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Hot-dip zinc-coated steel sheet and strip

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as result of proposal for revision of Japanese Industrial Standard submitted by The Japan Iron and Steel Federation (JISF) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS G 3302**:2005 is replaced with this Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

Hot-dip zinc-coated steel sheet and strip

Introduction

This Japanese Industrial Standard has been prepared based on the third edition of **ISO 3575** published in 2005 and the fourth edition of **ISO 4998** published in 2005 with some modifications of the technical contents.

The portions given sidelines or dotted underlines are the matters in which the contents of the corresponding International Standards have been modified. A list of modifications with the explanations is given in Annex JD. Furthermore, matters in Annex JA to Annex JC are not stated in the corresponding International Standards.

1 Scope

This Standard specifies the steel sheet and strip (hereafter referred to as "sheet and coil") equally zinc-coated on both surfaces in a bath of molten zinc containing 97 % or over of zinc in mass fraction (provided that the aluminium content is usually 0.30 % or less). In this case, the term "sheet" includes not only sheets in flat form but also corrugated sheets of which the shapes and dimensions are specified in **JIS G 3316**.

NOTE : The International Standards corresponding to this Standard are as follows.

ISO 3575 : 2005 *Continuous hot-dip zinc-coated carbon steel sheet of commercial and drawing qualities*

ISO 4998 : 2005 *Continuous hot-dip zinc-coated carbon steel sheet of structural quality*

(Overall evaluation : MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standards and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS G 0320 *Standard test methods for heat analysis of steel products*

JIS G 0404 *Steel and steel products — General technical delivery requirements*

JIS G 0415 *Steel and steel products — Inspection documents*

JIS G 0594 *Methods of accelerated cyclic corrosion resistance tests for anodic coat-*

ings with exposure to salt spray, dry and wet conditions

JIS G 3316 *Shapes and dimensions of corrugated steel sheets*

JIS H 0401 *Methods of test for hot dip galvanized coatings*

NOTE : Corresponding International Standard : **ISO 1460** *Metallic coatings — Hot dip galvanized coatings on ferrous materials — Gravimetric determination of the mass per unit area* (MOD)

JIS H 8502 *Methods of corrosion resistance test for metallic coatings*

JIS K 0119 *General rules for X-ray fluorescence spectrometric analysis*

JIS K 5621 *Anticorrosive paint for general use*

JIS Z 2201 *Test pieces for tensile test for metallic materials*

JIS Z 2241 *Method of tensile test for metallic materials*

JIS Z 8401 *Guide to the rounding of numbers*

3 Grade, symbol and applicable nominal thickness [1)]

The grade, symbol and applicable nominal thickness shall be as follows.

Note [1)] The nominal thickness refers to the base metal thickness before coating [see **9.1 a)**].

a) The sheet and coil shall be classified into 6 grades using hot-rolled sheets and strips (hereafter referred to as "hot-rolled base metal") and into 11 grades using cold-reduced sheets and strips (hereafter referred to as "cold-reduced base metal"), and their grade symbols and applicable nominal thicknesses shall be as given in table 1 and table 2.

b) For the sheet and coil used for roofing and architectural siding, the symbol R indicating roofing or the symbol A indicating architectural siding shall be suffixed to the grade symbol in table 2. In this case, the applicable nominal thickness and the coating mass symbol shall be in accordance with Annex JA.

c) For the sheet and coil subjected to corrugating in accordance with **JIS G 3316**, the symbol W indicating the corrugated sheet and the shape symbol for the corrugated sheet shall be suffixed to the grade symbol in table 2 (for roofing or architectural siding, after the symbol thereof). In this case, the applicable nominal thickness and the coating mass symbol shall be in accordance with Annex JB.

Table 1 Grade symbol and applicable nominal thickness [using hot-rolled base metal [a)]]

Unit : mm

Grade symbol	Applicable nominal thickness	Application
SGHC	1.6 or over up to and incl. 6.0	Commercial use
SGH340		Structural use
SGH400		
SGH440		
SGH490		
SGH540		

Note [a)] For the nominal thickness of 1.6 mm or over up to and including 3.2 mm, unless the hot-rolled base metal is particularly specified, the cold-reduced base metal which satisfies the specification of the hot-rolled base metal may be used.

Table 2 Grade symbol and applicable nominal thickness (using cold-reduced base metal)

Unit : mm

Grade symbol	Applicable nominal thickness [a)]	Application
SGCC	0.25 or over up to and incl. 3.2	Commercial use
SGCH	0.11 or over up to and incl. 1.0	Commercial use of hard class
SGCD1	0.40 or over up to and incl. 2.3	Drawing use Class 1
SGCD2		Drawing use Class 2
SGCD3	0.60 or over up to and incl. 2.3	Drawing use Class 3
SGCD4		Drawing use Class 4, non-aging property [b)]
SGC340	0.25 or over up to and incl. 3.2	Structural use
SGC400		
SGC440		
SGC490		
SGC570	0.25 or over up to and incl. 2.0	

For the corrugated sheet, the grade of commercial use, commercial use of hard class and structural use in this table shall be used.

Notes [a)] The nominal thickness other than those listed in this table may be applied upon the agreement between the purchaser and the supplier.

[b)] The non-aging property refers to the property free from the stretcher strain during working.

4 Chemical composition

For the chemical composition of the base metal of sheet and coil, the test shall be performed in accordance with **13.1** and the heat analysis values shall be as given in table 3.

Table 3 Chemical composition

Unit : %

Grade symbol	C	Mn	P	S
SGHC	0.15 max.	0.80 max.	0.05 max.	0.05 max.
SGH340	0.25 max.	1.70 max.	0.20 max.	0.05 max.
SGH400	0.25 max.	1.70 max.	0.20 max.	0.05 max.
SGH440	0.25 max.	2.00 max.	0.20 max.	0.05 max.
SGH490	0.30 max.	2.00 max.	0.20 max.	0.05 max.
SGH540	0.30 max.	2.50 max.	0.20 max.	0.05 max.
SGCC	0.15 max.	0.80 max.	0.05 max.	0.05 max.
SGCH	0.18 max.	1.20 max.	0.08 max.	0.05 max.
SGCD1	0.12 max.	0.60 max.	0.04 max.	0.04 max.
SGCD2	0.10 max.	0.45 max.	0.03 max.	0.03 max.
SGCD3	0.08 max.	0.45 max.	0.03 max.	0.03 max.
SGCD4	0.06 max.	0.45 max.	0.03 max.	0.03 max.
SGC340	0.25 max.	1.70 max.	0.20 max.	0.05 max.
SGC400	0.25 max.	1.70 max.	0.20 max.	0.05 max.
SGC440	0.25 max.	2.00 max.	0.20 max.	0.05 max.
SGC490	0.30 max.	2.00 max.	0.20 max.	0.05 max.
SGC570	0.30 max.	2.50 max.	0.20 max.	0.05 max.

5 Coating

5.1 Type of coating

The coating shall be classified into two types: non-alloyed coating and alloyed coating [2].

Note [2] The alloyed coating refers to the coating obtained in such a way that an alloyed layer of iron and zinc is produced in the entire coating layer by heating after coating.

5.2 Coating mass

5.2.1 Coating mass symbol

For coating, both surfaces shall be equally coated in thickness, and the coating mass symbol shall be as given in table 4.

5.2.2 Coating mass

For the coating mass, the test shall be performed in accordance with **13.2**, and the minimum coating mass shall be as follows. The maximum coating mass (total mass on both surfaces) may be agreed between the purchaser and the supplier.

a) The coating mass on the sheet and coil shall be expressed by the total mass on both surfaces, and the minimum average coating mass at triple spots and the minimum coating mass at a single spot shall be as given in table 4. Here, the minimum average coating mass at triple spots shall apply to the average of the measured values of the coating masses of three test pieces cut from the specimen, and the minimum coating mass at a single spot shall apply to the smallest of the measured values of the coating masses of the three test pieces of which the average value is obtained.

Table 4 Minimum coating mass (total mass on both surfaces)

Unit : g/m²

Type of coating	Coating mass symbol	Minimum average coating mass at triple spots	Minimum coating mass at single spot
Non-alloyed coating	Z06 a)	60	51
	Z08	80	68
	Z10	100	85
	Z12	120	102
	Z14	140	119
	Z18	180	153
	Z20	200	170
	Z22	220	187
	Z25	250	213
	Z27	275	234
	Z35	350	298
	Z37	370	315
	Z45	450	383
	Z60	600	510
Alloyed coating	F04 a)	40	34
	F06	60	51
	F08	80	68
	F10	100	85
	F12	120	102
	F18a)	180	153
The coating masses corresponding to Z35, Z37, Z45, Z60, F10, F12 and F18 shall not apply to SGCD1, SGCD2, SGCD3 and SGCD4. Note a) Applicable only when agreed between the purchaser and the supplier.			

b) The minimum coating mass at a single spot on either surface on the sheet and coil should be 40 % or over of the minimum coating mass at a single spot (total mass on both surfaces).

5.3 Coating surface finishes

5.3.1 Type and symbol of surface finish for non-alloyed coating

The type and the symbol of the coating surface finish shall be as given in table 5.

Table 5 Type and symbol of surface finish for non-alloyed coating

Type of coating surface finish	Symbol	Remarks
Regular spangle	R	A coating having spangles as a result of the unrestricted growth of zinc crystals during normal solidification.
Minimized spangle	Z	A coating having the spangles obtained by restricting normal spangle formation to a minimum.

5.3.2 Skin-pass

Skin-passing to obtain surface smoothness shall be in accordance with the designa-

tion by the purchaser. In this case, the symbol shall be S.

5.4 Coating adherence

For the coating adherence of the flat sheet and coil to which the non-alloyed coating is applied, when the test is performed in accordance with **13.4.2** under the bend test condition given in table 9 or table 10, there shall be no flaking of the coating on the outside of the bent portion (within an area 7 mm or over from each side of the test piece).

In addition, the coating adherence may be evaluated in accordance with other evaluation test methods or evaluation criteria in place of the bend test for coating adherence when agreed between the purchaser and the supplier.

6 Chemical treatment

The type and the symbol of the chemical treatment for the flat sheet and coil shall be as given in table 6. Unless otherwise specified, the non-alloyed coating shall be subjected to the chromate treatment or chromate-free treatment, and the alloyed coating shall be untreated.

Chemical treatments other than those in table 6 may be agreed upon between the purchaser and the supplier.

Table 6 Type and symbol of chemical treatment

Type of chemical treatment	Symbol
Chromate treatment	C
Phosphate treatment [a)]	P
Chromate-free treatment [b)]	NC
Chromate-free phosphate treatment [c)]	NP
Untreated	M
Notes [a)] For phosphate treatment, chromate treatment shall generally be applied on the phosphate-treated surface in order to improve the corrosion resistance. [b)] Chromate-free treatment refers to the chemical treatment which does not contain the hexavalent chromium. [c)] Chromate-free phosphate treatment refers to the chemical treatment which does not contain hexavalent chromium applied on the phosphate-treated surface.	

7 Oiling

The type and the symbol of oiling for the sheet and coil shall be as given in table 7. Unless otherwise specified, the non-alloyed coating shall be unoiled and the alloyed coating shall be oiled.

Table 7 Type and symbol of oiling

Type of oiling	Symbol
Oiled	O
Unoiled	X

8 Mechanical properties

8.1 Applicable mechanical properties

Applicable mechanical properties for the flat sheet and coil shall be as given in table 8.

Table 8 Applicable mechanical property

Grade symbol	Bendability [a]	Tensile test characteristics [b]
SGHC	○	— [e]
SGH340	○	○
SGH400	○	○
SGH440	○	○
SGH490	○	○
SGH540	○	○
SGCC	○ [c]	— [e]
SGCH	— [d]	— [e]
SGCD1	○	○
SGCD2	○	○
SGCD3	○	○
SGCD4	○	○
SGC340	○	○
SGC400	○	○
SGC440	○	○
SGC490	○	○
SGC570	— [d]	○

Notes [a] Apply to the non-alloyed coating and not apply to the alloyed coating.
[b] For the nominal thickness under 0.25 mm, the tensile test shall not apply.
[c] When used for corrugated sheets, the bendability shall not apply.
[d] The bendability shall not apply.
[e] The tensile test characteristics shall not apply.

8.2 Bendability

For the bendability of the flat sheet and coil to which the non-alloyed coating is applied, when the test is performed in accordance with **13.4.2** under the bend test condition given in table 9 and table 10, there shall be no cracking (visible to the naked eye) or fracture of the base metal on the outside of the bent portion (within an area 7 mm or over from each side of the test piece).

NOTE : For the performance of the bend test, see **13.4.2**.

Table 9 Bendability (1)

Grade symbol	Bending angle	Internal spacing of bend (number of sheets of nominal thickness)					
		Nominal thickness 1.6 mm or over to and excl. 3.0 mm			Nominal thickness 3.0 mm or over		
		Coating mass symbol			Coating mass symbol		
		Z06 to Z27	Z35, Z37	Z45, Z60	Z06 to Z27	Z35, Z37	Z45, Z60
SGHC	180 °	1	2	2	2	2	2
SGH340		1	1	2	2	2	3
SGH400		2	2	2	3	3	3
SGH440 SGH490 SGH540		3	3	3	3	3	3

Table 10 Bendability (2)

Grade symbol	Bending angle	Internal spacing of bend (number of sheets of nominal thickness)								
		Nominal thickness Under 1.6 mm			Nominal thickness 1.6 mm or over to and excl. 3.0 mm			Nominal thickness 3.0 mm or over		
		Coating mass symbol			Coating mass symbol			Coating mass symbol		
		Z06 to Z27	Z35, Z37	Z45, Z60	Z06 to Z27	Z35, Z37	Z45, Z60	Z06 to Z27	Z35, Z37	Z45, Z60
SGCC	180 °	1	1	2	1	2	2	2	2	2
SGCD1		1	—	—	1	—	—	—	—	—
SGCD2 SGCD3 SGCD4		0 (Flat on it-self)	—	—	0 (Flat on it-self)	—	—	—	—	—
SGC340		1	1	2	1	1	2	2	2	3
SGC400		2	2	2	2	2	2	3	3	3
SGC440 SGC490		3	3	3	3	3	3	3	3	3

8.3 Tensile test characteristics

For the tensile test characteristics of the flat sheet and coil, when the test is performed in accordance with **13.4.3**, the result shall be as given in table 11 or table 12.

The yield point shall be the upper yield point.

Table 11 Tensile test characteristics (1)

Grade symbol	Yield point or proof stress N/mm²	Tensile strength N/mm²	Elongation % Nominal thickness mm					Test piece and direction of tensile test
			1.6 or over to and excl. 2.0	2.0 or over to and excl. 2.5	2.5 or over to and excl. 3.2	3.2 or over to and excl. 4.0	4.0 or over up to and incl. 6.0	
SGHC	(205 min.)	(270 min.)	—	—	—	—	—	No. 5 in rolling direction
SGH340	245 min.	340 min.	20 min.	20 min.	20 min.	20 min.	20 min.	No. 5 in rolling direction or perpendicular to the rolling direction
SGH400	295 min.	400 min.	18 min.	18 min.	18 min.	18 min.	18 min.	
SGH440	335 min.	440 min.						
SGH490	365 min.	490 min.	16 min.	16 min.	16 min.	16 min.	16 min.	
SGH540	400 min.	540 min.						

NOTE 1 1 N/mm² = 1 MPa
NOTE 2 Values in parentheses are shown for reference.

Table 12 Tensile test characteristics (2)

Grade symbol	Yield point or proof stress N/mm²	Tensile strength N/mm²	Elongation % Nominal thickness mm						Test piece and direction of tensile test
			0.25 or over to and excl. 0.40	0.40 or over to and excl. 0.60	0.60 or over to and excl. 1.0	1.0 or over to and excl. 1.6	1.6 or over to and excl. 2.5	2.5 or over	
SGCC	(205 min.)	(270 min.)	—	—	—	—	—	—	No. 5 in rolling direction
SGCH[a)]	—	—	—	—	—	—	—	—	
SGCD1	—	270 min.	—	34 min.	36 min.	37 min.	38 min.	—	
SGCD2	—	270 min.	—	36 min.	38 min.	39 min.	40 min.	—	
SGCD3	—	270 min.	—	38 min.	40 min.	41 min.	42 min.	—	
SGCD4 [b)]	—	270 min.	—	40 min.	42 min.	43 min.	44 min.	—	
SGC340	245 min.	340 min.	20 min.	20 min.	20 min.	20 min.	20 min.	20 min.	No. 5 in rolling direction or perpendicular to the rolling direction
SGC400	295 min.	400 min.	18 min.	18 min.	18 min.	18 min.	18 min.	18 min.	
SGC440	335 min.	440 min.	18 min.	18 min.	18 min.	18 min.	18 min.	18 min.	
SGC490	365 min.	490 min.	16 min.	16 min.	16 min.	16 min.	16 min.	16 min.	
SGC570	560 min.	570 min.	—	—	—	—	—	—	

NOTE 1 Values in parentheses are shown for reference.
NOTE 2 1 N/mm² = 1 MPa
Notes [a)] SGCH is a material not subjected to annealing, usually having a Rockwell hardness of 85 HRB or more or a Vickers hardness of 170 HV or more (the test load may be chosen appropriately).
[b)] For the sheet and coil of SGCD4, the stretcher strain shall not be generated when working is performed during six months after manufacturing.

9 Dimensions and tolerances

9.1 Expression of dimensions

The dimensions of sheet and coil shall be expressed as follows.

a) For the thickness of sheet and coil, the thickness of the base metal prior to coating shall be regarded as the nominal thickness and the thickness of the base metal after coating shall be regarded as the product thickness.

b) The dimensions of sheet shall be expressed in nominal thickness, width and length in millimetres.

c) The dimensions of coil shall be expressed in nominal thickness and width in millimetres. When the mass of coil is the theoretical mass, the length shall be expressed in metres.

9.2 Standard dimensions

The standard dimensions of sheet and coil shall be as follows. The standard nominal thickness of corrugated sheet, standard width and length prior to corrugation shall be in accordance with Annex JB. Further, the standard length and width of corrugated sheet after corrugation shall be in accordance with JIS G 3316.

a) **Standard nominal thickness** The standard nominal thickness of sheet and coil shall be as given in table 13.

Table 13 Standard nominal thickness

Unit : mm

Standard nominal thickness											
(0.27)	(0.30)	(0.35)	0.40	0.50	0.60	0.70	0.80	0.90	1.0	1.2	1.4
1.6	1.8	2.0	2.3	2.8	3.2	3.6	4.0	4.5	5.0	5.6	6.0
Values in parentheses shall apply to the coating mass or more coatings corresponding to the non-alloyed Z18. Upon the agreement between the purchaser and the supplier, the thicknesses of 0.65 mm and 0.75 mm may serve as the standard nominal thicknesses.											

b) **Standard width and standard length of sheet** The standard width of sheet and coil, and the standard length of sheet shall be as given in table 14.

Table 14 Standard width and standard length of sheet

Unit : mm

Standard width	Standard length of sheet						
762	1 829	2 134	2 438	2 743	3 048	3 353	3 658
914	1 829	2 134	2 438	2 743	3 048	3 353	3 658
1 000	2 000						
1 219	2 438	3 048	3 658				
1 524	3 048						
1 829	3 658						
As for the coil, 610 mm shall also be regarded as the standard width in addition to those given in this table.							

9.3 Dimensional tolerances

9.3.1 Tolerances on product thickness

Tolerances on the product thickness of sheet and coil shall be as follows.

a) Tolerances on the product thickness shall apply to the value of the nominal thickness rounded to three decimal places plus the equivalent thickness of the coating given in table 18 rounded to two decimal places in accordance with rule A of JIS Z 8401.

b) Tolerances on the product thickness shall be as given in table 15, table 16 or table 17.

c) The product thickness shall be measured at any point 25 mm or over from the side edge (the end in the width direction) .

d) Shall not apply to the irregular portions such as the welds in a coil.

Table 15 Tolerances on product thickness (applicable to SGHC)

Unit : mm

Nominal width	Width			
	Under 1 200	1 200 or over to and excl. 1 500	1 500 or over to and excl. 1 800	1 800 or over up to and incl. 2 300
1.60 or over to and excl. 2.00	± 0.17	± 0.18	± 0.19	± 0.22 a)
2.00 or over to and excl. 2.50	± 0.18	± 0.20	± 0.22	± 0.26 a)
2.50 or over to and excl. 3.15	± 0.20	± 0.22	± 0.25	± 0.27
3.15 or over to and excl. 4.00	± 0.22	± 0.24	± 0.27	± 0.28
4.00 or over to and excl. 5.00	± 0.25	± 0.27	—	—
5.00 or over to and excl. 6.00	± 0.27	± 0.29	—	—
6.00	± 0.30	± 0.31	—	—

Note a) Applicable to those of width under 2 000 mm.

Table 16 Tolerances on product thickness (applicable to SGH340, SGH400, SGH440, SGH490 and SGH540)

Unit : mm

Nominal width	Width	
	Under 1 600	1 600 or over to and excl. 2 000
1.60 or over to and excl. 2.00	± 0.20	± 0.24
2.00 or over to and excl. 2.50	± 0.21	± 0.26
2.50 or over to and excl. 3.15	± 0.23	± 0.30
3.15 or over to and excl. 4.00	± 0.25	± 0.35
4.00 or over to and excl. 5.00	± 0.46	—
5.00 or over up to and incl. 6.00	± 0.51	—

Table 17 Tolerances on product thickness (applicable to SGCC, SGCH, SGCD1 to SGCD4 and SGC340 to SGC570)

Unit : mm

Nominal thickness	Width				
	Under 630	630 or over to and excl. 1 000	1 000 or over to and excl. 1 250	1 250 or over to and excl. 1 600	1 600 or over
Under 0.25	± 0.04	± 0.04	± 0.04	—	—
0.25 or over to and excl. 0.40	± 0.05	± 0.05	± 0.05	± 0.06	—
0.40 or over to and excl. 0.60	± 0.06	± 0.06	± 0.06	± 0.07	± 0.08
0.60 or over to and excl. 0.80	± 0.07	± 0.07	± 0.07	± 0.07	± 0.08
0.80 or over to and excl. 1.00	± 0.07	± 0.07	± 0.08	± 0.09	± 0.10
1.00 or over to and excl. 1.25	± 0.08	± 0.08	± 0.09	± 0.10	± 0.12
1.25 or over to and excl. 1.60	± 0.09	± 0.10	± 0.11	± 0.12	± 0.14
1.60 or over to and excl. 2.00	± 0.11	± 0.12	± 0.13	± 0.14	± 0.16
2.00 or over to and excl. 2.50	± 0.13	± 0.14	± 0.15	± 0.16	± 0.18
2.50 or over to and excl. 3.15	± 0.15	± 0.16	± 0.17	± 0.18	± 0.21
3.15 or over	± 0.17	± 0.18	± 0.20	± 0.21	—

Table 18 Equivalent coating thickness

Non-alloyed coating

Unit : mm

Coating mass symbol	Z06	Z08	Z10	Z12	Z14	Z18	Z20	Z22	Z25	Z27	Z35	Z37	Z45	Z60
Equivalent coating thickness	0.013	0.017	0.021	0.026	0.029	0.034	0.040	0.043	0.049	0.054	0.064	0.067	0.080	0.102

Alloyed coating

Coating mass symbol	F04	F06	F08	F10	F12	F18
Equivalent coating thickness	0.008	0.013	0.017	0.021	0.026	0.034

9.3.2 Tolerances on width

Tolerances on the width of sheet and coil shall be as given in table 19. Width shall be measured at a normal portion in a coil and at any position for sheet. However, tolerances on the width of corrugated sheet after corrugation shall be in accordance with JIS G 3316.

Table 19 Tolerances on width

Unit : mm

Width	Applicable grade symbol		
	SGHC, SGH340, SGH400, SGH440, SGH490, SGH540		SGCC, SGCH, SGCD1 to SGCD4, SGC340 to SGC570
	Tolerance A [a)]	Tolerance B [a)]	
1 500 or under	+ 25 0	+ 10 0	+ 7 0
Over 1 500			+ 10 0
Note [a)] Generally, tolerance A is applied to the mill edge and tolerance B is applied to the cut edge.			

9.3.3 Tolerances on length

Tolerances on the length of sheet shall be as given in table 20. The length shall be measured at any position of sheet.

Table 20 Tolerances on length

Unit : mm

Tolerances on length
+ 15 0

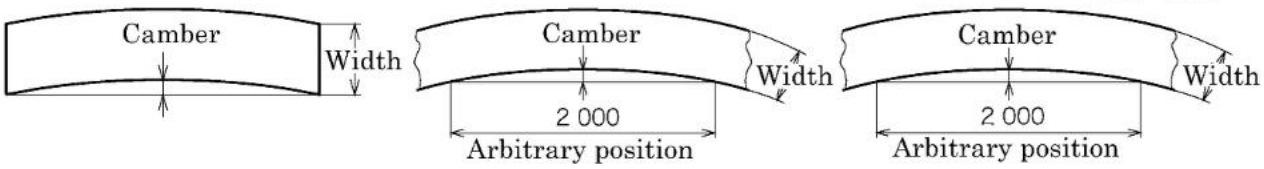
10 Shapes

10.1 Camber

The application of camber for the flat sheet and coil shall be as shown in figure 1. The maximum camber of the flat sheet and coil shall be as given in table 21 or table 22. However, the camber shall not apply to the irregular portions in a coil. The measurement of camber may be omitted [3)], however, when particularly specified by the purchaser, the measurement shall be performed.

Note [3)] The measurement of camber may be omitted by the judgment of the manufacturer on the precondition that camber shall satisfy the specified value.

Unit : mm



For flat sheet of SGHC to SGH540 and flat sheet of SGCC to SGC570 under 2 000 mm in length

For flat sheet of SGCC to SGC570 at least 2 000 mm in length

For coil

Figure 1 Application of camber

Table 21 Maximum value of camber (applicable for SGHC, SGH340, SGH400, SGH440, SGH490 and SGH540)

Unit : mm

Width	Flat sheet			Coil
	Length			
	Under 2 500	2 500 or over to and excl. 4 000	4 000 or over	
Under 630	5	8	12	5 in any 2 000 length
630 or over to and excl. 1 000	4	6	10	
1 000 or over	3	5	8	

Table 22 Maximum value of camber (applicable for SGCC SGCH, SGCD1 to SGCD4 and SGC340 to SGC570)

Unit : mm

Width	Flat sheet		Coil
	Length		
	Under 2 000	2 000 or over	
Under 630	4	4 in any 2 000 length	
630 or over	2	2 in any 2 000 length	

10.2 Out-of-square

The out-of-square for the flat sheet shall be expressed as $\frac{l}{b} \times 100$ (%) in figure 2 and shall not exceed 1 %.

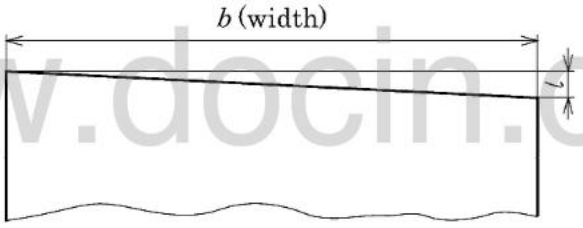


Figure 2 Out-of-square for flat sheet

10.3 Flatness

The flatness for the flat sheet shall be as given in table 23 or table 24. The flatness shall be measured with a sheet lying under its own mass on a flat surface, and the value of flatness shall be obtained by subtracting the product thickness from the maximum deviation from the flat horizontal surface. The value thus obtained shall apply to the upper surface of the sheet.

Table 23 Flatness for flat sheet (applicable for SGHC, SGH340, SGH400, SGH440, SGH490 and SGH540)

Unit : mm

Nominal thickness	Width			
	Under 1 250	1 250 or over to and excl. 1 600	1 600 or over to and excl. 2 000	2 000 or over up to and incl. 2 300
1.60 or over to and excl. 3.15	16 max.	18 max.	20 max.	—
3.15 or over to and excl. 4.00	16 max.			—
4.00 or over to and excl. 6.00	14 max.			24 max.
6.00	13 max.			21 max.

Table 24 Flatness for flat sheet (applicable for SGCC, SGCH, SGCD1 to SGCD4 and SGC340 to SGC570)

Unit : mm

Width	Type		
	Bow	Edge wave [a)]	Centre buckle [b)]
Under 1 000	12 max.	8 max.	6 max.
1 000 or over to and excl. 1 250	15 max.	9 max.	8 max.
1 250 or over to and excl. 1 600	15 max.	11 max.	8 max.
1 600 or over	20 max.	13 max.	9 max.

Notes [a)] It refers to the type of flatness in which a corrugation appears at the edge (the end in the width direction) of flat sheet.

[b)] It refers to the type of flatness in which a corrugation appears at the central part of flat sheet.

11 Mass and tolerances thereof

11.1 Mass of sheet

The mass of sheet shall usually be given in the theoretical mass in kilogrammes.

11.2 Mass of coil

The mass of coil shall be given in either the actual or the theoretical mass in kilogrammes.

11.3 Calculation method of mass

The calculation method of the mass of sheet and coil shall be as given in table 25.

Table 25 Calculation method of mass

Calculation order			Calculation method	Number of figures in resultant values [d]
Basic mass of base metal		kg/mm·m²	7.85 (thickness of 1 mm·area of 1 m²)	—
Unit mass of base metal		kg/m²	Basic mass of base metal (kg/mm·m²) × nominal thickness (mm)	Rounded off to 4 significant figures.
Unit mass after coating		kg/m²	Unit mass of base metal (kg/m²) + coating mass constant (kg/m²) [c]	Rounded off to 4 significant figures.
Sheet	Area of sheet [a]	m²	Width (mm) × length (mm) × 10^{-6}	Rounded off to 4 significant figures.
	Mass of a single sheet	kg	Unit mass after coating (kg/m²) × area (m²)	Rounded off to 3 significant figures.
	Mass of a single bundle [b]	kg	Mass of single sheet (kg) × number of sheets in a single bundle of the same dimensions	Rounded off to integral number of kg.
	Total mass	kg	Total mass of each bundle (kg)	Integral number of kg.
Coil	Unit mass of coil	Kg/m	Unit mass after coating (kg/m²) × width (mm) × 10^{-3}	Rounded off to 3 significant figures.
	Mass of a single coil	kg	Unit mass of coil (kg/m) × length (m)	Rounded off to integral number of kg.
	Total mass	kg	Total mass of each coil (kg)	Integral number of kg.

Notes [a] The width dimensions to be used for the calculation of the area of corrugated sheet shall be those prior to corrugation.

[b] The number of sheets, when the bundle mass is specified, shall be obtained by dividing the specified mass by the mass of a single sheet of the same shape, dimensions and coating mass, to be rounded off to an integral number.

[c] The coating mass constants shall be as given in table 26.

[d] Rounding off of the numerical values shall be in accordance with rule A of **JIS Z 8401**.

Table 26 Coating mass constants for mass calculation

Non-alloyed coating Unit : kg/m²

Coating mass symbol	Z06	Z08	Z10	Z12	Z14	Z18	Z20	Z22	Z25	Z27	Z35	Z37	Z45	Z60
Coating mass constant	0.090	0.120	0.150	0.183	0.203	0.244	0.285	0.305	0.350	0.381	0.458	0.481	0.565	0.722

Alloyed coating

Coating mass symbol	F04	F06	F08	F10	F12	F18
Coating mass constant	0.060	0.090	0.120	0.150	0.183	0.244

11.4 Tolerances on theoretical mass of sheet

Tolerances on the theoretical mass of sheet, which are expressed as the percentage obtained by dividing the difference between the theoretical mass obtained by 11.3 and the actual mass by the theoretical mass, shall be as given in table 27.

Table 27 Tolerances on mass

Theoretical mass of a single lot [a] kg	Tolerance %
Under 600	± 10
600 or over to and excl. 2 000	± 7.5
2 000 or over	± 5
Note [a] Calculation shall be made regarding a lot of sheets of the same quality, shape, dimensions and coating mass.	

12 Appearance

The sheet and coil shall be free from defects to the extent of detrimental to practical use. Unless otherwise specified, surface defects shall be applied to the one-sided surface [4] of the sheet and coil.

In addition, the coil may contain some irregular portions since, in general, it has no opportunity to remove defects by the inspection. Furthermore, the coil may include the weld.

Note [4] The one-sided surface, usually, refers to a surface of the upper side in packaging for the sheet and an outside surface of coils for the coil.

13 Tests

13.1 Analysis test

13.1.1 General matter of analysis test and sampling method of specimen

The chemical composition of the base metal shall be obtained by the heat analysis, and the general matter of analysis test and sampling method of specimen shall be in accordance with clause 8 of JIS G 0404.

13.1.2 Analytical method

The analytical method shall be in accordance with JIS G 0320.

13.2 Coating mass test

13.2.1 Sampling method of specimen

The sampling method of the specimen for each product of same dimensions and coating mass shall be as follows.

For the corrugated sheet, the specimen shall be taken from the flat sheet prior to corrugation.

a) For the continuously coated coil or the cut length thereof, one specimen shall be taken from every 50 t or fraction thereof.

b) For the sheet of which the base metal is performed coating after cut to specified lengths, one specimen shall be taken from every 3 000 sheets or fraction thereof.

13.2.2 Sampling position and size of test piece

The sampling position of the test piece shall be in accordance with **JC.2.2**. The size of the test piece shall be 1 200 mm^2 or over for the method in **5.2** of **JIS H 0401**. For the fluorescent X-ray method, it shall be in accordance with **JC.2.1**.

13.2.3 Test method

The coating mass shall be measured on both surfaces and the test method shall be in accordance with either of **5.2** of **JIS H 0401** or Annex JC.

The test may be performed by using the fluorescent X-ray measuring apparatus installed in the manufacturing line upon the agreement between the purchaser and the supplier.

13.3 Corrosion resistance test of coating

The corrosion resistance test of coating shall be performed by the method of clause 8 of **JIS H 8502**, table 4 of 7.12 of **JIS K 5621** or **JIS G 0594**.

This test shall be performed in accordance with the agreement between the purchaser and the supplier, and the evaluation criteria (setting of reference value and characteristics value) may be agreed between the purchaser and the supplier.

13.4 Mechanical test

13.4.1 General matter

The general matter of the mechanical test shall be in accordance with clause 7 and clause 9 of **JIS G 0404**. In this case, the sampling method of the specimen shall be Group A and the number and the sampling position of the test piece shall be as follows.

a) **Number of test pieces** One bend test piece and one tensile test piece shall be taken from every 50 t or fraction thereof of the products of the same grade, thickness and coating mass, respectively.

b) **Sampling position of test piece** The centre of the test piece shall be located at a position of 1/4 of the width or near the position.

13.4.2 Bend test

The bend test shall be in accordance with **a)** and **b)**.

The bend test may be omitted [5], however when particularly specified by the purchaser, the test shall be performed.

Note [5] The test may be omitted by the judgment of the manufacturer on the precondition that bendability shall satisfy the specified value.

a) **Test piece** The test piece shall have a width of 75 mm to 125 mm and a suitable length of about twice the width. Unless otherwise specified, one test piece shall be cut from the specimen parallel to the rolling direction of the base metal.

b) **Bending of test piece** The test piece shall be bent manually with a vise at 180 ° in the longitudinal direction of the test piece as shown in figure 3. When a hand vise is not available, other suitable means of testing may be adopted.

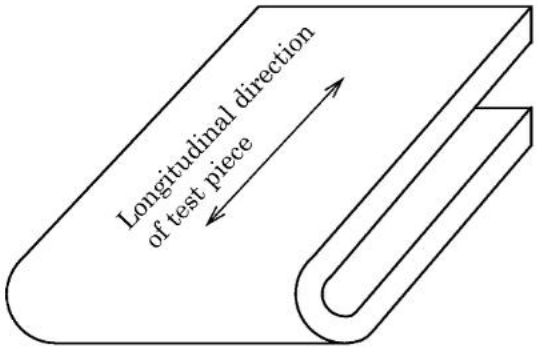


Figure 3 Direction of bend test

13.4.3 Tensile test

The tensile test shall be as follows.

a) **Test piece** The test piece shall be No. 5 test piece of **JIS Z 2201**, and one shall be cut from the specimen in the direction as given in table 11 and table 12.

b) **Test method** The test method shall be in accordance with **JIS Z 2241**.

c) **Thickness used for calculation of yield point or proof stress, and tensile strength** The thickness used for calculation of yield point or proof stress, and tensile strength shall be in accordance with any of the following.

— actual measured thickness after removing the coating layer,

— thickness obtained by subtracting the equivalent coating thickness from the actual measured thickness including the coating layer,

— thickness obtained by subtracting the coating thickness converted by the actual measured coating mass from the actual measured thickness including the coating layer.

14 Inspection

14.1 Inspection

The inspection shall be as follows.

a) Chemical composition shall comply with clause 4.

b) Coating mass shall comply with 5.2.

c) Coating adherence shall comply with 5.4.

d) Mechanical properties shall comply with clause 8.

e) Dimensions shall comply with clause 9.

f) Shapes shall comply with clause 10.

g) Mass shall comply with clause 11.

h) Appearance shall comply with clause 12.

14.2 Re-inspection

For the sheet and coil having failed to meet the requirements of the coating mass test, the coating adherence test, the bending test or the tension test, retests may be performed for acceptance in accordance with 9.8 of JIS G 0404.

15 Markings

For each package or bundle of the sheet and coil that have passed the inspection, the following items shall be legibly marked by a suitable means. When agreed between the purchaser and the supplier, the following items may be marked on individual sheet by a suitable means.

a) Grade symbol

b) Symbol for roofing, symbol for architectural siding, and/or symbol for the corrugated sheet (including the shape symbol for corrugated sheet). These symbols shall be marked after the grade symbol.

c) Symbol for surface finish, symbol for skin-pass treatment, symbol for chemical treatment and/or symbol for oiling. These symbols shall be marked when specified by the purchaser.

d) Coating mass symbol

e) Dimensions (See 9.1. Only the nominal thickness for one sheet.)

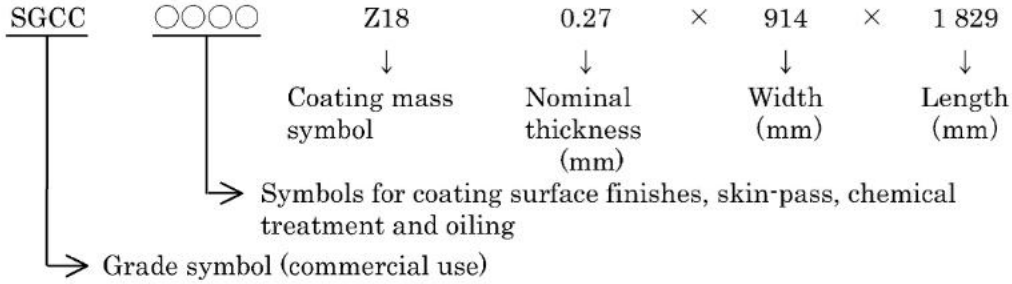
f) Identification number of product

g) Number of sheets or mass (May be omitted for one sheet.)

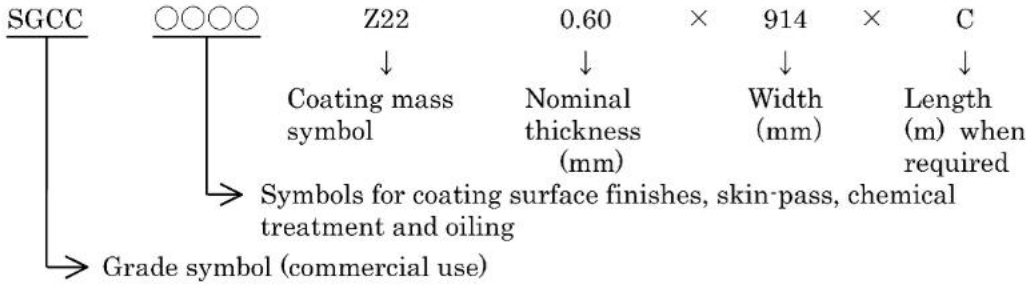
h) Manufacturer's name or its identifying brand

Marking shall be as shown in the following examples.

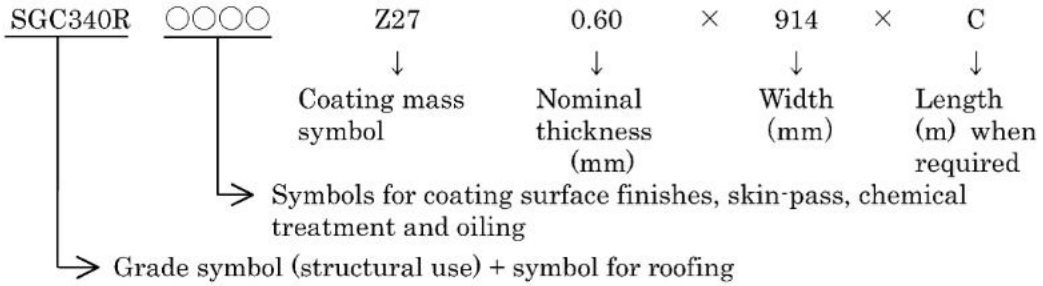
Example 1 Sheet



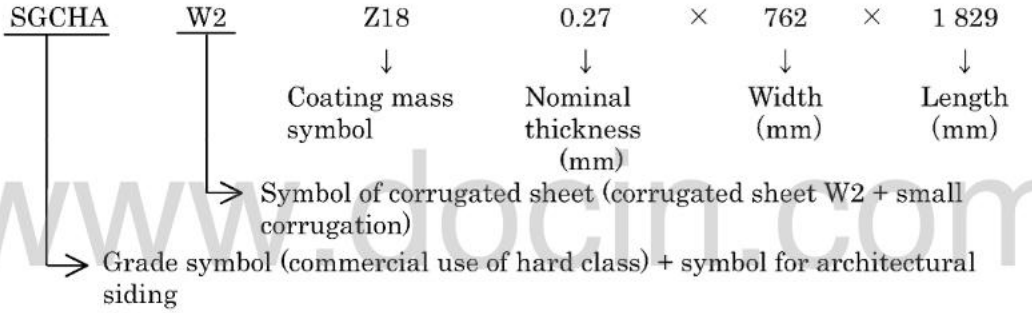
Example 2 Coil



Example 3 Coil for roofing



Example 4 Corrugated sheet for architectural siding using flat sheet of commercial use of hard class



16 Items to be confirmed at the time of order

The purchaser and the supplier should include the following information in an inquiry sheet and an order sheet in order to specify the requirements according to this Standard properly.

a) Grade symbol (table 1 and table 2)

b) Dimensions (For standard nominal thickness, standard width and standard length, table 13 and table 14. For corrugated sheet, table JB.2 and JIS G 3316.)

c) Symbol for coating surface finish (table 5)

d) Skin-pass treatment

e) Coating mass symbol (table 4)

f) Symbol for chemical treatment (table 6)

g) Symbol for oiling (table 7)

h) Maximum mass and minimum mass of one bundle or one coil of product

i) Total mass ordered

j) Tolerance on width for hot-rolled base metal (table 19)

k) Internal diameter and external diameter for coil

l) Application, processing method, etc. when possible

17 Report

When there is a request from the purchaser beforehand, the manufacturer shall submit the inspection document to the purchaser. In this case, the report shall comply with the requirements in clause 13 of JIS G 0404. However, unless otherwise specified, the type of inspection document shall comply with either standard designation 2.3 or 3.1.B in table 1 of JIS G 0415.

Annex JA
(normative)
Nominal thickness and coating mass symbol of sheet and coil for roofing and architectural siding

JA.1 Scope

This Annex specifies the nominal thickness and the coating mass symbol applicable to sheet and coil (using cold-reduced base metal) for roofing and architectural siding.

JA.2 Applicable nominal thickness and coating mass symbol

The nominal thickness and the coating mass symbol applicable to sheet and coil for roofing and architectural siding shall be as given in table JA.1.

Table JA.1 Applicable nominal thickness and coating mass symbol (cold-reduced base metal is used)

Application	Applicable nominal thickness mm	Coating mass symbol [a)]
For roofing	0.35 or over up to and incl. 1.0	Z25, Z27
	Over 1.0	Z27
For architectural siding	0.27 or over up to and incl. 0.50	Z18, Z22, Z25, Z27
	Over 0.50 up to and incl. 1.0	Z22, Z25, Z27
	Over 1.0	Z27
Note [a)] Application of Z35, Z37, Z45 and Z60 may be agreed between the purchaser and the supplier.		

Annex JB
(normative)
Nominal thickness, coating mass symbol and standard dimension for corrugated sheet

JB.1 Scope

This Annex specifies the nominal thickness, the coating mass symbol and the standard dimensions applicable to the corrugated sheet.

JB.2 Applicable nominal thickness and coating mass symbol

The nominal thickness and coating mass symbol applicable to corrugated sheet shall be as given in table JB.1.

Table JB.1 Applicable nominal thickness and coating mass symbol

Applicable nominal thickness mm	Coating mass symbol [a)]	Application (informative)
0.11 or over to and excl. 0.16	Z12	Specific field of application
0.16 or over to and excl. 0.27		—
0.27 or over up to and incl. 0.30		Specific field of application
	Z18, Z22, Z25, Z27	—
Over 0.30 up to and incl. 0.50	Z18, Z22, Z25, Z27	
Over 0.50 up to and incl. 1.0	Z22, Z25, Z27	
Note [a)] Application of Z35, Z37, Z45 and Z60 may be agreed between the purchaser and the supplier.		

JB.3 Standard dimensions

JB.3.1 Standard nominal thickness

The standard nominal thickness of the corrugated sheet shall be as given in table JB.2. Values in parentheses shall be applied to specific field of application for Z12.

Table JB.2 Standard nominal thickness

Unit : mm

(0.11)	(0.12)	(0.13)	(0.14)	(0.15)	0.16	0.17	0.19	0.20
0.25	0.27	0.30	0.35	0.40	0.50	0.60	0.80	1.0

JB.3.2 Standard width and length of corrugated sheet prior to corrugation

The standard width and length of corrugated sheet prior to corrugation shall be as given in table JB.3.

Table JB.3 Standard width and standard length

Unit : mm

Standard width before corrugation	Standard length						
762	1 829	2 134	2 438	2 743	3 048	3 353	3 658
914	1 829	2 134	2 438	2 743	3 048	3 353	3 658
1 000	2 000						

Annex JC
(normative)

Test method for coating mass of hot-dip zinc-coated steel sheet and strip using fluorescent X-rays

JC.1 Scope

This Annex specifies the test method for the coating mass of the hot-dip zinc-coated steel sheet and strip using the fluorescent X-rays.

JC.2 Test piece

JC.2.1 Size of test piece

The test piece shall be of the size that ensures the fluorescent X-ray irradiation area of 314 mm^2 or over.

JC.2.2 Test piece sampling position

The test piece shall be cut from the specimen prepared in accordance with 13.2.1. The test piece for continuously zinc-coated type shall be cut from the location shown in figure JC.1 while those for sheet-by-sheet zinc-coated type shall be taken from the location shown in figure JC.2. However, the coating mass may be measured at the same locations without specially cutting the test pieces.

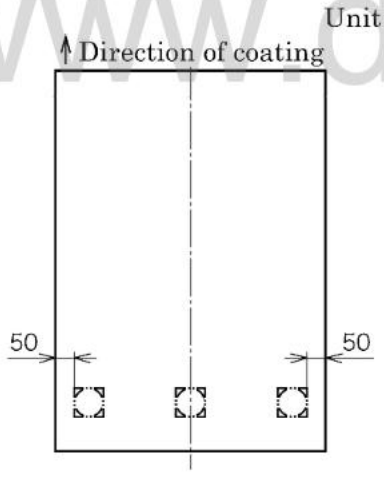


Figure JC.1 Test piece sampling position (for continuously zinc-coated)

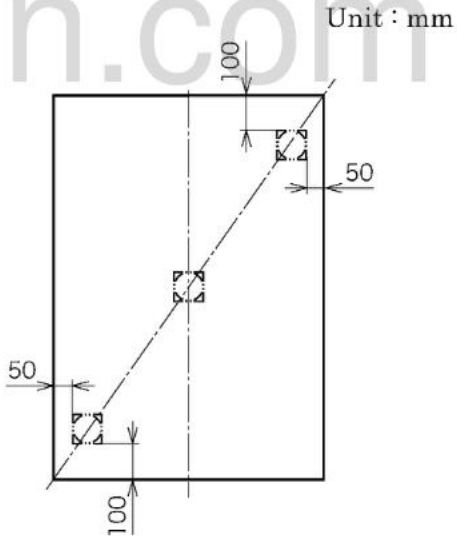


Figure JC.2 Test piece sampling position (for sheet-by-sheet zinc-coated)

JC.3 Test apparatus

The test apparatus shall be in accordance with clause 4 of **JIS K 0119**.

JC.4 Spectral line for measurement

The spectral line for measurement shall be the primary ray of ZnKα (wavelength of 14.35 nm).

JC.5 Operation

The operation shall be as follows.

a) Place the test piece correctly in the chamber of the apparatus under the predetermined conditions.

b) Irradiate X-rays on the test piece under the predetermined conditions, and read the amount of fluorescent X-rays with the indicator.

c) Prepare the working curve from the relational expression between the intensity of fluorescent X-rays and the coating mass by using the test piece of which the coating mass is known by the method specified in **JIS H 0401**.

d) Convert the value on the indicator into the coating mass per square metre (g/m^2 per surface) using the table (working curve) corresponding to the predetermined conditions.

e) Repeat the procedures **a)** to **d)** for the reverse side of the test piece to obtain its coating mass, and the total mass of coating on both sides shall be regarded as the coating mass (g/m^2, both surfaces) of the test piece.

Annex JD (informative) Comparison table between JIS and corresponding International Standards

JIS G 3302 : 2007 *Hot-dip zinc-coated steel sheet and strip*					**ISO 3575** : 2005 *Continuous hot-dip zinc-coated carbon steel sheet of commercial and drawing qualities* **ISO 4998** : 2005 *Continuous hot-dip zinc-coated carbon steel sheet of structural quality*		
(I) Requirements in **JIS**		(II) International Standard numbers	(III) Content specified in International Standards		(IV) Classification and details of technical deviation between **JIS** and the International Standards by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Content of technical deviation	
1 Scope	The hot-dip zinc-coated steel sheet and strip are specified.	**ISO 3575**	1.1	The hot-dip zinc-coated steel sheet of commercial and drawing qualities, and steel coil are specified.	Addition	In **JIS**, scope covers two **ISO** Standards.	The standard system differs between **JIS** and **ISO** Standard.
		ISO 4998	1	The hot-dip zinc-coated steel sheet and coil of structural quality are specified.			
2 Normative references							

(I) Requirements in **JIS**		(II) International Standard numbers	(III) Content specified in International Standards		(IV) Classification and details of technical deviation between **JIS** and the International Standards by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Content of technical deviation	
3 Grade, symbol and applicable nominal thickness	Grade symbols and nominal thickness of 3 grades of commercial use, 4 grades of drawing use and 10 grades of structural use are specified.	**ISO 3575**	1 4.2	Grade symbols and nominal thickness of 1 grade of commercial quality and 4 grades of drawing quality are specified.	Addition Alteration	In **JIS**, the division of hot-rolled base metal and cold-reduced base metal is specified. In **JIS**, more grades than those in **ISO** Standards are specified, and the thickness range to be applied is wider than that in **ISO** Standards. In **JIS**, coating using steel sheets is added.	Based on the difference in market demands.
		ISO 4998	1 4.2	Grade symbols and nominal thickness of 7 grades of structural quality are specified.			
4 Chemical composition	The chemical composition (four elements) of base metal to which coating is applied is specified.	**ISO 3575** **ISO 4998**	4.1	The chemical composition (four elements) of base metal, upper limit of alloy element not specified and permissible variation in product analysis are specified.	Alteration	The chemical composition differs between **JIS** and **ISO** Standards. In **JIS**, the upper limit of alloy element not specified and permissible variation in product analysis are not specified.	Since the specified mechanical properties differ between **JIS** and **ISO** Standards, chemical composition differs. In **JIS**, product analysis is not specified because of no market demands.

(I) Requirements in **JIS**		(II) International Standard numbers	(III) Content specified in International Standards		(IV) Classification and details of technical deviation between **JIS** and the International Standards by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Content of technical deviation	
5.2 Coating mass	Coating mass symbol, and minimum average coating mass at triple spots and minimum coating mass at single spot as coating mass are specified.	**ISO 3575** **ISO 4998**	4.3.1 5.3		Addition Alteration	In **JIS**, the more detailed coating mass than that in **ISO** Standards is specified.	The market demands for coating mass differs.
5.4 Coating adherence	Coating adherence of non-alloyed coating is specified.		4.3.2 5.4	The evaluation of coating adherence by bend test is specified.	Addition	Although the evaluation by bend test does not differ between **JIS** and **ISO** Standards, in **JIS**, other evaluation tests are added.	In **JIS**, the evaluation by the more accurate test method is approved upon the agreement between the purchaser and the supplier.
6 Chemical treatment	Five types of chemical treatment are specified.		4.6.1 4.6.2	Two types of chemical treatment are specified.	Addition	In **JIS**, the chemical treatment capable of supporting environmentally restricted substances is added.	The proposal of addition of chemical treatment symbols to **ISO** Standards will be submitted.
8 Mechanical properties	Bendability and tensile test characteristics (yield point or proof stress, tensile strength, and elongation) as mechanical properties are specified.		4.2	Tensile test characteristics (yield point or proof stress, tensile strength, and elongation) are specified.	Addition Alteration	In **JIS**, bendability is added. The tensile test characteristics differ between **JIS** and **ISO** Standards.	The bend test in **JIS** can be omitted, and the deletion of bendability will be studied in the future. The tensile test characteristics are based on the difference in market demands.
9.1 Expression of dimensions			1 Annex A	For thickness, either product thickness or base metal thickness is used.	Deletion	For thickness in **JIS**, base metal thickness is used.	In **JIS**, from the viewpoint of commercial practice, base metal thickness is used. Although in **ISO** Standards only product thickness was specified, the proposal of addition of use of base metal thickness was submitted and adopted in **ISO** Standards published in 2005.

(I) Requirements in **JIS**		(II) International Standard numbers	(III) Content specified in International Standards		(IV) Classification and details of technical deviation between **JIS** and the International Standards by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Content of technical deviation	
9.2 Standard dimensions	Standard dimensions of sheets and coils are specified.	**ISO 3575** **ISO 4998**	—	—	Addition	In **JIS**, standard dimensions are added.	In **JIS**, from the viewpoint of commercial practice, it is necessary to specify standard dimensions.
9.3 Dimensional tolerances	Dimensional tolerances are specified.		4.8 Annex A		Alteration	Dimensional tolerances differ between **JIS** and **ISO** Standards.	Dimensional tolerances are specified based on the tolerances on hot-rolled base metal and cold-reduced base metal.
10 Shapes	Shapes are specified.		4.8 4.7		Alteration	Tolerances on shapes differ between **JIS** and **ISO** Standards.	Tolerances on shapes are specified based on tolerances on hot-rolled base metal and cold-reduced base metal. The proposal of revision of tolerances on flatness in **ISO** Standards was submitted, and is under review as of 2006.
11 Mass and tolerances thereof	Mass of sheets and coils is specified.		—	—	Addition	In **JIS**, the measured mass or the calculated mass is used.	In **JIS**, from the viewpoint of commercial practice, it is necessary to specify mass.

(I) Requirements in **JIS**		(II) International Standard numbers	(III) Content specified in International Standards		(IV) Classification and details of technical deviation between **JIS** and the International Standards by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Content of technical deviation	
13.1 Analysis test	Sampling method of specimen and analytical method are specified.	**ISO 3575** **ISO 4998**	4.1 5.1	The concrete sampling method and analytical method are not specified. The heat analysis is performed by the manufacturer, and the product analysis is performed by the purchaser as necessary.	Addition	In **JIS**, the sampling method and analytical method are concretely specified.	Since the standard system differs between **JIS** and **ISO** Standards, it is necessary to specify concretely.
13.2 Coating mass test	Sampling method of test piece and analytical method are specified.		5.3 6.2.1	Although the measurement method of coating mass is specified, the frequency of sampling of test pieces is not specified.	Addition	Although in **JIS** the sampling method of test pieces is specified, in **ISO** Standards the sampling frequency required is determined by the judgment of the manufacturer.	Since the standard system differs between **JIS** and **ISO** Standards, it is necessary to specify concretely.
13.3 Corrosion resistance test of coating	The corrosion resistance test of coating is specified.		—	—	Addition	In **JIS**, the corrosion resistance test of coating is added.	Added in **JIS** since the data on corrosion resistance may be requested by the purchaser.

(I) Requirements in **JIS**		(II) International Standard numbers	(III) Content specified in International Standards		(IV) Classification and details of technical deviation between **JIS** and the International Standards by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Content of technical deviation	
13.4 Mechanical test	Test pieces and test methods in the bend test and tensile test are specified.	**ISO 3575** **ISO 4998**	4.2 5.2 6.1 6.2.2		Alteration	The shape of tensile test piece differs between **JIS** and **ISO** Standards.	In **JIS**, the original shape of tensile test piece of **JIS** is used.
14.1 Inspection	Inspection is specified.		—	—	Addition	In **JIS**, inspection is specified by arranging it into one clause, and in **ISO** Standards it is specified by using separate clauses.	The standard system differs between **JIS** and **ISO** Standards.
15 Markings	Items to be marked are specified.		11		Addition	In **JIS**, the markings for roofing, architectural siding and corrugated sheets are added.	In **JIS**, symbols by application are specified.
16 Items to be confirmed at the time of order	Items to be confirmed at the time of order are specified.		12		Addition	In **JIS**, dimensions of corrugated sheets are added.	In **JIS**, corrugated sheets are added.
17 Report	Report is specified.		—	—	Addition	In **JIS**, report is added.	In **JIS**, since from the viewpoint of commercial practice report may be required, it is necessary to specify.
Annex JA (normative)	Nominal thickness and coating mass symbols for sheet and coil for roofing and architectural siding are specified.		—	—	Addition	In **JIS**, the specification for roofing and architectural siding is added.	It is necessary to specify for the specific application.

(I) Requirements in **JIS**		(II) International Standard numbers	(III) Content specified in International Standards		(IV) Classification and details of technical deviation between **JIS** and the International Standards by clause		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Content of technical deviation	
Anne JB (normative)	Nominal thickness, coating mass symbol and standard dimension for corrugated sheet are specified.	**ISO 3575** **ISO 4998**	—	—	Addition	In **JIS**, the specification of corrugated sheets is added.	The corrugated sheets are the product originally specified in **JIS**, and therefore it is necessary to specify.
Annex JC (normative)	The test method for the coating mass of hot-dip zinc-coated steel sheet and strip using fluorescent X-rays is specified.		—	—	Addition	In **JIS**, the specification of the test method for the coating mass using fluorescent X-rays is added.	It is necessary to specify since the specification of the test method for the coating mass using fluorescent X-rays is added.
—	—		3	Terms and definitions are specified.	Deletion	Deleted in **JIS**.	In **JIS G 0203**, terms are defined.
—	—		8	The resubmission for acceptance when the products are rejected during earlier inspection is specified.	Deletion	Deleted in **JIS**.	Specified in the normative reference of **JIS G 0404**.
—	—		10	Attendance inspection is specified.	Deletion	Deleted in **JIS**.	Specified in the normative reference of **JIS G 0404**.

Overall degree of correspondence between **JIS** and International Standards (**ISO 3575** : 2005, **ISO 4998** : 2005): MOD

NOTE 1 Symbols in sub-columns of classification by clause in the above table indicates as follows:

— Deletion : Deletes the specification item(s) or content(s) of in International Standards.

— Addition : Adds the specification item(s) or content(s) which are not included in International Standards.

— Alteration : Alters the specification content(s) which are included in International Standards.

NOTE 2 Symbol in column of designated degree of correspondence between **JIS** and International Standards in the above table indicates as follows:

— MOD : Modifies International Standards.

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