

COATED COLD-ROLLED STOCK

Galvanized cold-rolled sheet steel

Cold-rolled steel intended for cold shaping, painting and making stamped items, kitchen utensils, containers and other metal ware shall be galvanized at continuous hot galvanizing lines and can be delivered in sheet and coils.

Chemical composition

Standard	Steel Grade	Group	Drawing Category	Fraction of total mass, %				
				C	Mn	S (max)	P (max)	Al
GOST 14918-80	08ps, 08Yu	HSh	N	08ps, 08Yu as per GOST 9045-93; 08ps as per GOST 1050-88				
			G					
VG								
	St1ps, St2ps, St3ps, 08ps	HP, PK ON	-	08ps as per GOST 9045-93; 08ps as per GOST 1050-88; St1ps, St2ps, St3ps as per GOST 380-94				
ASTM A653/A653M-99a	CS Type A			0.10	0.60	0.035	0.030	-
	CS Type B			0.02-0.15	0.60	0.035	0.030	-
	FS Type A			0.10	0.50	0.035	0.020	-
	FS Type B			0.02-0.10	0.50	0.030	0.020	-
	SS Grd 33 (230)			0.20	-	0.04	0.04	-
	SS Grd 37 (255)			0.20	-	0.04	0.01	-
	SS Grd 40 (275)			0.25	-	0.04	0.10	-
	SS Grd 50 (340) Class 2			0.40	-	0.04	0.20	-
DIN EN 10142+A1-91(95)	DX51D			0.25	-	0.04	0.10	-
	DX52D			0.40	-	0.04	0.20	-
BS 2989-82	Z 35			0.25	1.50	0.040	-	-
JIS G 3302-87	SGCC	-	-	0.02-0.10	0.2-0.5	0.025	0.025	-

Mechanical properties

Standard	Steel Grade	Group	Drawing Category	Tensile Strength σ_B , N/mm ²	Yield Strength σ_T , N/mm ²	Relative Elongation δ_4 , %, min, when L=50 mm, for widths, mm:		
						Up to 0,7	Over 0,7 to 1,5	Over 1,5 to 2,0
GOST 14918-80	08ps, 08Yu	HSh	N	300-490	-	21	22	23
			G	275-430	-	23	24	25
			VG	255-410	-	26	28	29
		St1ps, St2ps, St3ps, 08ps	HP, PK ON	-	-	230	20	22
						-	-	-
ASTM A653/A653M-97	CS Type A				170-380	20		
	CS Type B				205-380	20		
	FS Type A				170-310	26		
	FS Type B				170-310	26		
	SS Grd 33 (230)			310	230	20		
	SS Grd 37 (255)			360	255	18		
	SS Grd 40 (275)			380	275	16		
	SS Grd 50 (340)			450	340	12		
DIN EN 10142+A1-91(95)	FePO2 G			500	-	22		
	FePO3 G			420	300	26		
BS 2989-82	Z 35			450	350	15	17	-

* For steel sheet of steel grade SGCC generally minimal yield strength is to be 206 N/mm², minimal ultimate breaking strength is to be 275 N/mm² or higher, those values are given for reference only.

Under GOST 14918-80

According to GOST 14918-80 galvanized cold-rolled sheet steel can be manufactured of two classes with reference to zinc coating thickness:

1st class: zinc layer thickness to be 18 to 40 µm,

2nd class: zinc layer thickness to be 10 to 18 µm.

Indentation depth after hardness test of galvanized rolled stock of HSh Group

Sheet Thickness, mm	Indentation depth, min, mm, for the following drawing categories		
	VG	G	N
0.5	8.5	8.0	6.9
0.6	8.9	8.5	7.2
0.7	9.2	8.9	7.5
0.8	9.5	9.3	7.8
0.9	9.9	9.6	8.2
1.0	10.1	9.9	8.6
1.1	10.3	10.1	8.7
1.2	10.5	10.3	8.7
1.3	10.7	10.5	8.9
1.4	10.8	10.6	9.0
1.5	11.0	10.8	9.1
1.6	11.3	11.0	9.5
1.7	11.4	11.1	9.6
1.8	11.5	11.2	9.7
1.9	11.6	11.3	9.8
2.0	11.7	11.4	9.9

Number of bends before fracture for bend test of galvanized rolled stock, Groups HP, PK, ON

Product Thickness, mm	Number of Bends
Up to 0.8 inclusive	8
Over 0.8 to 1.2 inclusive	5
Over 1.2 to 2.0 inclusive	3

Under TU 14-105-679-02 and TU 14-105-685-02

Products with higher level mechanical properties. Steel grade 01YuT.

Under DIN EN 10142-90+A1-95

Steel Grade	Coating Identification	Coating mass, g/m ²
DX551D	Z 200	200
DX52D	Z 225	225
	Z 275	275

Under ASTM A653/A653M-99 a

Mass of zinc coating

Steel Grade	Coating Identification	Coating mass, g/m ²
CS Type A	Z 180	180
CS Type B	Z 275	275
FS Type A		
FS Type B		
SS Grd 33(230)		
SS Grd 33(225)		
SS Grd 33(275)		
SS Grd 50(340) Class 2		

Tolerances according to DIN EN 10143-1993 (instead of 59232 07/78)

Thickness tolerances

For hot-dip galvanized flat rolled products of mild alloyed steel intended for cold shaping and structural alloyed steel with maximal yield strength equaling 280 N/mm².

Nominal Thickness of Rolled Product	Normal tolerances on nominal thickness range, mm		Limited tolerances on nominal thickness range, mm	
	Up to 1200 incl.	Over 1200 to 1500 incl.	Up to 1200 incl.	Over 1200 to 1500 incl.
0.40 to 0.60 inclusive	±0.06	±0.07	±0.04	±0.05
Over 0.60 to 0.80 inclusive	±0.07	±0.08	±0.05	±0.06
Over 0.80 to 1.00 inclusive	±0.08	±0.09	±0.06	±0.07
Over 1.00 to 1.20 inclusive	±0.09	±0.10	±0.07	±0.08
Over 1.20 to 1.60 inclusive	±0.11	±0.12	±0.08	±0.09

Thickness tolerances

For hot-dip galvanized flat rolled products of alloyed steel with minimal yield strength equaling 280 N/mm².

Nominal Thickness of Rolled Product	Normal tolerances on nominal thickness range, mm		Limited tolerances on nominal thickness range, mm	
	Up to 1200 incl.	Over 1200 to 1500 incl.	Up to 1200 incl.	Over 1200 to 1500 incl.
0.40 to 0.60 inclusive	±0.07	±0.08	±0.05	±0.06
Over 0.60 to 0.80 inclusive	±0.08	±0.09	±0.06	±0.07
Over 0.80 to 1.00 inclusive	±0.09	±0.10	±0.07	±0.08
Over 1.00 to 1.20 inclusive	±0.11	±0.12	±0.08	±0.09
Over 1.20 to 1.60 inclusive	±0.13	±0.14	±0.09	±0.11

Thickness tolerances

For hot-dip galvanized flat rolled products of alloyed steel over 600 mm wide.

Nominal Thickness of Rolled Product	Normal Tolerances, mm		Limited Tolerances, mm	
	Lower tolerance	Upper tolerance	Lower tolerance	Upper tolerance
600 to 1200 inclusive	0	+5	0	+2
Over 1200 to 1500 inclusive	0	+6	0	+2
Over 1500	0	+7	0	+3

Width tolerances

For hot-dip galvanized flat rolled products of alloyed steel of width under 600 mm.

Tolerance Class	Nominal Thickness	Nominal Width, mm							
		Up to 125 incl.		Over 125 to 250 incl.		Over 250 to 400 incl.		Over 400 to 600 incl.	
		Lower tolerance	Upper tolerance	Lower tolerance	Upper tolerance	Lower tolerance	Upper tolerance	Lower tolerance	Upper tolerance
Normal	Up to 0.6	0	+0.4	0	+0.5	0	+0.7	0	+1.0
	0.6 to 1.0 incl.	0	+0.5	0	+0.6	0	+0.9	0	+1.2
	Over 1.0 to 2.0 incl.	0	+0.6	0	+0.8	0	+1.1	0	+1.4
Limited	Up to 0.6	0	+0.2	0	+0.2	0	+0.	0	+0.5
	0.6 to 1.0 incl.	0	+0.2	0	+0.3	0	+0.4	0	+0.6
	Over 1.0 to 2.0 incl.	0	+0.3	0	+0.4	0	+0.5	0	+0.7

Flatness tolerances

For hot-dip galvanized flat rolled products of mild alloyed steel intended for cold shaping and structural alloyed steel with minimal yield strength equaling 280 N/mm².

Tolerance Class	Nominal Width of Product, mm	Tolerance, mm, for nominal thickness, mm		
		Up to 0.7	0.7 to 1.2	Over 1.2.
Normal	600 to 1200 inclusive	12	10	8
	Over 1200 to 1500 inclusive	15	12	10
Limited	600 to 1200 inclusive	5	4	3
	Over 1200 to 1500 inclusive	6	5	4

Flatness tolerances

For hot-dip galvanized flat rolled products of mild alloyed steel intended for cold shaping and structural alloyed steel with minimal yield strength of 280 to 360 N/mm².

Tolerance Class	Nominal Width of Product, mm	Tolerance, mm, for nominal thickness, mm		
		Up to 0.7	0.7 to 1.2	Over 1.2.
Normal	600 to 1200 inclusive	15	13	10
	Over 1200 to 1500 inclusive	18	15	13
Limited	600 to 1200 inclusive	8	6	5
	Over 1200 to 1500 inclusive	9	8	6

Tolerances according to ASTM A924/A924M-99

Thickness tolerances

For hot-dip galvanized rolled products. Measured at a distance ≥ 10 mm from edges.

Specified Width of Product, mm	Specified Thickness, mm		
	Over 0.4 to 1.0 incl.	Over 1.0 to 1.5 incl.	Over 1.5 to 2.0 incl.
Up to 1500	± 0.10	± 0.13	± 0.15

Thickness tolerances

For hot-dip galvanized rolled products. Measured at a distance ≥ 25 mm from edges.

Specified Width of Product, mm	Specified Thickness, mm	
	Up to 1.5	Over 1.5 to 2.0 incl.
Up to 1500 incl.	± 0.05	± 0.08

Width tolerances

For hot-dip galvanized rolled products in sheet, coils, cut to length without specified accuracy.

Specified Width of Product, mm	Positive Tolerance (no negative tolerance), mm
Over 300 to 600 incl.	+3
Over 600 to 1200 incl.	+5
Over 1200 to 1500 incl.	+6

Length tolerances

For hot-dip galvanized rolled products in sheet, cut to length without specified accuracy.

Specified Length of Product, mm	Positive Tolerance (no negative tolerance), mm
Over 300 to 1500 incl.	+6
Over 1500 to 3000 incl.	+20
Over 3000 to 6000 incl.	+35

Camber tolerances

For hot-dip galvanized rolled products in coils of width over 300 mm.

Specified Length of Product, mm	Tolerance, mm
Up to 1200 incl.	4
Over 1200 to 1800 incl.	5
Over 1800 to 2400 incl.	6
Over 2400 to 3000 incl.	8
Over 3000 to 3700 incl.	10
Over 3700 to 4300 incl.	13

Dimensions of galvanized products

Dimensions	Names of Aluminizing Lines	
	Galvanizing Line	Aluminizing Line
Width, mm	1250	1500
Thickness, mm	0.5 to 1.5	
Coil mass, t	5 to 12	
Sheet bundle mass, t	2 to 10	
Sheet length, mm	2000-2500	

Tolerances as per GOST 19904-90

Description of Export Packaging for Galvanized Rolled Stock

Coils

Internal diameter of coil: 600 ±20 mm.

Outer diameter of coil: max. 1400 mm.

Coil mass: 5 to 12 t.

Each coil shall be stuck with two paper labels, two galvanized steel tags are fixed to radial tying bands. One tag is placed at the outer side of a coil and the other tag is placed at the inner one. At a coil end labels inscribed "Zn" are stuck.

Sheet

Bundle mass: 5 to 10 t.

Bundle height : 530 mm.

Two paper labels are stuck to each bundle and two metal tags are fixed at longitudinal tying bands – one per each end face.