



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS G 4312 : 2019

(JSSA/JSA)

Heat-resistant steel plate, sheet and strip

Copyright © 2019 Japanese Standards Association

ICS 77.140.10 ; 77.140.20 ; 77.140.50

Reference number : JIS G 4312 : 2019 (E)

PROTECTED BY COPYRIGHT

 **Documents**
Document Sharing Hub

24 S

Date of Establishment: 1964-09-01

Date of Revision: 2019-03-20

Date of Public Notice in Official Gazette: 2019-03-20

Investigated by: Japanese Industrial Standards Committee

Standards Board for ISO area

JIS G 4312 : 2019, First English edition published in 2019-09

Translated and published by: Japanese Standards Association
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2019

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

HN

Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	1
3 Symbol of grade	2
4 Manufacturing method	2
4.1 Hot-rolled sheets and strips	2
4.2 Cold-rolled sheets and strips	3
5 Chemical composition	4
5.1 Heat analysis values	4
5.2 Product analysis values	4
6 Mechanical properties	7
6.1 General requirements	7
6.2 Mechanical properties of austenitic series	7
6.3 Mechanical properties of ferritic series	8
6.4 Mechanical properties of martensitic series	9
6.5 Mechanical properties of precipitation hardening series	10
7 Surface finish	12
8 Shape, dimensions, mass and tolerances	12
8.1 Hot-rolled sheets and strips	12
8.2 Cold-rolled sheets and strips	26
9 Appearance	33
10 Tests	33
10.1 Chemical analysis	33
10.2 Mechanical test	33
10.3 Optional tests	34
11 Inspection	34
12 Marking	35
13 Report	35
Annex JA (informative) Heat treatment conditions for heat-resistant steel sheet and strip	36
Annex JB (informative) Comparison table between JIS and corresponding International Standard	38

Foreword

This Japanese Industrial Standard has been 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 4312:2011** is replaced with this Standard.

However, **JIS G 4312:2011** may be applied in the **JIS** mark certification based on the relevant provisions of Article 19 Clause 1, etc. of the Industrial Standardization Law until March 19, 2020.

This **JIS** document is protected by the Copyright Law.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, applications for a patent after opening to the public or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, applications for a patent after opening to the public or utility model rights.

Heat-resistant steel plate, sheet and strip

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 4955** : 2016, Edition 4, with some modifications of the technical contents.

The vertical lines on both sides indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JB.

1 Scope

This Standard specifies heat-resistant steel plate and sheet (hereafter referred to as sheets) and heat-resistant steel strip (hereafter referred to as strips).

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

ISO 4955 : 2016 *Heat-resistant steels* (MOD)

In addition, 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*

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

JIS G 0567 *Method of elevated temperature tensile test for steels and heat-resisting alloys*

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

JIS Z 2243-1 *Brinell hardness test — Part 1 : Test method*

JIS Z 2244 *Vickers hardness test — Test method*

JIS Z 2245 *Rockwell hardness test — Test method*

JIS Z 2248 *Metallic materials — Bend test*

JIS Z 8401 *Guide to the rounding of numbers*

3 Symbol of grade

Sheets and strips are classified into 28 grades. The classification and the symbol of grade shall be as given in Table 1.

Table 1 Classification and symbol of grade

Classification	Symbol of grade a), b)	Classification	Symbol of grade a), b)
Austenitic series	SUH309	Ferritic series	SUH21
	SUH310		SUH409
	SUH330		SUH409L
	SUH660		SUH446
	SUH661		SUS405-HR
	SUS302B-HR		SUS410L-HR
	SUS304-HR		SUS430-HR
	SUS309S-HR		SUS430J1L-HR
	SUS310S-HR		SUS436J1L-HR
	SUS316-HR	Martensitic series	SUS403-HR
	SUS316Ti-HR		SUS410-HR
	SUS317-HR	Precipitation hardening series	SUS630-HR SUS631-HR
	SUS321-HR		
	SUS347-HR		
	SUSXM15J1-HR		
Notes a) When the use of symbols is required to indicate that the product is a sheet, -HP (hot-rolled steel sheets) or -CP (cold-rolled steel sheets) shall be suffixed to the symbol of grade. Example SUH309-HP b) When the use of symbols is required to indicate that the product is a strip, -HS (hot-rolled steel strips) or -CS (cold-rolled steel strips) shall be suffixed to the symbol of grade. Example SUH409-CS			

4 Manufacturing method

4.1 Hot-rolled sheets and strips

The manufacturing method of the hot-rolled sheets and strips shall be as follows.

- a) After hot rolling, sheets and strips shall be heat treated and then pickled or subjected to treatment equivalent to this. Correction, grinding, or a combination of these may be applied, if necessary. Treatment such as pickling after heat treatment may be omitted by agreement between the purchaser and the manufacturer.

NOTE Typical heat treatment conditions are shown in Annex JA for reference. Other heat treatment conditions than those in Annex JA may be selected.

- b) When the sheets and strips are used as the material for pipes and pipe fittings which are to be heat treated in the post process, and as the material for rerolling, the heat treatment may be omitted by agreement between the purchaser and the

manufacturer. In this case, the symbol AR shall be suffixed.

- c) For austenitic series, heat treatment may be applied on the rolling line followed by immediate cooling under the approval of the purchaser. In this case, the symbol LS shall be suffixed.
- d) For heat treatment for SUS630-HR and SUS631-HR, the purchaser shall specify either solution treatment or precipitation hardening treatment. In this case, the symbol for the type of heat treatment given in Table 2 shall be suffixed. For heat treatment for SUH660 and SUH661, the purchaser shall specify the type of heat treatment and also specify that either the product itself or the test piece is heat treated. The symbols for heat treatment shall be as given in Table 2.

4.2 Cold-rolled sheets and strips

The manufacturing method of the cold-rolled sheets and strips shall be as follows.

- a) After cold rolling, sheets and strips shall be heat treated and then pickled or subjected to treatment equivalent to this. Correction, grinding, temper rolling or a combination of these may be applied, if necessary.

NOTE Typical heat treatment conditions are shown in Annex JA for reference. Other heat treatment conditions than those in Annex JA may be selected.

- b) For heat treatment for SUS630-HR and SUS631-HR, the purchaser shall specify either solution treatment or precipitation hardening treatment. In this case, the symbol for the type of heat treatment given in Table 2 shall be suffixed. For heat treatment for SUH660 and SUH661, the purchaser shall specify the type of heat treatment and also specify that either the product itself or the test piece is heat treated. The symbols for heat treatment shall be as given in Table 2.

Table 2 Symbol for heat treatment

Symbol of grade	Type of heat treatment	Symbol for heat treatment
SUS630-HR	Solution treatment	S
	Precipitation hardening treatment	H900, H1025, H1075, H1150
SUS631-HR	Solution treatment	S
	Precipitation hardening treatment	RH950, TH1050
SUH660	Solution treatment	S
	Ageing treatment after solution treatment	H
SUH661	Solution treatment	S
	Ageing treatment after solution treatment	H
Other grades	Solution treatment	S

5 Chemical composition

5.1 Heat analysis values

Sheets and strips shall be tested in accordance with **10.1** and the heat analysis values shall be as given in Table 3 to Table 6.

5.2 Product analysis values

When the product analysis of sheets and strips is requested by the purchaser, the test shall be performed in accordance with **10.1**. The resultant product analysis values shall satisfy the requirements in Table 3 to Table 6 within tolerances given in Table 5 of **JIS G 0321**. The tolerances for elements not given in Table 5 of **JIS G 0321** may be as agreed between the purchaser and the manufacturer.

Copyright Japanese Standards Association
Provided by IHS Markit under license with JSA
No reproduction or networking permitted without license from IHS
Full document details: JIS G 4312 2019

Table 3 Chemical composition of austenitic series

Unit: %

Symbol of grade	C	Si	Mn	P	S	Ni	Cr	Mo	Others
SUH309	0.20 max.	1.00 max.	2.00 max.	0.040 max.	0.030 max.	12.00 to 15.00	22.00 to 24.00	—	—
SUH310	0.25 max.	1.50 max.	2.00 max.	0.040 max.	0.030 max.	19.00 to 22.00	24.00 to 26.00	—	—
SUH330	0.15 max.	1.50 max.	2.00 max.	0.040 max.	0.030 max.	33.00 to 37.00	14.00 to 17.00	—	—
SUH660	0.08 max.	1.00 max.	2.00 max.	0.040 max.	0.030 max.	24.00 to 27.00	13.50 to 16.00	1.00 to 1.50	Ti : 1.90 to 2.35 V : 0.10 to 0.50 Al : 0.35 max. B : 0.001 to 0.010
SUH661	0.08 to 0.16	1.00 max.	1.00 to 2.00	0.040 max.	0.030 max.	19.00 to 21.00	20.00 to 22.50	2.50 to 3.50	W : 2.00 to 3.00 Co : 18.50 to 21.00 N : 0.10 to 0.20 Nb : 0.75 to 1.25
SUS302B-HR	0.15 max.	2.00 to 3.00	2.00 max.	0.045 max.	0.030 max.	8.00 to 10.00	17.00 to 19.00	—	—
SUS304-HR	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	—	—
SUS309S-HR	0.08 max.	1.00 max.	2.00 max.	0.045 max.	0.030 max.	12.00 to 15.00	22.00 to 24.00	—	—
SUS310S-HR	0.08 max.	1.50 max.	2.00 max.	0.045 max.	0.030 max.	19.00 to 22.00	24.00 to 26.00	—	—
SUS316-HR	0.08 max.	1.00 max.	2.00 max.	0.045 max.	0.030 max.	10.00 to 14.00	16.00 to 18.00	2.00 to 3.00	—
SUS316Ti-HR	0.08 max.	1.00 max.	2.00 max.	0.045 max.	0.030 max.	10.00 to 14.00	16.00 to 18.00	2.00 to 3.00	Ti : $5 \times C$ % min.
SUS317-HR	0.08 max.	1.00 max.	2.00 max.	0.045 max.	0.030 max.	11.00 to 15.00	18.00 to 20.00	3.00 to 4.00	—
SUS321-HR	0.08 max.	1.00 max.	2.00 max.	0.045 max.	0.030 max.	9.00 to 13.00	17.00 to 19.00	—	Ti : $5 \times C$ % min.
SUS347-HR	0.08 max.	1.00 max.	2.00 max.	0.045 max.	0.030 max.	9.00 to 13.00	17.00 to 19.00	—	Nb : $10 \times C$ % min.
SUSXM15J1-HR ^{a)}	0.08 max.	3.00 to 5.00	2.00 max.	0.045 max.	0.030 max.	11.50 to 15.00	15.00 to 20.00	—	—

Note ^{a)} For SUSXM15J1-HR, when either Cu, Mo, Nb, Ti or N, or a combination of these, which are not given in this Table, is added as required, the content rate of the added element(s) shall be reported.

Table 4 Chemical composition of ferritic series

Unit: %

Symbol of grade	C	Si	Mn	P	S	Cr	Mo	N	Others
SUH21 ^{a)}	0.10 max.	1.50 max.	1.00 max.	0.040 max.	0.030 max.	17.00 to 21.00	—	—	Al : 2.00 to 4.00
SUH409	0.08 max.	1.00 max.	1.00 max.	0.040 max.	0.030 max.	10.50 to 11.75	—	—	Ti : $6 \times C$ % to 0.75
SUH409L	0.030 max.	1.00 max.	1.00 max.	0.040 max.	0.030 max.	10.50 to 11.75	—	—	Ti : $6 \times C$ % to 0.75
SUH446	0.20 max.	1.00 max.	1.50 max.	0.040 max.	0.030 max.	23.00 to 27.00	—	0.25 max.	
SUS405-HR	0.08 max.	1.00 max.	1.00 max.	0.040 max.	0.030 max.	11.50 to 14.50	—	—	Al : 0.10 to 0.30
SUS410L-HR	0.030 max.	1.00 max.	1.00 max.	0.040 max.	0.030 max.	11.00 to 13.50	—	—	
SUS430-HR	0.12 max.	0.75 max.	1.00 max.	0.040 max.	0.030 max.	16.00 to 18.00	—	—	
SUS430J1L-HR	0.025 max.	1.00 max.	1.00 max.	0.040 max.	0.030 max.	16.00 to 20.00	—	0.025 max.	Ti, Nb, Zr or a combination of these : $8 \times (C \% + N \%)$ to 0.80, Cu : 0.30 to 0.80
SUS436J1L-HR	0.025 max.	1.00 max.	1.00 max.	0.040 max.	0.030 max.	17.00 to 20.00	0.40 to 0.80	0.025 max.	Ti, Nb, Zr or a combination of these : $8 \times (C \% + N \%)$ to 0.80

The Ni content shall not exceed 0.60 %.

Note ^{a)} For SUH21, when elements not given in this table are added, the content rate of the added elements shall be reported.

Table 5 Chemical composition of martensitic series

Unit: %

Symbol of grade	C	Si	Mn	P	S	Cr
SUS403-HR	0.15 max.	0.50 max.	1.00 max.	0.040 max.	0.030 max.	11.50 to 13.00
SUS410-HR	0.15 max.	1.00 max.	1.00 max.	0.040 max.	0.030 max.	11.50 to 13.50

The Ni content shall not exceed 0.60 %.

Table 6 Chemical composition of precipitation hardening series

Unit: %

Symbol of grade	C	Si	Mn	P	S	Ni	Cr	Cu	Others
SUS630-HR	0.07 max.	1.00 max.	1.00 max.	0.040 max.	0.030 max.	3.00 to 5.00	15.00 to 17.50	3.00 to 5.00	Nb : 0.15 to 0.45
SUS631-HR	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

6 Mechanical properties

6.1 General requirements

Sheets and strips shall be tested in accordance with 10.2, and the mechanical properties shall be as specified in 6.2 to 6.5. However, for sheets and strips of under 0.30 mm in thickness, the tensile test may be omitted. When the sheets and strips are used as the material for pipes and pipe fittings which are to be heat treated in the post process, and as the material for rerolling, the necessity of requirements for mechanical properties and their reference values shall be as agreed between the purchaser and the manufacturer.

NOTE This Standard does not specify requirements for mechanical properties of products which are heat treated after shipment from the manufacturer.

6.2 Mechanical properties of austenitic series

Mechanical properties of austenitic series shall be as given in Table 7 according to the condition of heat treatment. In this case, the sample shall be prepared in accordance with Class A as specified in 7.6 of JIS G 0404. The proof stress shall apply only when specified by the purchaser. When SUH660 and SUH661 are subjected to the ageing treatment, their mechanical properties shall be checked.

Table 7 Mechanical properties in condition of solution treatment and of ageing treatment after solution treatment of austenitic series

Symbol of grade	Heat treatment symbol	Proof stress N/mm ²	Tensile strength N/mm ²	Elongation %	Hardness ^{a)}			
					HBW	HRC	HRBW or HRBS ^{b)}	HV
SUH309	S	205 min.	560 min.	40 min.	201 max.	—	95 max.	210 max.
SUH310	S	205 min.	590 min.	35 min.	201 max.	—	95 max.	210 max.
SUH330	S	205 min.	560 min.	35 min.	201 max.	—	95 max.	210 max.
SUH660	S	—	730 max.	25 min.	192 max.	—	91 max.	202 max.
	H	590 min.	900 min.	15 min.	248 min.	24 min.	—	261 min.
SUH661	S	315 min.	690 max.	35 min.	248 max.	—	100 max.	261 max.
	H	345 min.	760 min.	30 min.	192 min.	—	91 min.	202 min.
SUS302B-HR	S	205 min.	520 min.	40 min.	207 max.	—	95 max.	218 max.
SUS304-HR	S	205 min.	520 min.	40 min.	187 max.	—	90 max.	200 max.
SUS309S-HR	S	205 min.	520 min.	40 min.	187 max.	—	90 max.	200 max.
SUS310S-HR	S	205 min.	520 min.	40 min.	187 max.	—	90 max.	200 max.
SUS316-HR	S	205 min.	520 min.	40 min.	187 max.	—	90 max.	200 max.
SUS316Ti-HR	S	205 min.	520 min.	40 min.	187 max.	—	90 max.	200 max.
SUS317-HR	S	205 min.	520 min.	40 min.	187 max.	—	90 max.	200 max.
SUS321-HR	S	205 min.	520 min.	40 min.	187 max.	—	90 max.	200 max.
SUS347-HR	S	205 min.	520 min.	40 min.	187 max.	—	90 max.	200 max.
SUSXM15J1-HR	S	205 min.	520 min.	40 min.	207 max.	—	95 max.	218 max.
Proof stress, tensile strength and elongation shall apply to those of 0.30 mm or more in thickness. NOTE 1 1 N/mm² = 1 MPa NOTE 2 HRBW and HRBS may not be able to be applied when sheets and strips are thin. Notes ^{a)} Hardness shall be either of those given in the table. Unless otherwise specified, which of the hardness scales to apply shall be left to the discretion of the manufacturer. ^{b)} Either HRBW or HRBS may be used for measurement. In the case of dispute, HRBW shall be used. The report of measured values shall clearly state the measurement method employed (HRBW or HRBS).								

6.3 Mechanical properties of ferritic series

Mechanical properties of annealed sheets and strips shall be as given in Table 8. In this case, the sample shall be prepared in accordance with Class A as specified in 7.6 of **JIS G 0404**. The proof stress shall apply only when specified by the purchaser. When tested for bendability, sheets and strips shall be free from cracks on the outer surface of test piece.

Table 8 Mechanical properties in annealed condition of ferritic series

Symbol of grade	Proof stress N/mm ²	Tensile strength N/mm ²	Elongation %	Hardness ^{a)}			Bendability	
				HBW	HRBW or HRBS ^{b)}	HV	Bending angle	Inside radius
SUH21	245 min.	440 min.	15 min.	210 max.	95 max.	220 max.	—	—
SUH409	175 min.	360 min.	22 min.	162 max.	80 max.	175 max.	180°	Thickness under 8 mm
SUH409L	175 min.	360 min.	25 min.	162 max.	80 max.	175 max.	180°	0.5 × thickness
SUH446	275 min.	510 min.	20 min.	201 max.	95 max.	210 max.	135°	Thickness 8 mm or more
SUS405-HR	175 min.	410 min.	20 min.	183 max.	88 max.	200 max.	180°	1.0 × thickness
SUS410L-HR	195 min.	360 min.	22 min.	183 max.	88 max.	200 max.	180°	1.0 × thickness
SUS430-HR	205 min.	420 min.	22 min.	183 max.	88 max.	200 max.	180°	
SUS430J1L-HR	205 min.	390 min.	22 min.	192 max.	90 max.	200 max.	180°	
SUS436J1L-HR	245 min.	410 min.	20 min.	192 max.	90 max.	200 max.	180°	
Proof stress, tensile strength and elongation shall apply to those of 0.30 mm or more in thickness.								
NOTE 1 1 N/mm ² = 1 MPa								
NOTE 2 HRBW and HRBS may not be able to be applied when sheets and strips are thin.								
Notes ^{a)} Hardness shall be either of those given in the table. Unless otherwise specified, which of the hardness scales to apply shall be left to the discretion of the manufacturer.								
^{b)} Either HRBW or HRBS may be used for measurement. In the case of dispute, HRBW shall be used. The report of measured values shall clearly state the measurement method employed (HRBW or HRBS).								

6.4 Mechanical properties of martensitic series

Mechanical properties of annealed sheets and strips shall be as given in Table 9. In this case, the sample shall be prepared in accordance with Class A as specified in 7.6 of **JIS G 0404**. The proof stress shall apply only when specified by the purchaser. When tested for bendability, sheets and strips shall be free from cracks on the outer surface of test piece.

Table 9 Mechanical properties in annealed condition of martensitic series

Symbol of grade	Proof stress N/mm ²	Tensile strength N/mm ²	Elongation %	Hardness ^{a)}			Bendability	
				HBW	HRBW or HRBS ^{b)}	HV	Bending angle	Inside radius
SUS403-HR	205 min.	440 min.	20 min.	201 max.	93 max.	210 max.	180°	1.0 × thickness
SUS410-HR	205 min.	440 min.	20 min.	201 max.	93 max.	210 max.	180°	1.0 × thickness

Proof stress, tensile strength and elongation shall apply to those of 0.30 mm or more in thickness.

NOTE 1 1 N/mm² = 1 MPa

NOTE 2 HRBW and HRBS may not be able to be applied when sheets and strips are thin.

Notes ^{a)} Hardness shall be either of those given in the table. Unless otherwise specified, which of the hardness scales to apply shall be left to the discretion of the manufacturer.

^{b)} Either HRBW or HRBS may be used for measurement. In the case of dispute, HRBW shall be used. The report of measured values shall clearly state the measurement method employed (HRBW or HRBS).

6.5 Mechanical properties of precipitation hardening series

Mechanical properties of precipitation hardening series shall be as specified in the following a), b) or c) according to the condition of heat treatment.

- a) Mechanical properties of sheets and strips subjected to the solution treatment shall be as given in Table 10. In this case, the sample shall be prepared in accordance with Class A as specified in 7.6 of **JIS G 0404**. The proof stress shall apply only when specified by the purchaser.

When sheets and strips are subjected to the solution treatment, the mechanical tests shall not be performed on those in the condition of precipitation hardening, in general. However, when the sample is prepared in accordance with Class A as specified in 7.6 of **JIS G 0404** and is subjected to precipitation hardening treatment, the mechanical properties and their reference values may be as agreed between the purchaser and the manufacturer, if requested by the purchaser.

- b) Mechanical properties of sheets and strips subjected to the precipitation hardening treatment after solution treatment shall be as given in Table 10. In this case, the sample shall be prepared in accordance with Class A as specified in 7.6 of **JIS G 0404**. The proof stress shall apply only when specified by the purchaser.
- c) When heat treatment other than solution treatment and precipitation hardening treatment is applied to sheets and strips of SUS630-HR, the mechanical properties, their reference values and the type of sample shall be as agreed between the purchaser and the manufacturer.

Table 10 Mechanical properties in condition of solution treatment and of precipitation hardening treatment after solution treatment of precipitation hardening series

Symbol of grade	Heat treatment symbol	Proof stress N/mm ²	Tensile strength N/mm ²	Elongation %		Hardness ^{a)}			
						HBW	HRC	HRBW or HRBS ^{b)}	HV
SUS630-HR	S	—	—	—		363 max.	38 max.	—	—
	H900	1 175 min.	1 310 min.	Thickness 5.0 mm or under	5 min.	375 min.	40 min. ^{c)}	—	—
				Thickness over 5.0 mm up to and incl. 15.0 mm	8 min.				
				Thickness over 15.0 mm	10 min.				
	H1025	1 000 min.	1 070 min.	Thickness 5.0 mm or under	5 min.	331 min.	35 min. ^{c)}	—	—
				Thickness over 5.0 mm up to and incl. 15.0 mm	8 min.				
				Thickness over 15.0 mm	12 min.				
	H1075	860 min.	1 000 min.	Thickness 5.0 mm or under	5 min.	302 min.	31 min.	—	—
				Thickness over 5.0 mm up to and incl. 15.0 mm	9 min.				
				Thickness over 15.0 mm	13 min.				
	H1150	725 min.	930 min.	Thickness 5.0 mm or under	8 min.	277 min.	28 min.	—	—
				Thickness over 5.0 mm up to and incl. 15.0 mm	10 min.				
				Thickness over 15.0 mm	16 min.				
SUS631-HR	S	380 max.	1 030 max.	20 min.		192 max.	—	92 max.	200 max.
	RH950	1 030 min.	1 230 min.	Thickness 3.0 mm or under	—	—	40 min.	—	392 min.
				Thickness over 3.0 mm	4 min.				
	TH1050	960 min.	1 140 min.	Thickness 3.0 mm or under	3 min.	—	35 min.	—	345 min.
				Thickness over 3.0 mm	5 min.				

Proof stress, tensile strength and elongation shall apply to those of 0.30 mm or more in thickness.

NOTE 1 1 N/mm² = 1 MPa

NOTE 2 HRBW and HRBS may not be able to be applied when sheets and strips are thin.

Notes ^{a)} Hardness shall be either of those given in the table. Unless otherwise specified, which of the hardness scales to apply shall be left to the discretion of the manufacturer.

^{b)} Either HRBW or HRBS may be used for measurement. In the case of dispute, HRBW shall be used. The report of measured values shall clearly state the measurement method employed (HRBW or HRBS).

^{c)} Applicable to hot-rolled sheets and strips.