Guangzhou Jiaxiao Material Technology Co., Ltd.

Company Profile

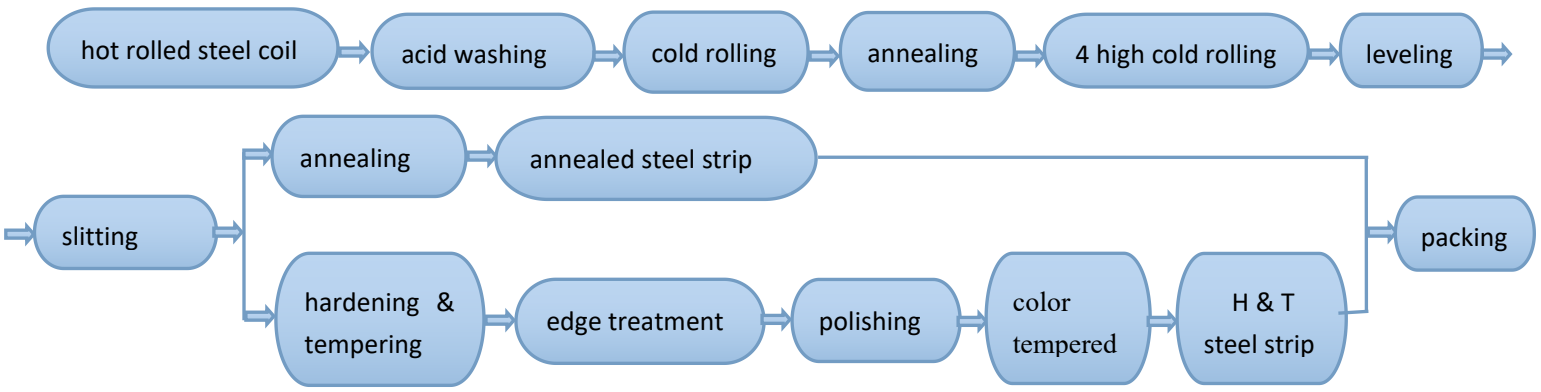
Guangzhou Jiaxiao Material Technology Co., Ltd., is a leading supplier for high carbon steel strip, alloy steel strip and stainless steel strip in heat treatment ways - hardening and tempering conditions and cold rolled annealing conditions. Occupying 25,000 square meters manufacturing area, we own more than 100 staffs, including senior technical staffs, 30 mid-level technical staffs as well as series of facilities including acid washing, cold rolling, annealing, cutting slitting,quenching and tempering, mechanical polishing, flatting machine, edge treatment, etc, to hold very tight thickness & width & flatness tolerances, decambering, deburring and round edging for safety applications. Strips are manufactured to the highest industry standards in a broad range of chemistries, sizes, tempers, and finishes to meet customized request.

Over 20 years experience in this industry, Jiaxiao MTC company has been dedicated itself to expanding target markets and updating sophisticated advanced equipment to improve our products to higher level. With pioneering efforts, Jiaxiao MTC company grew in great success and reputation for supplying excellent quality steel strip to numerous industries. For future, we will always be striving to bring you a higher quality product and a more efficient cost for all of our many products.

Business lines

- hardened and tempered & annealed steel strips/coils/sheet
- c67s, c70s, c75s ,c80s,c85s,c90s,c95s high carbon spring steel strip
- c45s,c50s, c55s, c60s medium carbon steel strip
- 50CrV4, 51CrV4, 60Si2Mn,50CrNiMoV alloy steel strip
- AISI420 stainless steel strip
- 75Cr1,75Ni8,D6A,X32,M42,68CrNiMo steel strip
- S35E,S355MC,16MnCr5,S550MC steel strip
- Supply capacities around 15000 tons per year
- first-rate crude materials purchase from ISO certificated state-own enterprise to guarantee superior quality
- Production Specification range(mm) 0.10-5.0*10-1250mm

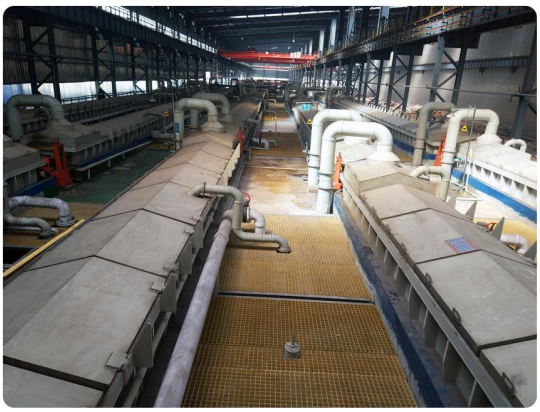
Production procedures



hot rolled steel coil

Acid washing

Purchase crude material (hot rolled steel coils) from reputable hot rolling factory to do the acid washing and to remove the oxidation in steel surface before going to cold rolling process



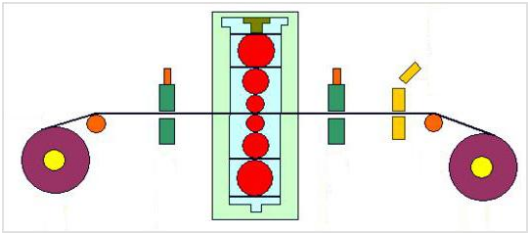
acid to clean and etch the surface

The oxide scale on the top layer of the steel, is not dissolved in water, which thickness is generally 5-20um. By pickling, the oxides on these series of chemical reactions in acid, can be removed to improve the steel surface.

Cold Rolling

Cold rolling to reduce the thickness to improve accuracy

Jiaxiao MTC, using cold rolled facility to reduce the thickness of hot rolled steel coils until the required thickness is reached as well as accurate dimension tolerance.



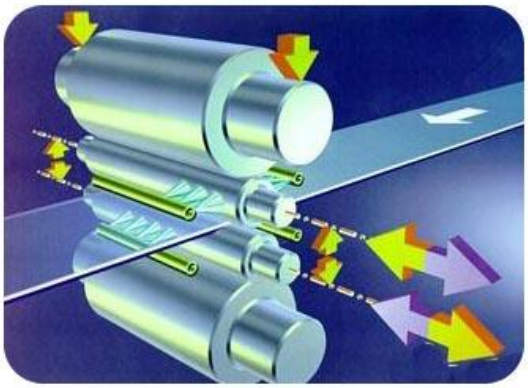
During cold rolling mill, hot rolled steel coil is fed in between two rollers, which rotate in opposite directions. The gap between the two rolls is less than the thickness of the starting coils.

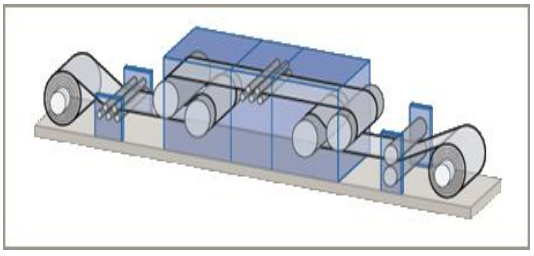
4 high reversing cold rolled mills

This type of cold rolling mill is mainly used for making thinner thickness - 0.08mm to 0.15mm with optimized tolerance.

Benefits

- Rolling technology for highest quality standards
- Cold rolling smaller thickness
- Satisfying highest requirement regarding process technology, reliability and maintenance
- Deformation-optimized housing geometry





good flat strip surface

Leveling

Guangzhou Jiaxiao MTC uses Leveller to produce smooth and good flat strip surface. Leveling is to remove any shape defects (curve or twist) in coiled material before any heat treatment. It plays an importance role in delivering the desired material properties and the product standards required by the customer. Our leveling process stretches sheet steel in coil form by pulling it beyond its yield point, top-to-bottom and edge-to-edge. Following this procedure, the material should be perfectly flat and relatively free of internal stresses.

Cold Rolled Annealed Steel Strip

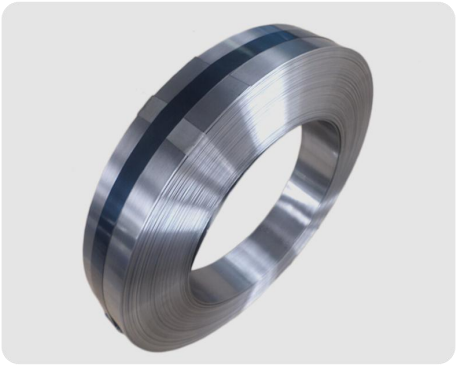
annealing facility

Annealed steel strips/ coils are produced by the process of annealing wherein to alter its physical and properties such as strength and hardness. Annealing increases the ductility and makes steel softer.

Jiaxiao MTC mainly produce bright annealing steel strips and spherodized steel strips.Bright annealing is to put steel coil into confined space of annealing furnace and heat it to a high temperature. At this point, a suitable temperature is maintained. After this, the steel inside annealing furnace, is cooled slowly and then comes to bright surface, which won`t cause decarbonization.

Spheroidization is achieved by holding steel for a prolonged period at temperatures near the lower critical point or by a cyclic heating and subsequent cooling close to these temperatures. The process can be accelerated by prior deformation or hardening. Spheriodized steel strips are used for various application requiring maximum cold forming.

bright annealed steel strip



Annealing dimensions

thickness 0.1mm to 5.00mm
width 2mm to 1200mm
hardness max 180HV
surface: polish, bright
edge: mill, slit, sheared

Application

Cold rolled annealed steel strips are mainly suitable for product requiring for severe bending and shaping before heat-treatment to very high hardness, such as springs, washers, spacers, clips, pin, inserts, shoe shank, toe cap,auto components, auto clutches, etc.

Hardened and Tempered Steel Strip

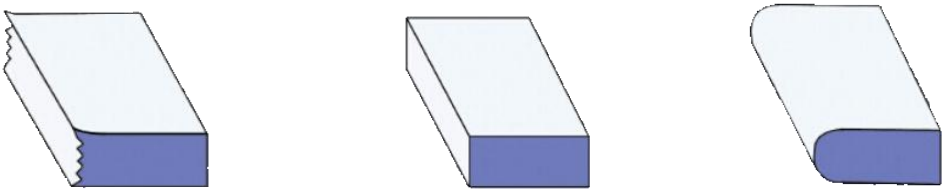
Hardening and Tempering is a thermal process that strengthens steel strips through a controlled heating and cooling process. The hardening process involves heating the steel strip to above the critical transformation temperature for the given grade and then rapidly cooling. The steel strip in this condition is extremely brittle and requires further treatment in the tempering. Then strips are reheated to a lower temperature and holding it at the given temperature for a given period of time. This process is done in an inert atmosphere to avoid oxidation. This type of steel strip has high degree of toughness and has excellent spring properties.

Hardened and tempered dimensions

thickness 0.1mm to 5.00mm
width 2mm to 500mm
hardness 30-55HRC
surface: nature,blue, yellow, white, polish
edge: slit,, rounded, square

Surface finish

Edge



Slit edge　Square edge　Round edge

Application　H+T steel strips are widely used for rolling shutter door springs, band saw blade, scraper, trowel, putty knives, shoe insole, knives, kinds of flat springs etc, which don`t require severe bending.

Rolling Shutter Spring Steel Strip

Jiaxiao MTC steel strip for shutter spring is well-know good quality for this application. We understand that the flexibility is the key for shutter spring when the door rolling down and rolling up and strip steel can`t be broken when bending. Jiaxiao MTC, every year, exports hundreds of tons of strip steel worldwide for this use and We have great experience, knowing how to solve these problems and to avoid this problems. From first-rate raw material, cold rolling, quenching and tempering process, de-burring edges, etc, each production step, is checked carefully in width, thickness, hardness, edge as flexibility. Spring steel strip (c67s and c75s C80) is most suitable for shutter spring material.

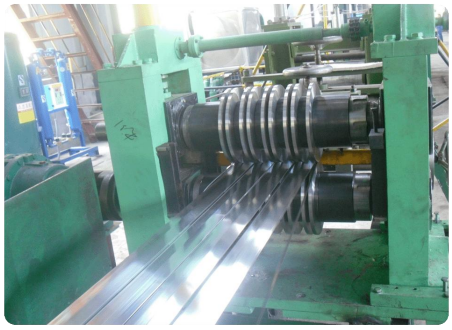
Average Capacity of the most used springs

80 x 1.40mm	50kg	55 x 1.20mm	26kg	45 x 1.20mm	18kg
60 x 1.40mm	39kg	55 x 1.00mm	18kg	45 x 1.00mm	15kg
60 x 1.30mm	34kg	50 x 1.40mm	28kg	40 x 1.40mm	19kg
60 x 1.20mm	29kg	50 x 1.30mm	25kg	40 x 1.20mm	16kg
60 x 1.10mm	23kg	50 x 1.20mm	21kg	40 x 1.00mm	13kg
60 x 1.00mm	19kg	50 x 1.00mm	17kg	30 x 1.00mm	10kg
55 x 1.40mm	33kg	45 x 1.40mm	24kg		
55 x 1.30mm	29kg	45 x 1.30mm	21kg		

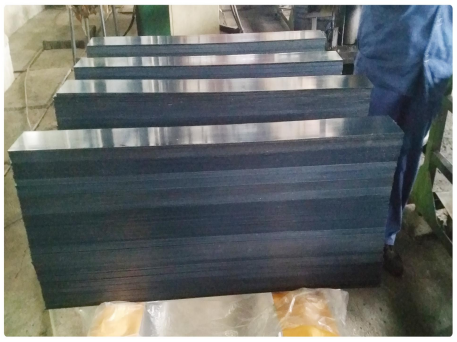
shutter net weight	weight plus friction	spring number and measures		
20kg	24kg	2		40x 1.00
30kg	36kg	2		45 x 1.20
40kg	48kg	2		60 x 1.10
50kg	60kg	2		60 x 1.20
60kg	72kg	3		60 x 1.10
70kg	84kg	2	6 0 x 1.20+1	55 x 1.20
80kg	96kg	3		60 x 1.20
90kg	108kg	2	60 x 1.40+1	60 x 1.20
100kg	120kg	4		60 x 1.20
110kg	132kg	4		60 x 1.30
120kg	144kg	2	60 x 1.40+2	60 x 1.30
130kg	156kg	4		60 x 1.40
140kg	168kg	4	60 x 1.30+2	40 x 1.20
150kg	180kg	4	60 x 1.30+2	50 x 1.20
160kg	192kg	4	60 x 1.40+2	45 x 1.20
170kg	204kg	4	60 x 1.40+2	60 x 1.10
180kg	216kg	4	60 x 1.30+2	60 x 1.20
190kg	228kg	4	60 x 1.40+2	60 x 1.30
200kg	240kg	6		60 x 1.40

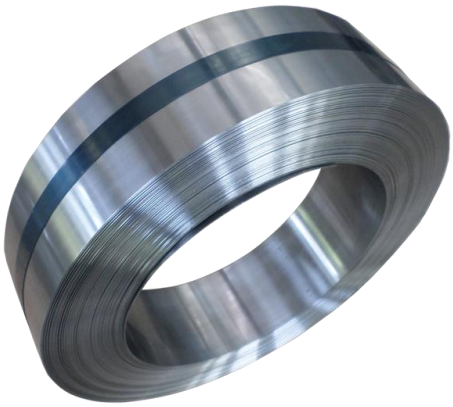
Slitting & Length Cutting to Sheet

After master coils are cold rolled, the coils are slit to narrow width before annealing or hardening & tempering or cut to required length into sheets. Slitting involves passing the coiled strip through a set of rotating knives that continuously shear the wide coil to the exact width required in narrower coils

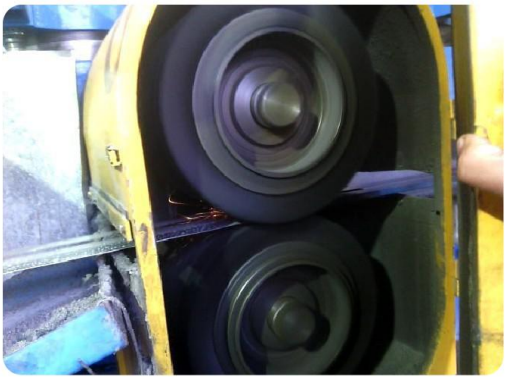


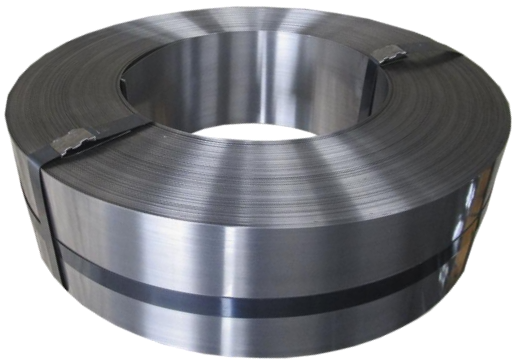
Strips can be cut into pieces of steel sheets and length is up to end-user`s request, such as 1m, 2m, 3m, 4m, 5m etc.





Polishing



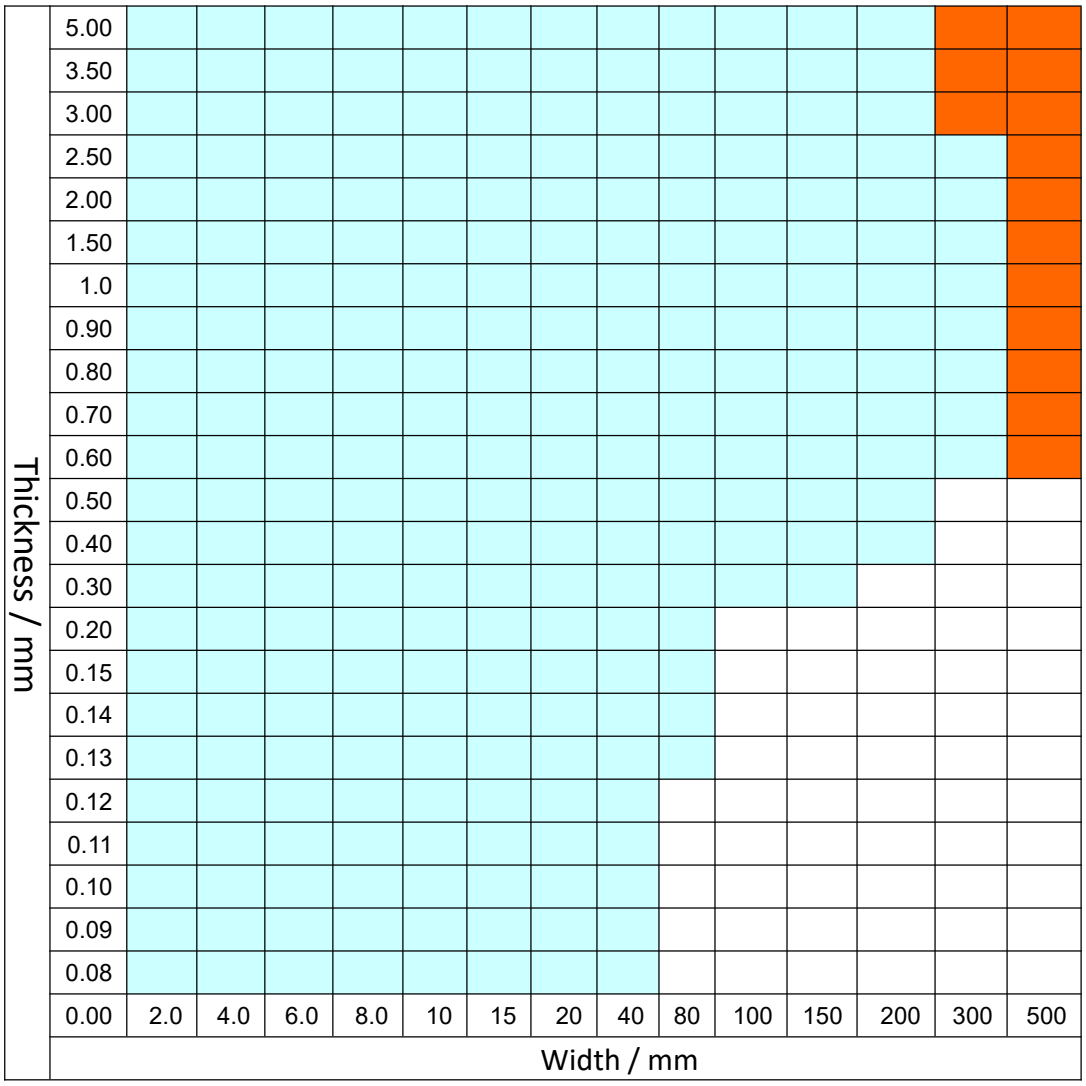


polish facility

Size range of strip

hardened and tempered steel strips

cold rolled annealed steel strips



Thickness and width tolerance

Thickness mm	Standard Tolerance +/-mm
<0.25	+/-0.015
0.25-0.40	+/-0.020
0.40-0.60	+/-0.025
0.60-0.90	+/-0.030
0.90-120	+/-0.040
1.20-1.60	+/-0.050
1.60-2.10	+/-0.055
2.1.0-2.60	+/-0.060
2.60-3.20	+/-0.065
3.20-5.00	+/-0.070

Thickness mm	Width tolerance +/- mm			
	<50	50-100	100-200	200-500
<0.30	+/-0.30	+/-0.35	-	-
0.30-0.60	+/-0.20	+/-0.30	+/-0.50	+/-0.80
0.60-1.20	+/-0.20	+/-0.25	+/-0.50	+/-0.80
1.20-1.60	+/-0.20	+/-0.25	+/-0.50	+/-0.80
1.60-3.20	+/-0.20	+/-0.25	+/-0.50	+/-0.80

◆ thickness & width, special tolerances can be made according to your request.

Material grades

International Equivalent Grades						Chemical Compositions (%)						
DIN	ГОСТ	AISI	BS	JIS	EN	C	Mn	P max	S max	Si	Cr	Ni
CK50	50	1050	CS50	S50C	C50	0.46-0.54	0.50-0.80	≤0.035	≤0.035	0.17-0.37	-	-
CK55	55	1055	-	S55C	C55	0.52-0.60	0.60-0.90	≤0.035	≤0.035	0.17-0.37	-	-
CK60	60	1060	CS60	S58C	C60	0.57-0.66	0.60-0.90	≤0.035	≤0.035	0.17-0.37	-	-
CK67	65Г	1065	CS65	-	C65	0.64-0.68	0.60-1.10	≤0.035	≤0.035	0.17-0.37	-	-
CK70	-	1070	CS70	-	C70	0.64-0.72	0.50-0.80	≤0.035	≤0.035	0.17-0.37	-	-
CK75	-	1074	CS75	-	C75	0.72-0.80	0.50-0.80	≤0.035	≤0.035	0.17-0.37	-	-
CK80	-	1080	CS80	-	C80	0.75-0.82	≤0.40	≤0.035	≤0.035	0.17-0.37	-	-
CK95	-	1095	CS95	-	C95	0.95-1.20	≤0.040	≤0.035	≤0.035	0.17-0.37	-	-
50CrV4	50ХФА	6150	735A30	SUP10	50CrV4	0.47-0.55	0.70-1.10	≤0.035	≤0.035	0.15-0.40	-	-
60Si2Mn	60С2	9260	250A58	SUP7	-	0.52-0.65	0.60-0.90	≤0.035	≤0.035	1.50-2.00	-	-
3Cr13	-	420	-	SUS420J2	-	0.25-0.35	≤1.50	≤0.035	≤0.035	≤1.00	12.0-14.0	-
75Cr1	-	-	-	-	-	0.70-0.80	0.60-0.80	≤0.025	≤0.025	0.25-0.50	0.30-0.40	-
D6A	-	-	-	-	-	0.44-0.48	0.60-0.90	≤0.025	≤0.025	0.10-0.35	0.85-1.20	-
75Ni8	-	-	-	-	-	0.72-0.78	0.30-0.50	≤0.025	≤0.025	0.10-0.35	<0.15	1.80-2.10
16MnCr5	-	-	-	-	-	0.14-0.19	1.00-1.30	≤0.025	≤0.025	0.10-0.40	0.80-1.10	-
X32	-	-	-	-	-	0.29-0.33	0.80-1.10	≤0.025	≤0.025	0.20-0.35	3.50-4.20	0.20-0.80
S550MC	-	-	-	-	-	≤0.12	≤1.80	≤0.025	≤0.015	≤0.50	-	-

HARDNESS TABLE SHEET

Vickers 维氏硬度	Brinn el 布氏硬度	Rock ewell(HR) 洛氏硬度				Rock ewell Super tical 洛氏硬度			Shore 肖氏硬度	T/S 抗拉硬度		Vickers 维氏硬度
(Hv)	(Hb)	HrA	HrB	HrC	HrD	15-N	30-N	(HS)	45-N	N/mm2	kgf/mm2	(HV)
670		80.6		58.8	69.8	89.7	76.4	65.3				670
660		80.3		58.3	69.5	89.5	75.9	64.7	79			660
650		80		57.8	69	89.2	75.5	64.1				650
640		79.8		57.3	68.7	89	75.1	63.5	77			640
630		79.5		56.8	68.3	88.8	74.6	63				630
620		79.2		56.3	67.9	88.5	74.2	62.4	75			620
610		78.9		55.7	67.5	88.2	73.6	61.7				610
600		78.6		55.2	67	88	73.2	61.2	74			600
590		78.4		54.7	66.7	87.8	72.7	60.5		2095	210	590
580		78		54.1	66.2	87.5	72.1	59.9	72	2020	206	580
570		77.8		53.6	65.8	87.2	71.7	59.3		1981	202	570
560		77.4		53	65.4	86.9	71.2	58.6	71	1952	199	560
550	505	77		52.3	64.8	86.6	70.5	57.8		1912	195	550
540	496	76.7		51.7	64.4	86.3	70	57	69	1863	190	540
530	488	76.4		51.1	63.9	86	69.5	56.2		1824	186	530
520	480	76.1		50.5	63.5	85.7	69	55.6	67	1795	183	520
510	473	75.7		49.8	62.9	85.4	68.3	54.7		1755	179	510
500	465	75.3		49.1	62.2	85	67.7	53.9	66	1706	174	500
490	456	74.9		48.4	61.6	84.7	67.1	53.1		1957	169	490
480	448	74.5		47.7	61.3	83.3	66.4	52.2	64	1618	165	480
470	441	74.1		46.9	60.7	83.9	65.7	51.3		1569	160	470
460	433	73.6		46.1	60.1	83.6	64.9	50.4	62	1530	156	460
450	425	73.3		45.3	59.4	73.2	64.3	49.4		1500	153	450
440	415	72.8		44.5	58.8	82.8	63.5	48.4	59	1461	149	440
430	405	72.3		43.6	58.2	82.3	62.7	47.4		1412	144	430
420	397	71.8		42.7	57.7	81.8	61.9	46.4	57	1373	140	420
410	288	71.4		41.8	56.8	81.4	31.1	45.3		1334	136	410
400	379	70.8		40.8	56	81	60.2	44.1	55	1285	131	400
390	369	70.3		39.8	55.2	80.3	59.3	42.9		1245	127	390
380	360	69.8	110	38.8	54.4	79.8	58.4	41.7	52	1206	123	380
370	350	69.2		37.7	53.6	79.2	57.4	40.4		1177	120	370
360	341	68.7	109	36.6	52.8	78.6	56.4	39.1	50	1128	115	360
350	331	68.1		35.5	51.9	78	55.4	37.8		1098	112	350

Vickers 维氏硬度	Brinn el 布氏硬度	Rock ewell(HR) 洛氏硬度				Rock ewell Super tical 洛氏硬度			Shore 肖氏硬度	T/S 抗拉硬度		Vickers 维氏硬度
(Hv)	(Hb)	HrA	HrB	HrC	HrD	15-N	30-N	(HS)	45-N	N/mm2	kgf/mm2	(HV)
340	340	67.6	108	34.4	51.1	77.4	54.4	36.5	47	1069	109	340
330	330	67		33.3	50.2	76.8	53.6	35.2		1030	105	330
320	320	66.4	107	32.2	49.4	76.2	52.3	33.9	45	1010	103	320
310	310	65.8		31	48.4	75.6	51.3	32.5		981	100	310
300	300	65.2	105	29.8	47.5	74.9	50.2	31.1	42	951	97	300
295	295	64.8		29.2	47.1	74.6	49.7	30.4		941	96	295
290	290	64.5	104.5	28.5	46.5	74.2	49	29.5	41	922	94	290
285	285	64.2		27.8	46	73.8	48.4	28.7		902	92	285
280	280	63.8	103.5	27.1	45.3	73.4	47.8	27.9	40	892	91	280
275	275	63.5		26.4	44.9	73	47.2	27.1		873	89	275
270	270	63.1	102	25.6	44.4	72.6	46.4	26.2	38	853	87	270
265	265	62.7		24.8	43.7	72.1	45.7	25.2		843	86	265
260	260	62.4	101	24	43.1	71.6	45	24.3	37	824	84	260
255	255	62		23.1	42.2	71.1	44.2	23.2		804	82	255
250	250	61.6	99.5	22.2	41.7	70.6	43.4	22.2	36	794	81	250
245	245	61.2		21.3	41.1	70.1	42.5	21.2		775	79	245
240	240	60.7	98.1	20.3	40.3	69.6	41.7	19.9	34	765	78	240
230	230		96.7	18					33	736	75	230
220	220		95	15.7					32	696	71	220
210	210		93.4	13.4					30	667	68	210
200	200		91.5	11					29	637	65	200
190	190		89.5	8.5					28	608	62	190
180	180		87.1	6.3					26	579	59	180
170	170		85	3.0					25	549	56	170
160	160		81.7	0.0					24	520	53	160
150	150		78.7						22	490	50	150
140	140		75						21	451	46	140
130	130		71.2						20	431	44	130
120	120		66.7							392	40	120
110	110		62.3									110
100	100		56.2									100
95	95		52									95

Tensile strength to Hardness

Brinell Diameter of impression mm	Brinell Harness Number HB	Vicker Hardness Number HV	Rockwell C Scale hardness Number HRC	Equivalent Tensile strength Rm N/mm2
2.50	(601)	640	57	-
2.55	(578)	615	56	-
2.60	(555)	591	55	2075
2.65	(534)	569	54	2015
2.70	(514)	547	53	1950
2.75	(495)	528	52	1880
2.80	(477)	508	51	1820
2.85	(461)	491	50	1760
2.90	444	474	49	1695
2.95	429	455	48	1635
3.00	415	440	47	1580
3.05	401	425	46	1530
3.10	388	410	45	1480
3.15	375	296	44	1435
3.20	363	383	43	1385
3.25	352	372	42	1340
3.30	341	360	41	1295
3.35	331	350	40	1250
3.40	321	339	39	1215
3.45	311	328	38	1180
3.50	302	319	37	1160
3.55	293	309	36	1115
3.60	285	301	35	1080
3.65	277	292	34	1055
3.70	269	284	33	1025
3.75	262	276	32	1000
3.80	255	269	31	980
3.85	248	261	30	950
3.90	241	253	29	930
3.95	235	247	28	910
4.00	229	241	27	880
4.05	223	235	26	860
4.10	217	228	25	840
4.15	212	223	24	825
4.20	207	218		
4.30	197	208	23	805
4.40	187	197	22	
4.50	179	189	21	785
4.60	170	179		
4.70	163	172	20	770
4.80	156	165	18	730
4.90	149	157		
5.00	143	150	16	705
5.10	137	144	14	675
5.20	131	138	12	650
5.30	126	133		
5.40	121	127		
5.50	116	122		
5.60	111	117		
5.70	107	113		
5.80	103	108		

Tolerance on flatness

The unflatness across the strip (also called cross camber and cross bow) is expressed as a percentage of the strip width. The unflatness along the strip, sometimes called coil-set, is also expressed as a percentage. Unless otherwise agreed upon the measuring length = the strip width for flatness measurements along and across the strip. Influence of possible residual stresses from slitting shall be excluded.

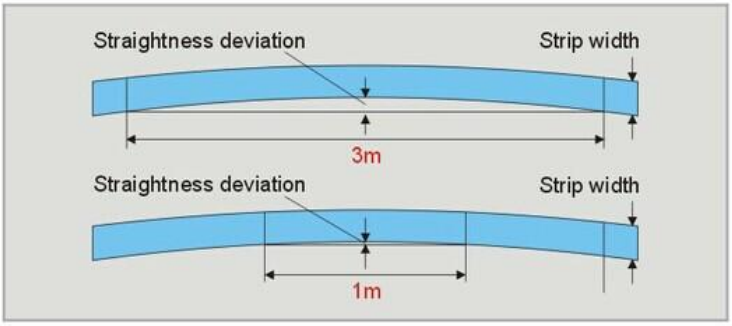
Tolerance	Maximum permitted deviation class (% of nominal strip width)
P0	-
P1	0.4
P2	0.3
P3	0.2
P4	0.1
P5	As per customer`s special requirement

Tolerance class	Strip Width							
	8 - (20) mm		20 - (50) mm		50 - (125) mm		125mm~	
	Measuring length							
	1m	3m	1m	3m	1m	3m	1m	3m
	Maximum allowed straightness deviation (mm)							
R1	5	45	3.5	31.5	2.5	22.5	2	18
R2	2	18	1.5	13.5	1.25	11.3	1	9
R3	1.5	13.5	1	9	0.8	7.2	0.5	4.5
R4	1	9	0.7	6.3	0.5	4.5	0.3	2.7
R9	As per customer`s special requirement							

Tolerance on Straightness

Straightness deviation is specified in millimeters and defined as lateral deviation of the edge from a straight line as shown in the graphic.

The straightness deviation is stated as edge camber(bow) and measured over a strip length of 1 or 3 meters. Straightness tolerance depends on the strip width and is given as one of five straightness classification groups (R).



Remarks

To covert straightness deviation from one measuring length to another the following formula can be used:

$$R1 = R2(\frac{L1}{L2})^2$$

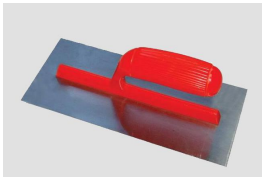
R1= straightness deviation measured on length L1.

R2=straightness deviation measured on length L2.

Application

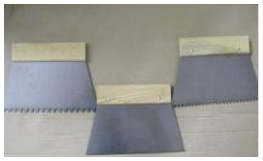
Construction tool

Bricklayer trowel



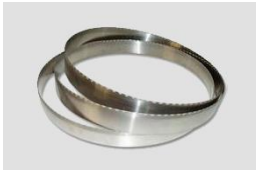
Plaster trowel

Putty knives



scraper

Saw Blades



Band saw blade

Hack saw blade

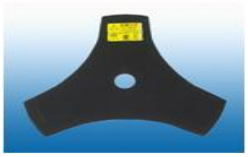
Circular Saw Blades

Gang Saw Blade

Blades

Power trowel blade

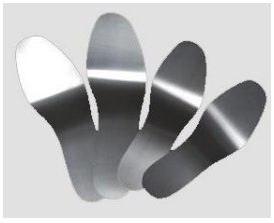
Lawn trowel blade



Reaper blade

Kinfe blade

Shoe accessories



Shoe insole

Shoe shank

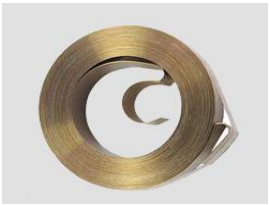
Shoe shank

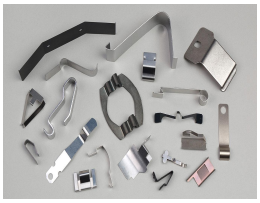
Toe Cap

springs

Flat spring, rolling shutter spring, toy spring,spring baskets

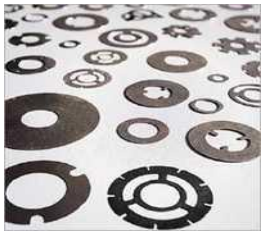
Kinds of spring

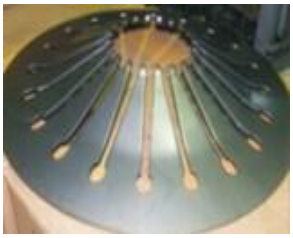




Washer, eyelet, metal clips, appliance /door spare parts, and furniture/ accessories, etc.

Auto components and others





clutch discs/washer, Wiper blade, ,seat belt spring.etc,

Facility

Certification

Laboratory Equipment

Strips are inspected strictly in material composition, size, hardness, tensile strength, etc to meet customers` request.

Material strength testing

Metallurgical structure inspection

Strength of the sample making

Chemical composition analysis

Hardness testing (rockwell, Brinell, Vivtorinox)

Flatness testing

Packing

Each coil is light oiled and then wrapped in plastic film and anti-rust paper and put into 20ft container for standard sea worthy