10	0.35	-	0.035	-	0.050	1.00	1.30	-	-	-	-
BS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DIN	16MnCr5	0.14	0.19	1.00	1.30	0.15	0.40	-	0.035	-	0.035	0.80	1.10	-	-	-	-
	20MnCr5	0.17	0.22	1.10	1.40	0.15	0.40	-	0.035	-	0.035	1.00	1.30	-	-	-	-
AISI/SAE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JIS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CHEMICAL COMPOSITION																	
Specification		C%		Mn%		Si%		P%		S%		Cr%		Ni%		Mo%	
FREE CUTTING STEELS		Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max
IS	11C10S25	0.03	0.15	0.80	1.20	-	0.10	-	0.060	0.20	0.30	-	-	-	-	-	-
	40C10S18	0.35	0.45	0.80	1.20	-	0.25	-	0.060	0.14	0.22	-	-	-	-	-	-
BS	EN 1A	0.07	0.15	0.80	1.20	-	0.10	-	0.070	0.20	0.30	-	-	-	-	-	-
	EN 1A (L)	0.07	0.15	0.80	1.20	-	0.10	-	0.070	0.20	0.30	-	-	-	-	-	-
	EN 15AM	0.30	0.40	1.30	1.70	-	0.25	-	0.060	0.12	0.20	-	-	-	-	-	-
	EN 8M	0.35	0.45	1.00	1.30	-	0.25	-	0.060	0.12	0.20	-	-	-	-	-	-
DIN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI/SAE	SAE 1213	-	0.13	0.70	1.00	-	-	0.07	0.12	0.24	0.33	-	-	-	-	-	-
	SAE 1214	-	0.15	0.85	1.15	-	-	0.04	0.09	0.26	0.35	-	-	-	-	-	-
	SAE 12L14	-	0.15	0.85	1.15	-	-	0.04	0.09	0.26	0.35	-	-	-	-	-	-
JIS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CHEMICAL COMPOSITION

Specification		C%		Mn%		Si%		P%		S%		Cr%		Ni%		Mo%		
		Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	
IS	40Cr ₄ Mo3	0.35	0.45	0.50	0.80	0.10	0.35	-	-	-	-	0.90	1.20	-	-	0.20	0.35	
	BS	EN 19	0.35	0.45	0.50	0.80	0.10	0.35	-	0.050	-	0.050	0.90	1.50	-	-	0.20	0.40
		EN 19A	0.35	0.45	0.50	0.80	0.10	0.35	-	0.050	-	0.050	0.90	1.20	-	-	0.20	0.35
		EN 19B	0.35	0.40	0.50	0.80	0.10	0.35	-	0.050	-	0.050	0.90	1.20	-	-	0.20	0.35
		EN 19C	0.40	0.45	0.50	0.80	0.10	0.35	-	0.050	-	0.050	0.90	1.20	-	-	0.20	0.35
		EN24	0.35	0.45	0.45	0.70	0.10	0.35	-	0.050	-	0.050	0.90	1.40	1.30	1.80	0.20	0.35
		EN31	0.90	1.20	0.30	0.75	0.10	0.35	-	0.050	-	0.050	1.00	1.60	-	-	-	-
		EN353	-	0.20	0.50	1.00	-	0.35	-	0.050	-	0.050	0.75	1.25	1.00	1.50	0.08	0.15
DIN	42CrMo4	0.38	0.45	0.50	0.80	0.15	0.40	-	0.035	-	0.035	0.90	1.20	-	-	0.15	0.30	
AISI/ SAE	SAE 4140	0.38	0.43	0.75	1.00	0.15	0.30	-	0.035	-	0.040	0.80	1.10	-	-	0.15	0.25	
	SAE 8620	0.18	0.23	0.70	0.90	0.15	0.30	-	0.035	-	0.040	0.40	0.60	0.40	0.70	0.15	0.25	
JIS																		



THIRUVANANTHAPURAM
INDUSTRIES

**BLACK BAR AND BRIGHT BAR MATERIAL
HARDNESS AND TENSILE DETAILS**

Sl. No.	Spec.	Standard	Hardness (BHN) at Black Bar Condition*(Min)	Tensile at Black Bar Condition* (Min)MPA	Elongation BLACK BAR Condition* (Min)	Hardness (BHN) at Drawn Bar Condition*(Min)	Tensile at Bright Bar Condition* (Min) MPA	Elongation %
1	EN3B	BS970-1955	130.00	430.00	25	138-220	462	15
2	IS2062 Grade A	IS2062 - 2006	124.00	410.00	25	135-220	470	15
3	SAE 1018	SAE(1976)	126.00	440.00	25	135-220	450	15
4	SAE1144	TES-047	185.00	610.00	15	195	710	12
5	EN32B	BS970-1955	115.00	380.00	25	130-220	450	15
6	SAE 1010	SAE(1976)	110.00	330.00	25	130-200	370	15
7	C15	DIN 17210 (1969)	98.00	323.00	25	120-220	440	18
8	C20	IS2073-1970	121.00	425.00	25	130-220	430	15
9	C 50	IS 5517-1978	160.00	528.00	25	190-275	627	10
10	SAE1008	SAE(1976)	133.00	440.00	30	140-200	480	20
11	SAE 1015	SAE(1976)	111.00	385.00	28	130-220	480	18
12	SAE 1020	SAE(1976)	111.00	380.00	25	130-220	420	15
13	SAE 15B41		200.00	650.00	10	230	815	
14	ST 52.3	DINSTD	140.00	490.00	22	145-229	520	16
15	EN8	BS970-1955	152.00	482.00	16	160-262	605	12
16	EN8D	BS970-1955	160.00	570.00	16	180-240	610	12
17	S40C	JISG-4051	187.00	570.00	16	190-255	610	12
18	S35C	JISG-4051	190.00	540.00	16	200-255	660	12
19	SAE1035	SAE(1976)	192.00	585.00	16	195-255	620	12
20	45C8	IS5517-1978	190.00	600.00	16	195-270	630	12
21	CK45	DIN 17200 (1969)	185.00	587.00	16	195-270	635	12
22	S45C	JISG-4051	170.00	560.00	16	185-270	630	12
23	SAE1055	SAE(1976)	197.00	587.00	12	210-275	660	10
24	EN9	BS970-1955	180.00	620.00	12	201-275	660	10
25	55C8	IS 1875	177.00	585.00	12	190-275	627	10
26	SAE1045	SAE(1976)	163.00	576.00	16	180-270	602	10
27	16MNCr5	DIN 17210 (1969)	165.00	602.00	25	180-229	674	17
28	20MNCr5	DIN 17210 (1969)	168.00	610.00	25	180-229	680	17
29	EN1A(NL)	BS970-1955	120.00	370.00	22	127-210	430	8
30	42CRMO4	DIN 17200(1969)	170.00	561.00	12- BLACK BAR	205	824	27
31	EN1A(L)/ 12L14	BS970 -1983	120.00	429.00	22	130	430	8
32	EN8M	BS970-1955	185.00	610.00	15	210-255	570	12
33	EN19	BS970-1955	170-180(SOFT Annealed)	627.00	12- BLACK BAR	(Annealed)190-255	627	27
34	SAE 4140	SAE(1976)	170-180(SOFT Annealed)	627.00	12- BLACK BAR	(Annealed)190-255	604	27
35	EN31	BS970-1955	140-160(SPERODISE Annealed)	528.00	30	(Annealed)160-240	627	8
36	SAE52100	SAE(1976)	140-160(SPERODISE Annealed)	528.00	30	(Annealed)160-240	627	8
37	SAE 8620	SAE(1976)	185-190	600.00		185-230	652	
38	41Cr4	DIN 17200 (1969)	170-180	627.00	29	(Annealed)190-255	640	
39	SCM415H	JISG-4105	180.00	594.00		190-270	670	9
40	ETN22	TES-047	166.00	547.00	20	190-230	627	15

These figures are indicative only*, arrived by our experience. However actual figure may vary heat wise.