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(JSSA/JSA)

**Cold rolled stainless steel strip for
springs**

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In the event of any doubts arising as to the contents,
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Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	1
3 Grade and symbol	2
4 Manufacturing method	2
5 Chemical compositions	2
5.1 Heat analysis value	2
5.2 Product analysis value	2
6 Mechanical properties	3
6.1 Hardness and bendability	3
6.2 Proof stress, tensile strength and elongation	5
7 Dimension, shape and tolerance	6
7.1 Tolerances on thickness	6
7.2 Tolerances on width	7
7.3 Tolerances on length of cut-to-length	7
7.4 Camber	8
7.5 Flatness	8
8 Appearance	8
9 Tests	9
9.1 Chemical analysis test	9
9.2 Mechanical test	9
9.3 Flatness test	10
10 Inspection and re-inspection	10
10.1 Inspection	10
10.2 Re-inspection	10
11 Marking	10
12 Report	10
Annex JA (informative) Standard heat treatment conditions	11
Annex JB (informative) Comparison table between JIS and corresponding International Standard	12

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 the result of proposal for revision of Japanese Industrial Standard submitted by Japan Stainless Steel Association (JSSA)/Japanese Standards Association (JSA) 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 4313:1996** is replaced with this Standard.

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Cold rolled stainless steel strip for springs

Introduction

This Japanese Industrial Standard has been prepared based on the second edition of ISO 6931-2 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 original International Standard have been modified. A list of modifications with explanations is given in Annex JB. Annex JA is not stated in the original International Standard.

1 Scope

This Standard specifies the stainless steel strip mainly used for flat springs and spiral springs (hereafter referred to as “the strip”). Further, this Standard applies to the cut-to-length which is cut from the strip.

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows :

ISO 6931-2 : 2005 *Stainless steels for springs — Part 2 : Narrow strip* (MOD)

The symbols which denote the degree of correspondence in the contents between the relevant International Standard and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21-1.

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 method for heat analysis of steel products

JIS G 0321 Product analysis and its tolerance for wrought steel

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

NOTE : Corresponding International Standard : ISO 404 *Steel and steel products — General technical delivery requirements* (MOD)

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

NOTE : Corresponding International Standard : ISO 10474 *Steel and steel products — Inspection documents* (IDT)

JIS Z 2241 *Metallic materials — Tensile testing — Method of test at room tem-*

perature

NOTE : Corresponding International Standard : ISO 6892-1 *Metallic materials — Tensile testing — Part 1 : Method of test at room temperature* (MOD)

JIS Z 2244 *Vickers hardness test — Test method*

NOTE : Corresponding International Standard : ISO 6507-1 *Metallic materials — Vickers hardness test — Part 1 : Test method* (MOD)

JIS Z 2248 *Metallic materials — Bend test*

NOTE : Corresponding International Standard : ISO 7438 *Metallic materials — Bend test* (MOD)

3 Grade and symbol

The strips shall be classified into 5 grades, and their symbols and classifications shall be as given in table 1.

Table 1 Symbol of grade and classification

Symbol of grade	Classification
SUS301-CSP SUS304-CSP	Austenitic series
SUS420J2-CSP	Martensitic series
SUS631-CSP SUS632J1-CSP	Precipitation hardening series

4 Manufacturing method

The strips shall be manufactured by cold rolling. After cold rolling, SUS420J2-CSP-O shall be subjected to the annealing, and SUS631-CSP-O shall be subjected to the solution treatment.

NOTE : Symbol “O” means the annealing or the solution treatment (see Annex JA).

5 Chemical compositions

5.1 Heat analysis value

The strips shall be subjected to the test of 9.1, and their heat analysis values shall be as given in table 2 to table 4.

5.2 Product analysis value

When the product analysis values of strips are requested by the purchaser, the test of 9.1 shall be performed, and the tolerances thereof shall be as given in table 5 of JIS G 0321.

Table 2 Chemical compositions of austenitic series

Unit : %

Symbol of grade	C	Si	Mn	P	S	Ni	Cr
SUS301-CSP	0.15 max.	1.00 max.	2.00 max.	0.045 max.	0.030 max.	6.00 to 8.00	16.00 to 18.00
SUS304-CSP	0.08 max.	1.00 max.	2.00 max.	0.045 max.	0.030 max.	8.00 to 10.50	18.00 to 20.00

Table 3 Chemical compositions of martensitic series

Unit : %

Symbol of grade	C	Si	Mn	P	S	Cr
SUS420J2-CSP	0.26 to 0.40	1.00 max.	1.00 max.	0.040 max.	0.030 max.	12.00 to 14.00
Ni 0.60 % max. may be contained.						

Table 4 Chemical compositions of precipitation hardening series

Unit : %

Symbol of grade	C	Si	Mn	P	S	Ni	Cr	Cu	Others
SUS631-CSP	0.09 max.	1.00 max.	1.00 max.	0.040 max.	0.030 max.	6.50 to 7.75	16.00 to 18.00	—	Al : 0.75 to 1.50
SUS632J1-CSP	0.09 max.	1.00 to 2.00	1.00 max.	0.040 max.	0.030 max.	6.50 to 7.75	13.50 to 15.50	0.40 to 1.00	Ti : 0.20 to 0.65

6 Mechanical properties

6.1 Hardness and bendability

The strips shall be subjected to the test of 9.2, and the hardness and the bendability thereof shall be as given in table 5. In this case, the sample shall be that of Class A in JIS G 0404.

The hardness of the test piece of precipitation hardening series on which the precipitation hardening treatment is performed, when requested by the purchaser, shall be as given in table 6.

The bendability shall apply when requested by the purchaser, and no crack shall be generated on the outside of the bent portion.

NOTE : When it is difficult to observe the cracks outside, a magnifier (5 to 20 times power) may be used.