

High-carbon steel strip: Martensitic hardened (+QT)

Chemical Composition

Classification of symbols	Numerical classification	European Standard (EN)	Chemical Composition							
			C	Si	Mn	Max. P	Max. S	Cr	V	Ni
C60S	1.1211	EN 10132-4	0.57 - 0.65	0.15 - 0.35	0.60 - 0.90	0.025	0.025	max. 0.40	-	max. 0.40
C67S	1.1231	EN 10132-4	0.65-0.73	0.15 - 0.35	0.60 - 0.90	0.025	0.025	max. 0.40	-	max. 0.40
C75S	1.1248	EN 10132-4	0.70-0.80	0.15 - 0.35	0.60 - 0.90	0.025	0.025	max. 0.40	-	max. 0.40
51CrV4	1.8159	EN 10132-4	0.47 - 0.55	max. 0.40	0.70 - 1.10	0.025	0.025	0.90 - 1.20	0.10 - 0.25	max. 0.40

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[Premium strip slitting](#)
 Premium strip slitting home-v2-EN%282%29.jpg

MARTENSITIC TEMPERED STEEL STRIP

TECHNICAL CAPABILITIES AND SUPPLY AND PACKAGING OPTIONS

VINCO specializes in the supply of high quality **martensitic hardened steel** strips. This type of strapping is characterized by high hardness and good resistance to corrosion. The martensitic tempering process is produced when the steel is subjected to a temperature between 800°C and 1000°C and then the strip is cooled in a controlled manner in water, oil or reinforced air.

In our catalog you will find different chemical compositions of unalloyed martensitic hardened steel strips and a chromium-vanadium alloy. All of them are governed by the EN 10132 Standard.

The supply options for the martensitic mild steel strips we have available are adjusted to the needs of our customers:

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- **Tightly wound strapping:** this format makes the best use of the material and gives uniformity to the strap. In addition, this service is available for coils weighing up to 2,000 kg.
- **Helycoil format:** the capacity of this delivery option is 55 mm nominal width and 2.20 mm nominal thickness.
- **Profiled strip and flattened or inserted strip:** these two types of supply are determined according to the customer's drawing.

In terms of packaging possibilities, VINCO offers you the possibility to send strapping in cookie or roll with strapping by layout -radial or perimeter-, or by material -plastic or metallic-. In addition, we also offer strapped format that can be with wood or on cardboard core, and palletized format with square pallet, round pallet, custom-made pallet or europallet to facilitate the transport of the product. Of course, all our shipments include an element to protect the material so that it arrives in perfect conditions.

high carbon steel strip, martensitic quenched and tempered, QT

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FINISHES AND TOLERANCES OF MARTENSITIC HARDENED STEEL STRIP

The finishes for this type of mild steel strip are governed by EN 10132-4:2000, which applies to cold rolled strip for heat treatment, and are as follows:

- Oxide finish with a gray/blue tone: unpolished.
- Bright tempered finish: not polished.
- A polished finish obtained by fine grinding, abrasive brushing or other process.
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Polished and colored finish: the hardened steel strip has a blue color due to oxidation by heat treatment.

Choose the finish that best suits your needs and contact us if you have any questions or need additional information by phone (+34) 94 412 33 99 or by e-mail at info@vinco.es.

Regarding tolerances for martensitic hardened steel strip, please refer to the section in the product sheet and access all detailed metrics according to thickness, length and nominal width.

Oscillate wound strip

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Equivalents

Classification of symbols	Numerical classification	European Standard (EN)	Approximate international equivalents						
			US (AISI)		Japan (JIS)		China (GB)		
C60S	1.1211	EN 10132-4:2000							
C67S	1.1231	EN 10132-4:2000	1065	A682/684	S65C-CSP	G4802	70		GB/T 1222
C75S	1.1248	EN 10132-4:2000	1074	A682/684	-	-	-		-
51CrV4	1.8159	EN 10132-4:2000	6150	A505/506	SUP 10	G4802	50CrVA		GB/T 1222

Mechanical properties

Classification of symbols	Numerical classification	European Standard (EN)	Mechanical properties and hardness requirements		Rockwell hardness values of steel for springs
			Tempered and quenched (+QT) d		Tempered and quenched (+QT)
			Rm N/mm ²	HV	HRC
C60S	1.1211	EN 10132:2021	1150 - 1750	345 - 530	35 - 51.5
C67S	1.1231	EN 10132:2021	1200 - 1900	370 - 580	38.5 - 54
C75S	1.1248	EN 10132:2021	1200 - 1900	370 - 580	38.5 - 54
51CrV4	1.8159	EN 10132:2021	1200 - 1800	370 - 550	38.5 - 52.5

Note: it is possible to specify the hardness values or the tensile strength values, but not both. If neither of the two values is specified, the tensile strength value is calculated. The specification for tensile strength/hardness must fall within a range of 150 N/mm² or 50 HV, unless expressly stated otherwise in the commercial agreement.

Finishes

EN 10132

Finish	Description	Roughness
Rust grey/blue	Unpolished	Ra ≤ 0.6 μm The requirements regarding roughness can be agreed when requesting the quote or placing the orders.
Bright tempered	Unpolished	
Polished	Obtained through fine grinding, abrasive brushing or other procedures.	
Polished and coloured	Blue or yellow in colour due to oxidation caused by heat treatment.	

Tolerances

THICKNESS TOLERANCES

A) Specified thickness tolerances for cold rolled strip and strip obtained strapping wide precision rolling w .

According to the EN 10140:2006 Standard.

Nominal Thickness t		Thickness tolerances according to EN 10140 for nominal widths w of					
		<125			≥ 125 and <600		
>	≤	A normal	B fine	C precision	A normal	B fine	C precision
-	0.10	± 0.008	± 0.006	± 0.004	± 0.010	± 0.008	± 0.005
0.10	0.15	±0.010	± 0.008	± 0.005	± 0.015	± 0.012	± 0.010
0.15	0.25	±0.015	± 0.012	± 0.008	± 0.020	± 0.015	± 0.010
0.25	0.40	± 0.020	± 0.015	± 0.010	± 0.025	± 0.020	± 0.012
0.40	0.60	± 0.025	± 0.020	± 0.012	± 0.030	± 0.025	± 0.015
0.60	1.00	± 0.030	± 0.025	± 0.015	± 0.035	± 0.030	± 0.020
1.00	1.50	± 0.035	± 0.030	± 0.020	± 0.040	± 0.035	± 0.025
1.50	2.50	± 0.045	± 0.035	± 0.025	± 0.050	± 0.040	± 0.030
2.50	4.00	± 0.050	± 0.040	± 0.030	± 0.060	± 0.050	± 0.035
4.00	6.00	± 0.060	± 0.050	± 0.035	± 0.070	± 0.055	± 0.040

Sizes in mm.

WIDTH TOLERANCES

Width tolerances for strips with sheared edges		Standard slitting tolerances for VINCO ¹⁾				Width tolerances according to the EN 10140 Standard for nominal widths of:					
Nominal Thickness t		3-15	15-50	50-150	>150	<125		≥ 125 and <250		≥250 and <600	
≥	<					A	B	A	B	A	B
0.1	0.4	± 0.075 ²⁾	± 0.075 ²⁾	± 0.075 ²⁾	± 0.10 ²⁾	± 0.15	± 0.10	± 0.20	± 0.13	± 0.25	± 0.18

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Width tolerances for strips with sheared edges		Standard slitting tolerances for VINCO ¹⁾				Width tolerances according to the EN 10140 Standard for nominal widths of:					
Nominal Thickness t		3-15	15-50	50-150	>150	<125		≥ 125 and <250		≥250 and <600	
≥	<					A	B	A	B	A	B
0.4	0.7	± 0,085	± 0,09	± 0,10	± 0,12	± 0.15	± 0.10	± 0.20	± 0.13	± 0.25	± 0.18
0.7	1.0	± 0.085 ³⁾	± 0.09 ³⁾	± 0.10 ³⁾	± 0.12 ³⁾	± 0.20	± 0.13	± 0.25	± 0.18	± 0.30	± 0.20
1.0	1.5	± 0.10 ⁴⁾	± 0.10 ⁴⁾	± 0.10 ⁴⁾	± 0.15 ⁴⁾	± 0.20	± 0.13	± 0.25	± 0.18	± 0.30	± 0.20
1.5	2.5	on request	± 0.13 ⁵⁾	± 0.15 ⁵⁾	± 0.16 ⁵⁾	± 0.25	± 0.18	± 0.30	± 0.20	± 0.35	± 0.20
2.5	2.6	on request	on request	± 0.16	± 0.175	± 0.25	± 0.18	± 0.30	± 0.20	± 0.35	± 0.25
2.6	4.1	on request	on request	± 0.16	± 0.175	± 0.30	± 0.20	± 0.35	± 0.25	± 0.40	± 0.30
4.1	6.1	on request	on request	± 0.16	± 0.175	± 0.35	± 0.25	± 0.40	± 0.30	± 0.45	± 0.35

1) Other, closer dimensional tolerances are possible under a commercial agreement

2) Including the value $t= 0.4$

3) Including the value $t= 1$

4) Including the value $t= 1.5$

5) Including the value $t= 2.5$

LENGTH TOLERANCES

Length tolerances	Closer tolerances are possible under a commercial agreement	Positive tolerance in relation to the nominal length, according to the EN 10140 Standard for the	
$L \leq 1000$	+ 2	+ 10	+ 6
$1000 < L \leq 2500$	+0,002L	+ 0.01 L	+ 6
$L > 2500$	+0,002L	+ 0.01 L	+ 0.003 L

Sizes in mm.

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EDGE CAMBER TOLERANCES

Nominal width (w)	Closer edge curve tolerances possible under a commercial agreement		Edge curve tolerances according to the EN 10140 Standard	
	Maximum deviation 1000 mm			
	Thickness t		Class A (Normal) (maximum deviation)	Class B (FS) (Reduced) (maximum deviation)
	$t \leq 1.20$ mm	$t > 1.20$ mm		
$3 \leq W < 6$	2.50	4.00	-	-
$6 < W \leq 10$	2.00	3.00	-	-
$10 < W \leq 20$	1.00	1.50	5.00	2.00
$20 < W < 25$	1.00	1.50	5.00	2.00
$25 \leq W < 40$	1.00	1.50	3.50	1.50
$40 \leq W < 125$	1.00	1.50	2.50	1.25
$125 \leq W \leq 350$	1.00	1.50	2.00	1.00
$350 < W < 600$	-	-	2.00	1.00

Sizes in mm.

The absolute value of the tolerance can be divided within that range.

RIPPLE - LONGITUDINAL FLATNESS

The flatness tolerance of the strips in cut lengths in the direction of rolling must be a maximum of 10 mm over 1000 mm. Any other flatness requirement must be agreed when placing the order.