

# Low-Carbon Steel: Tinned

## Chemical Composition

The chemical composition is not specified in standards.

Element	% in weight (maximum, unless another value is established)	
	(Type A)	(Type B)
C	0.04 - 0.08	0.09 - 0.12
Mn	0.18 - 0.35	0.30 - 0.50
S	0.02	0.02
P	0.02	0.02
Si	0.03	0.03
Cu	0.08	0.08
Ni	0.08	0.08
Sn	0.02	0.02
As	0.02	0.02
Mo	0.02	0.02
Cr	0.08	0.08
N	0.008	0.008
Al	0.02 - 0.08	0.02 - 0.08
Others	0.02	0.02

Type B steel is not suitable for use in welding.

Classification of symbols	Numerical classification	European Standard (EN)
TS230	1.0371	EN 10202
TS245	1.0372	EN 10202
TS260	1.0379	EN 10202

\* The data contained in this catalogue are for information purposes only and are not under any circumstances, contractual supply conditions. Errors and omissions excepted.

Classification of symbols	Numerical classification	European Standard (EN)
TS275	1.0375	EN 10202
TH415	1.0377	EN 10202
TH620	1.0374	EN 10202

## Equivalents

			Approximate international equivalents						
Classification of symbols	Numerical classification	European Standard (EN)	Specific designation in European Standards EN 10202 and EN 10203	US (AISI)		Japan (JIS)		China (GB)	
TS230	1.0371	EN 10202	T50BA						
TS245	1.0372	EN 10202	T52BA						
TS260	1.0379	EN 10202	T55BA						
TS275	1.0375	EN 10202	T57BA						
TH415	1.0377	EN 10202	T61CA						
TH620	1.0374	EN 10202	DR620						

## Mechanical properties

Classification of symbols	Numerical classification	European Standard (EN)	Mechanical properties and hardness requirements			
			Yield strength at 0.2% (Rp) N/mm <sup>2</sup>		Tensile strength (Rm) N/mm <sup>2</sup>	
			Nominal values	Dev.	Expected values	Dev.
TS230	1.0371	EN 10202	230	± 50	325	± 50
TS245	1.0372	EN 10202	245	± 50	340	± 50
TS260	1.0379	EN 10202	260	± 50	360	± 50
TS275	1.0375	EN 10202	275	± 50	375	± 50
TH415	1.0377	EN 10202	415	± 50	435	± 50

Classification of symbols	Numerical classification	European Standard (EN)	Mechanical properties and hardness requirements			
			Yield strength at 0.2% (Rp) N/mm <sup>2</sup>		Tensile strength (Rm) N/mm <sup>2</sup>	
			Nominal values	Dev.	Expected values	Dev.
TH620	1.0374	EN 10202	620	± 50	625	± 50

## HARDNESS VALUES - SINGLE REDUCED SHEETS EN 10202

Rockwell hardness values HR Tm (for information purposes only)						
Thickness (mm)	t ≤ 0.21		0.21 < t ≤ 0.28		t > 0.28	
New types	Nominal value	Dev.	Nominal value	Dev.	Nominal value	Dev.
TS230	Max. 53	-	Max. 52		Max. 51	-
TS245	53	± 4	52	± 4	51	± 4
TS260	56	± 4	55	± 4	54	± 4
TS275	58	± 4	57	± 4	56	± 4
TH415	62	± 4	61	± 4	60	± 4
TH620	-	-	-	-	-	-

## Finishes

**SURFACE FINISH**

## APPROVED FINISHES EN 10202

Product finish	Code	Base Steel	Nominal roughness of the base steel µm Ra	Terms and definitions
Bright	BR	Smooth	≤ 0.35	A finish resulting from the use of working rolls in the temper mill, with fine grinding, and, in the case of tin plates, the remelting of the layer of tin.
Fine stone	FS	Fine stone	0.25 - 0.45	A finish characterised by directional grooves, resulting from the use of rolls in the temper mill, with less fine grinding than is used for a bright finish and, in the case of tinplates, the remelting of the layer of tin.
Stone	ST	Stone	0.35 - 0.60	A finish characterised by directional grooves, resulting from the use of rolls in the temper mill, with less fine grinding than is used for a bright finish and, in the case of tinplates, the remelting of the layer of tin.

Product finish	Code	Base Steel	Nominal roughness of the base steel µm Ra	Terms and definitions
Silver	SG	Shot blasted	≥ 0.90	A tinplate product whose tin layer has been remelted, resulting from the use of shot blasted rolls in the temper mill.
Matt	MM	Shot blasted	Variable	A tinplate product resulting from the use of shot blasted rolls in the temper mill and not remelting the tin layer.

## COATING

### PRECISE VALUES FOR TIN COATINGS EN 10202

Nominal coating g/m <sup>2</sup>	Applications with high-speed welding (HS)		Other applications (SP)	
	min g/m <sup>2</sup>	max g/m <sup>2</sup>	min g/m <sup>2</sup>	max g/m <sup>2</sup>
2.80	2.3	3.9	2.3	No technical requirements
5.60	4.7	7.2	4.7	No technical requirements
8.40	7.15	No technical requirements	7.15	No technical requirements
11.20	9.55	No technical requirements	9.55	No technical requirements

## Tolerances

### **HICKNESS TOLERANCES**

Thickness tolerances and edge reduction according to EN 10202

**The thickness of the material must meet the following requirements:**

- a) Deviation from the agreed thickness, measured on the centre line of the strip, must not exceed  $\pm 5\%$ .
- b) Deviation from the agreed thickness, measured at any point at a distance of no less than 6 mm from the sheared edge, must be between +5% and -8%.

### **WIDTH TOLERANCES**

Nominal thickness t		dimensional width tolerances for strips with sheared edges under a commercial agreement <sup>1)</sup>			
>=	<	3-15	15-50	50-150	>150
0,20 <sup>2)</sup>	0,40	0;+0,15	0;+0,15	0;+0,15	0;+0,20
0,40	1,00	0;+0,17	0;+0,18	0;+0,20	0;+0,24
1,00	1,50	0;+0,20	0;+0,20	0;+0,20	0;+0,30
1,50	2,50	on request	0;+0,26	0;+0,30	0;+0,32
2,50	5,00	on request	on request	0;+0,32	0;+0,35

Sizes in mm.

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

2) Including the value t=0.20.

## EDGE CAMBER TOLERANCES

Nominal width(W)	Edge curve tolerances under commercial agreement	
	Maximum deviation 2000 mm Thickness (t)	
	t ≤ 1,20 mm	t > 1,20 mm
3 ≤ W < 6	10,00	15,00
6 < W ≤ 10	8,00	12,00
10 < W ≤ 20	4,00	6,00
20 < W ≤ 350	2,00	4,00

Sizes en mm.