

• SIZE TOLERANCES

THICKNESS TOLERANCES

NOMINAL THICKNESS (mm)		Thickness tolerances (W) for nominal widths of (mm)									
		Cold-rolled									Hot-rolled
		EN 10140									EN 10048
		W < 125			125 ≤ W < 250			250 ≤ W < 600			10 ≤ W < 600
A	B	C	A	B	C	A	B	C			
>	≤	Normal	Fine	Precision	Normal	Fine	Precision	Normal	Fine	Precision	
-	0.10	± 0.008	± 0.006	± 0.004	± 0.010	± 0.008	± 0.005	± 0.015	± 0.012	± 0.008	
0.10	0.15	± 0.010	± 0.008	± 0.005	± 0.015	± 0.012	± 0.010	± 0.020	± 0.015	± 0.010	
0.15	0.25	± 0.015	± 0.012	± 0.010	± 0.020	± 0.015		± 0.025		± 0.012	
0.25	0.40	± 0.020	± 0.015		± 0.025	± 0.020	± 0.015	± 0.030	± 0.020	± 0.015	
0.40	0.60	± 0.025	± 0.020	± 0.030	± 0.025	± 0.035		± 0.025	± 0.020		
0.60	0.80	± 0.030	± 0.025	± 0.015	± 0.035	± 0.030	± 0.020	± 0.040	± 0.030	± 0.025	
0.80	1.00				± 0.035	± 0.030	± 0.020	± 0.040	± 0.035	± 0.025	± 0.030
1.00	1.50	± 0.035	± 0.030	± 0.020	± 0.040	± 0.035	± 0.025	± 0.050	± 0.040	± 0.030	
1.50	2.00	± 0.045	± 0.035	± 0.025	± 0.050	± 0.040	± 0.030	± 0.060	± 0.045	± 0.035	
2.00	2.50							± 0.055	± 0.040	± 0.030	± 0.060
2.50	4.00	± 0.055	± 0.040	± 0.030	± 0.060	± 0.050	± 0.035	± 0.075	± 0.055	± 0.040	
4.00	5.00	± 0.070	± 0.050	± 0.035	± 0.075	± 0.060	± 0.040	± 0.090	± 0.065	± 0.045	
5.00	6.00							± 0.090	± 0.065	± 0.045	

WIDTH TOLERANCES

NOMINAL THICKNESS (mm)		Width tolerances (W) for nominal widths of (mm)					
		Cold-rolled					
		EN 10140					
		W < 125		125 ≤ W < 250		250 ≤ W < 600	
A	B	A	B	A	B		
>	≤	Normal	Fine	Normal	Fine	Normal	Fine
0.10	0.60	± 0.15	± 0.10	± 0.20	± 0.13	± 0.25	± 0.18
0.60	1.50	± 0.20	± 0.13	± 0.25	± 0.18	± 0.30	± 0.20
1.50	2.50	± 0.25	± 0.18	± 0.30	± 0.20	± 0.35	± 0.25
2.50	4.00	± 0.30	± 0.20	± 0.35	± 0.25	± 0.40	± 0.30
4.00	6.00	± 0.35	± 0.25	± 0.40	± 0.30	± 0.45	± 0.35

STRAIGHTNESS TOLERANCES

NOMINAL WIDTH (W)	Maximum deviation	
	EN 10140 (1000 mm)	
	Class A	Class B
10 ≤ W < 20		
20 ≤ W < 25	5.00	2.00
25 ≤ W < 40	3.50	1.50
40 ≤ W < 125	2.50	1.25
125 ≤ W < 350	2.00	1.00
350 ≤ W ≤ 600		

TRANSVERSE FLATNESS

Normal	Restreint
0.3% of the strip width	0.2% of the strip width

STRIP LENGTHS

-0; +10.0 mm



VINCO

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HIGH-CARBON STEEL STRIP

The data herein is merely for information purposes and do not imply contractual terms of supply. Unless there is an error or omission.



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Other grades and specifications of strips available through the Sales Department.

• CHEMICAL COMPOSITION

APPROXIMATE EQUIVALENCE				CHEMICAL COMPOSITION								
DESIG.	STANDARD	DIN DESIG.	ASTM DESIG.	C %	Si %	Mn %	P y S ≤%	Cr %	Mo %	Ni %	V %	
Case Hardening Steel												
C10E	EN 10132-2	Ck 10	1010	0.07-0.13	≤ 0.40	0.30-0.60	0.035	≤ 0.40	-	-	-	
C15E	EN 10132-2	Ck 15	1015	0.12-0.18	≤ 0.40	0.30-0.60	0.035	≤ 0.40	-	-	-	
16MnCr5	EN 10132-2	16MnCr5	5115	0.14-0.19	≤ 0.40	1.00-1.30	0.035	0.80-1.10	-	-	-	
20MnCr5	EN 10084	20MnCr5	5120	0.17-0.22	≤ 0.40	1.10-1.40	0.035	1.00-1.30	-	-	-	
18CrMo4	EN 10084	18CrMo4	-	0.15-0.21	≤ 0.40	0.60-0.90	0.035	0.90-1.20	0.15-0.25	-	-	
Heat-Treatable Steel												
C22E	EN 10132-3	Ck 22	1023	0.17-0.24	≤ 0.40	0.40-0.70	0.035	≤ 0.40	≤ 0.10	≤ 0.40	-	
C45E	EN 10132-3	Ck 45	1045	0.42-0.50	≤ 0.40	0.50-0.80	0.035	≤ 0.40	≤ 0.10	≤ 0.40	-	
25CrMo4	EN 10132-3	25CrMo4	4130	0.22-0.29	≤ 0.40	0.60-0.90	0.035	0.90-1.20	0.15-0.30	-	-	
42CrMo4	EN 10132-3	42CrMo4	4142	0.38-0.45	≤ 0.40	0.60-0.90	0.035	0.90-1.20	0.15-0.30	-	-	
Spring Steel and cold work tool Steel												
C55S	EN 10132-4	Ck 55	1055	0.52-0.60	0.15-0.35	0.60-0.90	0.025	≤ 0.40	≤ 0.10	≤ 0.40	-	
C60S	EN 10132-4	Ck 60	1060	0.57-0.65	0.15-0.35	0.60-0.90	0.025	≤ 0.40	≤ 0.10	≤ 0.40	-	
C67S	EN 10132-4	Ck 67	1070	0.65-0.73	0.15-0.35	0.60-0.90	0.025	≤ 0.40	≤ 0.10	≤ 0.40	-	
C75S	EN 10132-4	Ck 75	1074	0.70-0.80	0.15-0.35	0.60-0.90	0.025	≤ 0.40	≤ 0.10	≤ 0.40	-	
C85S	EN 10132-4	Ck 85	1086	0.80-0.90	0.15-0.35	0.40-0.70	0.025	≤ 0.40	≤ 0.10	≤ 0.40	-	
C100S	EN 10132-4	Ck 101	1095	0.95-1.05	0.15-0.35	0.30-0.60	0.025	≤ 0.40	≤ 0.10	≤ 0.40	-	
51CrV4	EN 10132-4	51CrV4	6150	0.47-0.55	≤ 0.40	0.70-1.10	0.025	0.90-1.20	≤ 0.10	≤ 0.40	0.10-0.25	
80CrV2	EN 10132-4	80CrV2	-	0.75-0.85	0.15-0.35	0.30-0.50	0.025	0.40-0.60	≤ 0.10	≤ 0.40	0.15-0.25	

• PRODUCTION RANGE (measured in mm)

	Annealed	Quenched (Heat treated)
Widths	3 - 650	3 - 500
Thicknesses	0.10 - 5.00	0.10 - 3.00

• SUPPLY CONDITIONS

+ A	Annealed	Same mechanical characteristics
+ LC (SK)	Annealed; skin pass	
+ CR	Cold-rolled (maximum hardness by rolling; hardened)	
+ QT	Quenched and tempered	
+ AC	Annealed with globular carbides	

• SURFACE FINISH

Cold-rolled strips have a bright end surface, obtained by rolling or annealing in a controlled atmosphere.

Hardened and tempered strips can have the surface finishes given below:

Hardened Steels Surface finishes		
Grey/blue rust	Not polished	
Bright hardened	Not polished	
Polished	Obtained by fine grinding, abrasive brushing and other processes	
Polished and coloured	Blue or yellow, due to oxidation during heat treatment	

• EDGES

Slit	GK	
	Rounded	
Special	SK	
	Round	

• MECHANICAL CHARACTERISTICS

GLOBALIZED ANNEALED STEEL

STEEL GRADE		HARDNESS (max.)	ELASTIC LIMIT	TENSILE STRENGTH	ELONGATION (min.)	QUENCHING TEMPERATURE
DESIGNATION	STANDARD					
		HV	N/sq mm	N/sq mm	A ₅₀	°C

Case Hardening Steel

C10E	EN 10132-2	135	≤ 345	≤ 430	26%	850-950
C15E	EN 10132-2	140	≤ 360	≤ 450	25%	850-950
16MnCr5	EN 10132-2	170	≤ 420	≤ 550	21%	850-950
20MnCr5	EN 10084	217	≤ 550	≤ 690	-	850-950
18CrMo4	EN 10084	207	≤ 535	≤ 670	-	850-950

Heat-treatable Steel

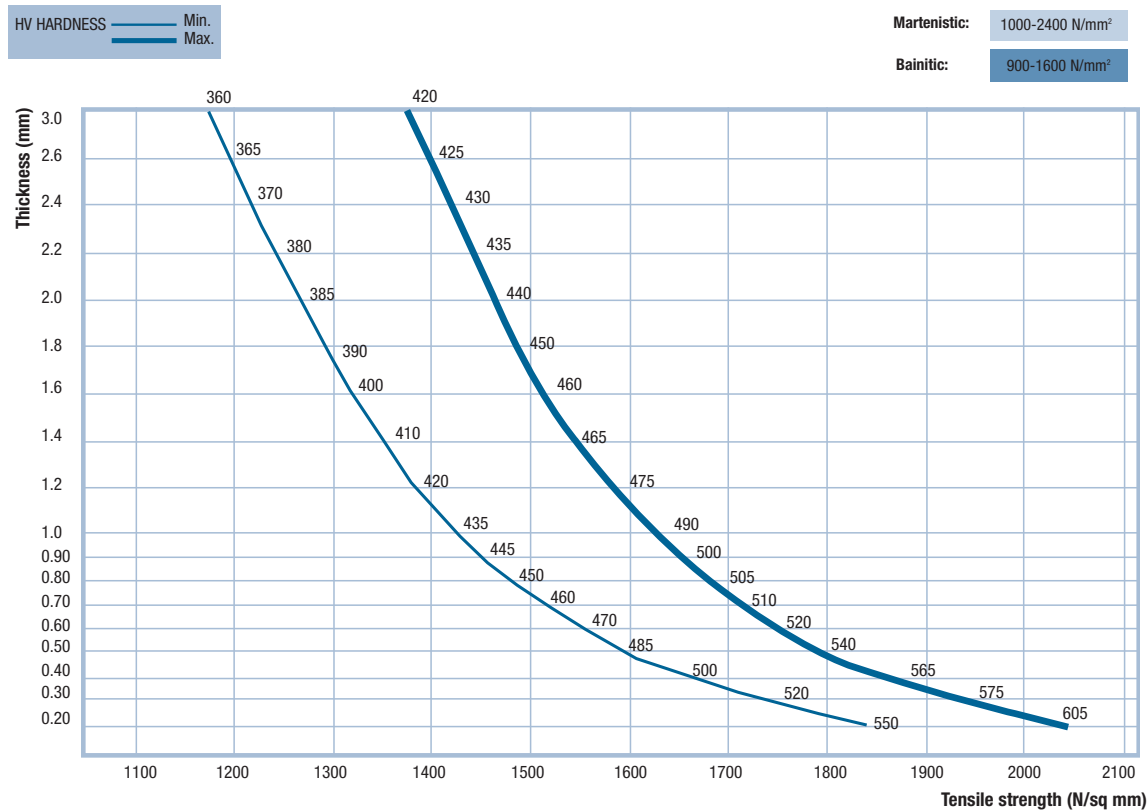
C22E	EN 10132-3	155	≤ 400	≤ 500	22%	860-900
C45E	EN 10132-3	180	≤ 455	≤ 570	18%	820-860
25CrMo4	EN 10132-3	175	≤ 440	≤ 580	19%	840-880
42CrMo4	EN 10132-3	195	≤ 480	≤ 620	15%	820-860

Spring Steel and cold work tool Steel

C55S	EN 10132-4	185	≤ 480	≤ 600	17%	-
C60S	EN 10132-4	195	≤ 495	≤ 620	17%	-
C67S	EN 10132-4	200	≤ 510	≤ 640	16%	-
C75S	EN 10132-4	200	≤ 510	≤ 640	15%	-
C85S	EN 10132-4	210	≤ 535	≤ 670	15%	-
C100S	EN 10132-4	220	≤ 550	≤ 690	13%	-
51CrV4	EN 10132-4	220	≤ 550	≤ 700	13%	820-850
80CrV2	EN 10132-4	225	≤ 580	≤ 720	12%	-

HARDENED STEEL

Standard STRENGTH-THICKNESS chart, depending on HARDNESS



• TENSILE STRENGTH-HARDNESS EQUIVALENCE TABLE

Tensile strength	Rockwell				Rockwell Surface			Brinell		Vickers	Shore
	Diamond		Ball 1/6"					Brinell 10 mm 3.000 Kg		Hardness No.	
	150 Kg HRC	60 Kg HRA	100 Kg HRD	100 Kg HRB	15N	30N	45N	Indent mm	Hardness No.		
2210	60.2	81	71	-	90	78	67	-	-	720	82
2180	59.3	81	70	-	90	77	66	-	-	700	81
2150	58.9	81	70	-	90	77	66	-	-	690	80
2130	58.4	81	70	-	89	76	65	-	-	680	79
2100	57.9	81	69	-	89	76	64	-	-	670	78
2080	57.4	80	69	-	89	75	64	-	-	660	78
2050	56.9	80	69	-	89	75	63	-	-	650	77
2030	56.4	80	69	-	88	74	62	-	-	640	76
2000	55.9	79	68	-	88	74	62	-	-	630	76
1970	55.4	79	68	-	88	73	62	-	-	620	75
1950	54.9	79	67	-	88	73	61	-	-	610	74
1930	54.4	78	67	-	87	72	61	-	-	600	73
1900	53.8	78	66	-	87	72	60	-	-	590	72
1870	53.3	78	66	-	87	71	59	-	-	580	72
1840	52.8	77	65	-	86	71	58	-	-	570	71
1800	52.1	77	65	-	86	70	57	-	-	560	69
1780	51.5	77	64	-	86	70	57	-	-	550	69
1760	50.9	76	64	-	86	69	56	-	-	540	68
1730	50.3	76	63	-	86	69	56	-	-	530	67
1710	49.7	76	63	-	85	68	55	-	-	520	66
1660	49	75	62	-	85	68	54	-	-	510	65
1650	48.3	75	62	-	85	67	53	-	-	500	64
1620	47.7	75	61	-	84	67	52	-	-	490	63
1570	47	74	61	-	84	66	51	-	-	480	63
1530	46.3	74	60	-	84	65	50	-	-	470	62
1510	45.5	73	60	-	84	65	49	-	-	460	61
1490	44.8	73	59	-	83	64	49	2.95	430	450	59
1460	44	73	59	-	83	63	48	2.97	423	440	58
1440	43.2	72	58	-	82	62	47	3.00	415	430	57
1410	42.4	72	57	-	82	61	46	3.02	408	420	57
1380	41.5	71	56	-	81	60	45	3.05	400	410	56
1350	40.7	71	56	-	81	60	44	3.07	392	400	55
1320	39.8	70	55	-	80	60	43	3.10	385	390	54
1290	38.9	70	55	-	80	59	42	3.15	376	380	53
1260	38	69	54	-	79	58	41	3.17	368	370	51
1230	37	69	53	-	79	57	40	3.22	359	360	50
1200	36	68	52	-	78	56	39	3.25	350	350	49
1170	34.9	68	52	-	78	55	37	3.30	340	340	48
1130	33.8	67	51	108	77	54	36	3.35	330	330	46
1100	32.7	67	50	107	77	53	35	3.40	320	320	45
1060	31.5	66	49	107	76	51	33	3.45	310	310	43
1030	30.3	65	48	106	75	50	32	3.50	300	300	42
990	29	65	47	105	75	50	30	3.57	290	290	41
960	27.6	64	45	104	73	48	28	3.63	280	280	39
920	26.2	63	45	103	73	47	27	3.70	270	270	38
890	24.6	62	43	102	72	45	25	3.75	260	260	37
850	23	62	42	101	71	44	23	3.83	250	250	36
820	21.2	61	41	100	70	42	21	3.90	240	240	35
780	19.2	-	40	99	69	42	20	4.00	230	230	33
750	-	-	-	98.2	-	-	-	4.08	220	220	33
720	-	-	-	96.6	-	-	-	4.15	210	210	32
650	-	-	-	93	-	-	-	4.35	190	190	29
620	-	-	-	90.8	-	-	-	4.50	180	180	27
580	-	-	-	88.2	-	-	-	4.60	170	170	26
550	-	-	-	85.4	-	-	-	4.75	160	160	25
510	-	-	-	82.2	-	-	-	4.90	150	150	23
480	-	-	-	78.4	-	-	-	5.05	140	140	22
450	-	-	-	74.4	-	-	-	5.20	130	130	20