JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS H 3100 : 2018

(JCBA/JSA)

Copper and copper alloy sheets, plates and strips

ICS 77.150.30

Reference number : **JIS H 3100 : 2018 (E)**

Date of Establishment: 1977-05-01
Date of Revision: 2018-03-20
Date of Public Notice in Official Gazette: 2018-03-20
Investigated by: Japanese Industrial Standards Committee
Standards Board for ISO area
Technical Committee on Metal and Inorganic Materials

JIS H 3100:2018, First English edition published in 2018-11

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.

Printed in Japan

AT

Contents

Page

1 Scope 1

2 Normative references 1

3 Terms and definitions 2

4 Name, grade, class and designation 2

5 Quality 5
5.1 Appearance 5
5.2 Chemical composition 5
5.3 Mechanical properties 7
5.4 Grain size 22
5.5 Electric conductivity and volume resistivity 24
5.6 Hydrogen embrittlement 27
5.7 Mechanical properties and other properties 27

6 Dimensions and tolerances, and permissible value on shape 27
6.1 Dimensions 27
6.2 Internal diameters of coil of strips 27
6.3 Dimensional tolerances 27
6.4 Permissible value on camber of strips 36
6.5 Permissible value of flatness of plates 37

7 Tests 37
7.1 Chemical analysis 37
7.2 Tensile test 38
7.3 Bend test 38
7.4 Hardness test 39
7.5 Grain size test 39
7.6 Electric conductivity test and volume resistivity test 39
7.7 Hydrogen embrittlement test 39

8 Inspection 40

9 Marking 40

10 Report 40

Annex A (informative) Mechanical properties and other properties 41

Annex B (informative) Representative dimensions of plates and representative internal diameters of coil of strips 43

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 Copper and Brass Association (JCBA)/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 H 3100**:2012 is replaced with this Standard.

However, **JIS H 3100**:2012 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, 2019.

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.

Copper and copper alloy sheets, plates and strips

1 Scope

This Japanese Industrial Standard specifies the rolled copper and copper alloy sheets and plates (hereafter referred to as plates) and strips (hereafter referred to as strips) (excluding the copper and copper alloy plates and strips specified in **JIS H 3110**, **JIS H 3130** and **JIS H 3510**).

The plates include the circular plates which are machined, punched or sheared from plates or strips.

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 H 0321 *General rules for inspection of non-ferrous metal materials*

JIS H 0500 *Glossary of terms used in wrought copper and copper alloys*

JIS H 0501 *Methods for estimating average grain size of wrought copper and copper alloys*

JIS H 0505 *Measuring methods for electrical resistivity and conductivity of nonferrous materials*

JIS H 1051 *Copper and copper alloys—Determination of copper content*

JIS H 1052 *Methods for determination of tin in copper and copper alloys*

JIS H 1053 *Methods for determination of lead in copper and copper alloys*

JIS H 1054 *Methods for determination of iron in copper and copper alloys*

JIS H 1055 *Methods for determination of manganese in copper and copper alloys*

JIS H 1056 *Methods for determination of nickel in copper and copper alloys*

JIS H 1057 *Methods for determination of aluminium in copper and copper alloys*

JIS H 1058 *Copper and copper alloys—Determination of phosphorus content*

JIS H 1062 *Methods for determination of zinc in copper and copper alloys*

JIS H 1074 *Copper and copper alloys—Determination of zirconium content*

JIS H 1292 *Copper alloys—Methods for X-ray fluorescence spectrometric analysis*

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

JIS Z 2244 *Vickers hardness test—Test method*

JIS Z 2248 *Metallic materials—Bend test*

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions, and those given in **JIS H 0500** apply.

3.1

oxygen free copper

copper which contains copper 99.96 % or more, satisfying the quality (hydrogen embrittlement) specified in **5.6**

NOTE Copper including oxygen may be subject to the hydrogen embrittlement at the elevated temperature of 400 °C or higher. Utilizing this property, the oxygen contained in copper is detectable by the hydrogen embrittlement test.

3.2

eddy current conductivity meter

device for measuring the electric conductivity of metal based on the correlation between the magnitude and distribution of eddy current generated in the metal by an adjacent a.c. magnetic field, and its electric conductivity

4 Name, grade, class and designation

The name, grade, class and designation of plates and strips are as given in Table 1. The product designation (see Table 3 and Table 5) shall be indicated by the designation given in Table 1 followed by the temper designation (see **JIS H 0500**). When plates and strips are used for the electric conduction or the pressure vessels, the product designation shall be indicated by the designation given in Table 1 followed by the symbol of application and the temper designation (see Table 4, Table 6 and Table 7).

Table 1 Name, grade, class and designation of plates and strips

Name	Grade		Class [a]	Designation	Characteristics and application examples (informative)
	Alloy No.	Shape			
Oxygen-free copper	C 1020	Plate	Common	C 1020 P [b]	Excellent electric conductivity, heat conductivity, workability and drawability. Good weldability, corrosion resistance and weathering resistance. Almost free from hydrogen embrittlement even when heated at elevated temperature in reducing atmosphere. Applicable to electrical use, chemical industries, etc.
			Special	C 1020 PS [b]	
		Strip	Common	C 1020 R [b]	
			Special	C 1020 RS [b]	
Tough-pitch copper	C 1100	Plate	Common	C 1100 P [b] [c]	Excellent electric conductivity and heat conductivity, and good workability, drawability, corrosion resistance and weathering resistance. Applicable to electrical use, distillers, buildings, chemical industries, gaskets, appliances, etc.
			Special	C 1100 PS [b] [c]	
		Strip	Common	C 1100 R [b] [c]	
			Special	C 1100 RS [b] [c]	
Phosphorus-deoxidized copper	C 1201	Plate	Common	C 1201 P	Good workability, drawability, weldability, corrosion resistance, weathering resistance and heat conductivity. C 1220 is almost free from hydrogen embrittlement even when heated at elevated temperature in reducing atmosphere. C 1201 has better electric conductivity than C 1220. Applicable to bath boilers, water heaters, gaskets, buildings, chemical industries, etc.
			Special	C 1201 PS	
		Strip	Common	C 1201 R	
			Special	C 1201 RS	
	C 1220	Plate	Common	C 1220 P [c]	
			Special	C 1220 PS [c]	
		Strip	Common	C 1220 R [c]	
			Special	C 1220 RS [c]	
Tin bearing copper	C 1441	Plate	Special	C 1441 PS [b]	Excellent electric conductivity, heat conductivity, thermal resistance and workability. Applicable to lead frames for semiconductors, wiring appliances or other electric and electronic parts, water heaters, etc.
		Strip	Special	C 1441 RS [b]	
Copper-zirconium alloys	C 1510	Plate	Special	C 1510 PS [b]	Excellent electric conductivity, heat conductivity, thermal resistance and workability. Applicable to lead frames for semiconductors, etc.
		Strip	Special	C 1510 RS [b]	
Copper-iron alloys	C 1921	Plate	Special	C 1921 PS [b]	Excellent electric conductivity, heat conductivity, strength and thermal resistance, and good workability. Applicable to lead frames for semiconductors, electric parts such as terminals and connectors, etc.
		Strip	Special	C 1921 RS [b]	
	C 1940	Plate	Special	C 1940 PS [b]	
		Strip	Special	C 1940 RS [b]	
Copper for detonators	C 2051	Strip	Common	C 2051 R	Excellent drawability. Applicable to detonators.

Table 1 (continued)

Name	Grade		Class [a)]	Designation	Characteristics and application examples (informative)
	Alloy No.	Shape			
Red brass	C 2100	Plate	Common	C 2100 P	Fine gloss, good workability, drawability and weathering resistance. Applicable to buildings, personal accessories, cosmetic cases, etc.
		Strip	Common	C 2100 R	
			Special	C 2100 RS	
	C 2200	Plate	Common	C 2200 P	
		Strip	Common	C 2200 R	
			Special	C 2200 RS	
	C 2300	Plate	Common	C 2300 P	
		Strip	Common	C 2300 R	
			Special	C 2300 RS	
	C 2400	Plate	Common	C 2400 P	
		Strip	Common	C 2400 R	
			Special	C 2400 RS	
Brass	C 2600	Plate	Common	C 2600 P [b)]	Excellent workability and drawability, and good plating property. Applicable to terminal connectors, etc.
		Strip	Common	C 2600 R [b)]	
			Special	C 2600 RS [b)]	
	C 2680	Plate	Common	C 2680 P [b)]	Good workability, drawability and good plating property. Intended for use in deep drawing work such as snap buttons, cameras, thermos bottles, and applicable to terminal connectors and wiring appliances, etc.
		Strip	Common	C 2680 R [b)]	
			Special	C 2680 RS [b)]	
	C 2720	Plate	Common	C 2720 P	Good workability and drawability. Intended for use in shallow drawing work, etc.
		Strip	Common	C 2720 R	
			Special	C 2720 RS	
	C 2801	Plate	Common	C 2801 P [b)]	High strength and moderate workability. Applicable to parts of wiring appliances used as punched or in a bent state, name plates, instrument panels, etc.
		Strip	Common	C 2801 R [b)]	
			Special	C 2801 RS [b)]	
Free-cutting brass	C 3710	Plate	Common	C 3710 P	Excellent punchability, and good machinability. Applicable to clock parts, gears, etc.
		Strip	Common	C 3710 R	
	C 3713	Plate	Common	C 3713 P	
		Strip	Common	C 3713 R	
Tin bearing brass	C 4250	Plate	Common	C 4250 P	Good stress resistance, corrosion cracking resistance, wear resistance and spring property. Applicable to switches, relays, connectors and various spring parts, etc.
		Strip	Common	C 4250 R	
			Special	C 4250 RS	
Phosphate-admiralty brass	C 4450	Strip	Common	C 4450 R	Good corrosion resistance. Applicable to welded tubes for gas piping, etc.

Table 1 (concluded)

Name	Grade		Class [a)]	Designation	Characteristics and application examples (informative)
	Alloy No.	Shape			
Naval brass	C 4621	Plate	Common	C 4621 P	Good corrosion resistance, especially against sea water. Thicker plates are applicable to tube plates for heat exchangers. Thinner plates are applicable to marine water-intake of ship use, etc. (C 4621 for Lloyd's and NK Class, and C 4640 for AB register of shipping).
	C 4640	Plate	Common	C 4640 P [c)]	
Aluminium bronze	C 6140	Plate	Common	C 6140 P [c)]	High strength, good corrosion resistance, especially against sea water, and good wear resistance. Applicable to machine parts, chemical industries, ship use, etc.
	C 6161	Plate	Common	C 6161 P	
	C 6280	Plate	Common	C 6280 P	
Cupronickel	C 7060	Plate	Common	C 7060 P [c)]	Good corrosion resistance, especially against sea water. Durable for relatively high temperature operation. Applicable to tube plates for heat exchangers, welded tubes, etc.
	C 7150	Plate	Common	C 7150 P [c)]	
Copper-nickel-tin	C 7250	Plate	Special	C 7250 PS	Good workability, molderability, fatigue resistance, thermal resistance and corrosion resistance. Applicable to springs for electronic or electric appliances, switches and relays, lead frames, connectors, etc.
		Strip	Special	C 7250 RS	

Notes [a)] Grades are classified according to the accuracy in dimensions (tolerances or permissible values) (see Table 9, Table 10, Table 12, Table 13, Table 16, Table 17, Table 22 and Table 23).

[b)] Plates and strips used for the electric conduction are indicated by the designation, P, PS, R or RS followed by C.

[c)] Plates and strips used for pressure vessels are indicated by the designation, P, PS, R or RS followed by V.

5 Quality

5.1 Appearance

The plates and strips shall have a uniform workmanlike finish, and shall be free from defects detrimental to use. The judgement on the defects detrimental to use shall be at the discretion of the manufacturer. If specially required, it may be upon the agreement between the purchaser and the manufacturer.

5.2 Chemical composition

The chemical composition of plates and strips shall be tested by **7.1**, and the results shall be as given in Table 2.

Table 2 Chemical composition of plates and strips

Unit: %

Alloy No.	Cu	Pb	Fe	Sn	Zn	Al	Mn	Ni	P	Zr
C 1020	99.96 min.	—	—	—	—	—	—	—	—	—
C 1100	99.90 min.	—	—	—	—	—	—	—	—	—
C 1201	99.90 min.	—	—	—	—	—	—	—	0.004 to 0.014	—
C 1220	99.90 min.	—	—	—	—	—	—	—	0.015 to 0.040	—
C 1441	Remainder [a)]	0.03 max.	0.02 max.	0.10 to 0.20	0.10 max.	—	—	—	0.001 to 0.020	—
C 1510	Remainder [a)]	—	—	—	—	—	—	—	—	0.05 to 0.15
C 1921	Remainder [a)]	—	0.05 to 0.15	—	—	—	—	—	0.015 to 0.050	—
C 1940	Remainder [a) b)]	0.03 max.	2.1 to 2.6	—	0.05 to 0.20	—	—	—	0.015 to 0.150	—
C 2051	98.0 to 99.0	0.05 max.	0.05 max.	—	Remainder [a)]	—	—	—	—	—
C 2100	94.0 to 96.0	0.03 max.	0.05 max.	—	Remainder [a)]	—	—	—	—	—
C 2200	89.0 to 91.0	0.05 max.	0.05 max.	—	Remainder [a)]	—	—	—	—	—
C 2300	84.0 to 86.0	0.05 max.	0.05 max.	—	Remainder [a)]	—	—	—	—	—
C 2400	78.5 to 81.5	0.05 max.	0.05 max.	—	Remainder [a)]	—	—	—	—	—
C 2600	68.5 to 71.5	0.05 max.	0.05 max.	—	Remainder [a)]	—	—	—	—	—
C 2680	64.0 to 68.0	0.05 max.	0.05 max.	—	Remainder [a)]	—	—	—	—	—
C 2720	62.0 to 64.0	0.07 max.	0.07 max.	—	Remainder [a)]	—	—	—	—	—
C 2801	59.0 to 62.0	0.10 max.	0.07 max.	—	Remainder [a)]	—	—	—	—	—
C 3710	58.0 to 62.0	0.6 to 1.2	0.10 max.	—	Remainder [a)]	—	—	—	—	—
C 3713	58.0 to 62.0	1.0 to 2.0	0.10 max.	—	Remainder [a)]	—	—	—	—	—
C 4250	87.0 to 90.0	0.05 max.	0.05 max.	1.5 to 3.0	Remainder [a)]	—	—	—	0.35 max.	—
C 4450	70.0 to 73.0	0.05 max.	0.03 max.	0.8 to 1.2	Remainder [a)]	—	—	—	0.002 to 0.100	—
C 4621	61.0 to 64.0	0.20 max.	0.10 max.	0.7 to 1.5	Remainder [a)]	—	—	—	—	—
C 4640	59.0 to 62.0	0.20 max.	0.10 max.	0.5 to 1.0	Remainder [a)]	—	—	—	—	—

Table 2 (concluded)

Unit: %

Alloy No.	Cu	Pb	Fe	Sn	Zn	Al	Mn	Ni	P	Zr
C 6140 [c]	88.0 to 92.5	0.01 max.	1.5 to 3.5	—	0.20 max.	6.0 to 8.0	1.0 max.	—	0.015 max.	—
C 6161 [d]	83.0 to 90.0	0.02 max.	2.0 to 4.0	—	—	7.0 to 10.0	0.50 to 2.0	0.5 to 2.0	—	—
C 6280 [d]	78.0 to 85.0	0.02 max.	1.5 to 3.5	—	—	8.0 to 11.0	0.50 to 2.0	4.0 to 7.0	—	—
C 7060	Remainder [a) e)]	0.02 max.	1.0 to 1.8	—	0.50 max.	—	0.20 to 1.0	9.0 to 11.0	—	—
C 7150	Remainder [a) e)]	0.02 max.	0.40 to 1.0	—	0.50 max.	—	0.20 to 1.0	29.0 to 33.0	—	—
C 7250	Remainder [a) f)]	0.05 max.	0.6 max.	1.8 to 2.8	0.50 max.	—	0.20 max.	8.5 to 10.5	—	—

Notes [a] The remainder is estimated from the contents of other elements than specified in this table; therefore, the remainder may include other elements than Cu or Zn.

[b] When Cu is analysed on the purchaser's request: Cu + Pb + Fe + Zn + P = 99.8 min.

[c] Cu + Pb + Fe + Zn + Al + Mn + P = 99.5 min.

[d] Cu + Fe + Al + Mn + Ni = 99.5 min.

[e] When Cu is analysed on the purchaser's request: Cu + Fe + Mn + Ni = 99.5 min.

[f] When Cu is analysed on the purchaser's request: Cu + Pb + Fe + Sn + Zn + Mn + Ni = 99.8 min.

5.3 Mechanical properties

The mechanical properties (tensile strength, elongation, bendability and hardness) of plates and strips shall be tested by **7.2** to **7.4**, and the results shall be as given in Table 3. The bendability and the hardness shall be applied only when requested by the purchaser. The plates and strips shall endure the bend test without generating any cracks on the outside surface of the bent position. In this case, the distance from the edges within which the generated cracks need not be evaluated shall be at the discretion of the manufacturer.

If specially required, the distance above mentioned shall be as agreed between the purchaser and the manufacturer. The obtained hardness shall be reported as an informative value.

The typical Vickers hardness values are given in Table 3 for reference.

The mechanical properties of plates and strips to be used for pressure vessels shall be tested by **7.2**, and the results shall be as given in Table 4.

Table 3 Mechanical properties of plates and strips

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 1020	O	C 1020 P-O [d] C 1020 PS-O [d]	0.10 or over to and excl. 0.15	195 min.	20 min.	0.10 or over up to and incl. 2.0	180°	Close contact	—	—
			0.15 or over to and excl. 0.30		30 min.					
			0.30 or over up to and incl. 30		35 min.					
		C 1020 R-O [d] C 1020 RS-O [d]	0.10 or over to and excl. 0.15		20 min.					
			0.15 or over to and excl. 0.30		30 min.					
			0.30 or over up to and incl. 4.0		35 min.					
	1/4H	C 1020 P-1/4H [d] C 1020 PS-1/4H [d]	0.10 or over to and excl. 0.15	215 to 285	15 min.	0.10 or over up to and incl. 2.0	180°	Thickness × 0.5	0.30 or over up to and incl. 30	55 to 100 [e]
			0.15 or over to and excl. 0.30		20 min.					
			0.30 or over up to and incl. 30	215 to 275	25 min.					
		C 1020 R-1/4H [d] C 1020 RS-1/4H [d]	0.10 or over to and excl. 0.15	215 to 285	15 min.				0.30 or over up to and incl. 4.0	
			0.15 or over to and excl. 0.30		20 min.					
			0.30 or over up to and incl. 4.0	215 to 275	25 min.					
	1/2H	C 1020 P-1/2H [d] C 1020 PS-1/2H [d]	0.10 or over to and excl. 0.15	235 to 315	—	0.10 or over up to and incl. 2.0	180°	Thickness × 1	0.20 or over up to and incl. 20	75 to 120 [e]
			0.15 or over to and excl. 0.30		10 min.					
			0.30 or over up to and incl. 20	245 to 315	15 min.					
		C 1020 R-1/2H [d] C 1020 RS-1/2H [d]	0.10 or over to and excl. 0.15	235 to 315	—				0.20 or over up to and incl. 4.0	
			0.15 or over to and excl. 0.30		10 min.					
			0.30 or over up to and incl. 4.0	245 to 315	15 min.					
	H	C 1020 P-H [d] C 1020 PS-H [d]	0.10 or over up to and incl. 10	275 min.	—	0.10 or over up to and incl. 2.0	180°	Thickness × 1.5	0.20 or over up to and incl. 10	80 min. [e]
		C 1020 R-H [d] C 1020 RS-H [d]	0.10 or over up to and incl. 4.0						0.20 or over up to and incl. 4.0	

Table 3 (continued)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 1100	O	C 1100 P-O [d] C 1100 PS-O [d]	0.10 or over to and excl. 0.15	195 min.	20 min.	0.10 or over up to and incl. 2.0	180°	Close contact	—	—
			0.15 or over to and excl. 0.50		30 min.					
			0.50 or over up to and incl. 30		35 min.					
		C 1100 R-O [d] C 1100 RS-O [d]	0.10 or over to and excl. 0.15		20 min.					
			0.15 or over to and excl. 0.50		30 min.					
			0.50 or over up to and incl. 4.0		35 min.					
	1/4H	C 1100 P-1/4H [d] C 1100 PS-1/4H [d]	0.10 or over to and excl. 0.15	215 to 285	15 min.	0.10 or over up to and incl. 2.0	180°	Thickness × 0.5	0.30 or over up to and incl. 30	55 to 100 [e]
			0.15 or over to and excl. 0.50		20 min.					
			0.50 or over up to and incl. 30	215 to 275	25 min.					
		C 1100 R-1/4H [d] C 1100 RS-1/4H [d]	0.10 or over to and excl. 0.15	215 to 285	15 min.				0.30 or over up to and incl. 4.0	
			0.15 or over to and excl. 0.50		20 min.					
			0.50 or over up to and incl. 4.0	215 to 275	25 min.					
	1/2H	C 1100 P-1/2H [d] C 1100 PS-1/2H [d]	0.10 or over to and excl. 0.15	235 to 315	—	0.10 or over up to and incl. 2.0	180°	Thickness × 1	0.20 or over up to and incl. 20	75 to 120 [e]
			0.15 or over to and excl. 0.50		10 min.					
			0.50 or over up to and incl. 20	245 to 315	15 min.					
		C 1100 R-1/2H [d] C 1100 RS-1/2H [d]	0.10 or over to and excl. 0.15	235 to 315	—				0.20 or over up to and incl. 4.0	
			0.15 or over to and excl. 0.50		10 min.					
			0.50 or over up to and incl. 4.0	245 to 315	15 min.					
	H	C 1100 P-H [d] C 1100 PS-H [d]	0.10 or over up to and incl. 10	275 min.	—	0.10 or over up to and incl. 2.0	180°	Thickness × 1.5	0.20 or over up to and incl. 10	80 min. [e]
		C 1100 R-H [d] C 1100 RS-H [d]	0.10 or over up to and incl. 4.0						0.20 or over up to and incl. 4.0	

Table 3 (continued)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 1201 C 1220	O	C 1201 P-O C 1201 PS-O C 1220 P-O C 1220 PS-O	0.10 or over to and excl. 0.15	195 min.	20 min.	0.10 or over up to and incl. 2.0	180°	Close contact	—	—
			0.15 or over to and excl. 0.30		30 min.					
			0.30 or over up to and incl. 30		35 min.					
		C 1201 R-O C 1201 RS-O C 1220 R-O C 1220 RS-O	0.10 or over to and excl. 0.15		20 min.					
			0.15 or over to and excl. 0.30		30 min.					
			0.30 or over up to and incl. 3.0		35 min.					
	1/4H	C 1201 P-1/4H C 1201 PS-1/4H C 1220 P-1/4H C 1220 PS-1/4H	0.10 or over to and excl. 0.15	215 to 285	15 min.	0.10 or over up to and incl. 2.0	180°	Thickness × 0.5	0.30 or over up to and incl. 30	55 to 100 [e]
			0.15 or over to and excl. 0.30		20 min.					
			0.30 or over up to and incl. 30	215 to 275	25 min.					
		C 1201 R-1/4H C 1201 RS-1/4H C 1220 R-1/4H C 1220 RS-1/4H	0.10 or over to and excl. 0.15	215 to 285	15 min.				0.30 or over up to and incl. 3.0	
			0.15 or over to and excl. 0.30		20 min.					
			0.30 or over up to and incl. 3.0	215 to 275	25 min.					
	1/2H	C 1201 P-1/2H C 1201 PS-1/2H C 1220 P-1/2H C 1220 PS-1/2H	0.10 or over to and excl. 0.15	235 to 315	—	0.10 or over up to and incl. 2.0	180°	Thickness × 1	0.20 or over up to and incl. 20	75 to 120 [e]
			0.15 or over to and excl. 0.30		10 min.					
			0.30 or over up to and incl. 20	245 to 315	15 min.					
		C 1201 R-1/2H C 1201 RS-1/2H C 1220 R-1/2H C 1220 RS-1/2H	0.10 or over to and excl. 0.15	235 to 315	—				0.20 or over up to and incl. 3.0	
			0.15 or over to and excl. 0.30		10 min.					
			0.30 or over up to and incl. 3.0	245 to 315	15 min.					
	H	C 1201 P-H C 1201 PS-H C 1220 P-H C 1220 PS-H	0.10 or over up to and incl. 10	275 min.	—	0.10 or over up to and incl. 2.0	180°	Thickness × 1.5	0.20 or over up to and incl. 10	80 min. [e]
		C 1201 R-H C 1201 RS-H C 1220 R-H C 1220 RS-H	0.10 or over up to and incl. 3.0						0.20 or over up to and incl. 3.0	

Table 3 (continued)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 1441	O	C 1441 PS-O [d] C 1441 RS-O [d]	0.10 or over to and excl. 0.15	195 min.	20 min.	0.10 or over up to and incl. 2.0	180°	Close contact	—	—
			0.15 or over up to and incl. 3.0		30 min.					
	1/4H	C 1441 PS-1/4H [d] C 1441 RS-1/4H [d]	0.10 or over to and excl. 0.15	215 to 305	15 min.	0.10 or over up to and incl. 2.0	180°	Thickness × 0.5	0.30 or over up to and incl. 3.0	45 to 105 [e]
			0.15 or over up to and incl. 3.0		20 min.					
	1/2H	C 1441 PS-1/2H [d] C 1441 RS-1/2H [d]	0.10 or over up to and incl. 3.0	245 to 345	10 min.	0.10 or over up to and incl. 2.0	180°	Thickness × 1	0.20 or over up to and incl. 3.0	60 to 120 [e]
	H	C 1441 PS-H [d] C 1441 RS-H [d]	0.10 or over to and excl. 0.15	275 to 400	—	0.10 or over up to and incl. 2.0	180°	Thickness × 1.5	0.10 or over up to and incl. 3.0	90 to 125 [e]
			0.15 or over up to and incl. 3.0		2 min.					
	EH	C 1441 PS-EH C 1441 RS-EH	0.10 or over up to and incl. 3.0	345 to 440	—	0.10 or over up to and incl. 2.0	W	Thickness × 1	0.10 or over up to and incl. 3.0	100 to 135 [e]
	SH	C 1441 PS-SH C 1441 RS-SH	0.10 or over up to and incl. 3.0	380 min.	—	0.10 or over up to and incl. 2.0	W	Thickness × 1.5	0.10 or over up to and incl. 3.0	115 min. [e]
C 1510	1/4H	C 1510 PS-1/4H [d] C 1510 RS-1/4H [d]	0.10 or over up to and incl. 3.0	275 to 310	13 min.	—	—	—	0.20 or over up to and incl. 3.0	70 to 100 [e]
	1/2H	C 1510 PS-1/2H [d] C 1510 RS-1/2H [d]	0.10 or over up to and incl. 3.0	295 to 355	6 min.	—	—	—	0.20 or over up to and incl. 3.0	80 to 110 [e]
	3/4H	C 1510 PS-3/4H [d] C 1510 RS-3/4H [d]	0.10 or over up to and incl. 3.0	325 to 385	3 min.	—	—	—	0.10 or over up to and incl. 3.0	100 to 125 [e]
	H	C 1510 PS-H [d] C 1510 RS-H [d]	0.10 or over up to and incl. 3.0	365 to 430	2 min.	—	—	—	0.10 or over up to and incl. 3.0	100 to 135 [e]
	EH	C 1510 PS-EH [d] C 1510 RS-EH [d]	0.10 or over up to and incl. 3.0	400 to 450	2 min.	—	—	—	0.10 or over up to and incl. 3.0	120 to 140 [e]
	SH	C 1510 PS-SH [d] C 1510 RS-SH [d]	0.10 or over up to and incl. 3.0	400 min.	2 min.	—	—	—	0.10 or over up to and incl. 3.0	125 min. [e]

Table 3 (continued)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 1921	O	C 1921 PS-O [d] C 1921 RS-O [d]	0.10 or over up to and incl. 3.0	255 to 345	30 min.	0.10 or over up to and incl. 1.6	180°	Close contact	0.20 or over up to and incl. 3.0	100 max. [e]
	1/4H	C 1921 PS-1/4H [d] C 1921 RS-1/4H [d]	0.10 or over up to and incl. 3.0	275 to 375	15 min.	0.10 or over up to and incl. 1.6	180° or W	Thickness × 0.5	0.10 or over up to and incl. 3.0	85 to 120 [e]
	1/2H	C 1921 PS-1/2H [d] C 1921 RS-1/2H [d]	0.10 or over up to and incl. 3.0	295 to 430	4 min.	0.10 or over up to and incl. 1.6		Thickness × 1	0.10 or over up to and incl. 3.0	100 to 130 [e]
	H	C 1921 PS-H [d] C 1921 RS-H [d]	0.10 or over up to and incl. 3.0	335 to 470	4 min.	0.10 or over up to and incl. 1.6		Thickness × 1.5	0.10 or over up to and incl. 3.0	110 to 150 [e]
	SH	C 1921 PS-SH [d] C 1921 RS-SH [d]	0.10 or over up to and incl. 3.0	470 to 540	4 min.	0.10 or over up to and incl. 1.6		Thickness × 2	0.10 or over up to and incl. 3.0	145 to 165 [e]
C 1940	O3 [g]	C 1940 PS-O3 [d] C 1940 RS-O3 [d]	0.10 or over up to and incl. 3.0	275 to 345	30 min.	—	—	—	0.20 or over up to and incl. 3.0	70 to 95 [e]
	O2 [g]	C 1940 PS-O2 [d] C 1940 RS-O2 [d]	0.10 or over up to and incl. 3.0	310 to 380	25 min.	—	—	—	0.20 or over up to and incl. 3.0	80 to 105 [e]
	O1 [g]	C 1940 PS-O1 [d] C 1940 RS-O1 [d]	0.10 or over up to and incl. 3.0	345 to 415	15 min.	—	—	—	0.10 or over up to and incl. 3.0	100 to 125 [e]
	1/2H	C 1940 PS-1/2H [d] C 1940 RS-1/2H [d]	0.10 or over up to and incl. 3.0	365 to 435	5 min.	—	—	—	0.10 or over up to and incl. 3.0	115 to 137 [e]
	H	C 1940 PS-H [d] C 1940 RS-H [d]	0.10 or over up to and incl. 3.0	415 to 485	2 min.	—	—	—	0.10 or over up to and incl. 3.0	125 to 145 [e]
	EH	C 1940 PS-EH [d] C 1940 RS-EH [d]	0.10 or over up to and incl. 3.0	460 to 505	—	—	—	—	0.10 or over up to and incl. 3.0	135 to 150 [e]
	SH	C 1940 PS-SH [d] C 1940 RS-SH [d]	0.10 or over up to and incl. 3.0	480 to 525	—	—	—	—	0.10 or over up to and incl. 3.0	140 to 155 [e]
	ESH [h]	C 1940 PS-ESH [d] C 1940 RS-ESH [d]	0.10 or over up to and incl. 3.0	505 to 590	—	—	—	—	0.10 or over up to and incl. 3.0	145 to 170 [e]

Table 3 (continued)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 1940	SSH [i]	C 1940 PS-SSH [d] C 1940 RS-SSH [d]	0.10 or over up to and incl. 3.0	550 min.	—	—	—	—	0.10 or over up to and incl. 3.0	155 min. [e]
C 2051	O	C 2051 R-O	0.20 or over up to and incl. 0.35	215 to 255	38 min.	—	—	—	—	—
			Over 0.35 up to and incl. 0.60		43 min.					
C 2100	O	C 2100 P-O	0.30 or over up to and incl. 30	205 min.	33 min.	0.30 or over up to and incl. 2.0	180°	Close contact	—	—
		C 2100 R-O C 2100 RS-O	0.30 or over up to and incl. 3.0							
	1/4H	C 2100 P-1/4H	0.30 or over up to and incl. 30	225 to 305	23 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 0.5	—	—
		C 2100 R-1/4H C 2100 RS-1/4H	0.30 or over up to and incl. 3.0							
	1/2H	C 2100 P-1/2H	0.30 or over up to and incl. 20	265 to 345	18 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 1	—	—
		C 2100 R-1/2H C 2100 RS-1/2H	0.30 or over up to and incl. 3.0							
	H	C 2100 P-H	0.30 or over up to and incl. 10	305 min.	—	0.30 or over up to and incl. 2.0	180°	Thickness × 1.5	—	—
		C 2100 R-H C 2100 RS-H	0.30 or over up to and incl. 3.0							
C 2200	O	C 2200 P-O	0.30 or over up to and incl. 30	225 min.	35 min.	0.30 or over up to and incl. 2.0	180°	Close contact	—	—
		C 2200 R-O C 2200 RS-O	0.30 or over up to and incl. 3.0							
	1/4H	C 2200 P-1/4H	0.30 or over up to and incl. 30	255 to 335	25 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 0.5	—	—
		C 2200 R-1/4H C 2200 RS-1/4H	0.30 or over up to and incl. 3.0							
	1/2H	C 2200 P-1/2H	0.30 or over up to and incl. 20	285 to 365	20 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 1	—	—
		C 2200 R-1/2H C 2200 RS-1/2H	0.30 or over up to and incl. 3.0							
	H	C 2200 P-H	0.30 or over up to and incl. 10	335 min.	—	0.30 or over up to and incl. 2.0	180°	Thickness × 1.5	—	—
		C 2200 R-H C 2200 RS-H	0.30 or over up to and incl. 3.0							
C 2300	O	C 2300 P-O	0.30 or over up to and incl. 30	245 min.	40 min.	0.30 or over up to and incl. 2.0	180°	Close contact	—	—
		C 2300 R-O C 2300 RS-O	0.30 or over up to and incl. 3.0							
	1/4H	C 2300 P-1/4H	0.30 or over up to and incl. 30	275 to 355	28 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 0.5	—	—
		C 2300 R-1/4H C 2300 RS-1/4H	0.30 or over up to and incl. 3.0							

Table 3 (continued)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 2300	1/2H	C 2300 P-1/2H	0.30 or over up to and incl. 20	305 to 380	23 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 1	—	—
		C 2300 R-1/2H C 2300 RS-1/2H	0.30 or over up to and incl. 3.0							
	H	C 2300 P-H	0.30 or over up to and incl. 10	355 min.	—	0.30 or over up to and incl. 2.0	180°	Thickness × 1.5	—	—
		C 2300 R-H C 2300 RS-H	0.30 or over up to and incl. 3.0							
C 2400	O	C 2400 P-O	0.30 or over up to and incl. 30	255 min.	44 min.	0.30 or over up to and incl. 2.0	180°	Close contact	—	—
		C 2400 R-O C 2400 RS-O	0.30 or over up to and incl. 3.0							
	1/4H	C 2400 P-1/4H	0.30 or over up to and incl. 30	295 to 375	30 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 0.5	—	—
		C 2400 R-1/4H C 2400 RS-1/4H	0.30 or over up to and incl. 3.0							
	1/2H	C 2400 P-1/2H	0.30 or over up to and incl. 20	325 to 400	25 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 1	—	—
		C 2400 R-1/2H C 2400 RS-1/2H	0.30 or over up to and incl. 3.0							
	H	C 2400 P-H	0.30 or over up to and incl. 10	375 min.	—	0.30 or over up to and incl. 2.0	180°	Thickness × 1.5	—	—
		C 2400 R-H C 2400 RS-H	0.30 or over up to and incl. 3.0							
C 2600	O	C 2600 P-O [d]	0.10 or over to and excl. 0.30	275 min.	35 min.	0.10 or over up to and incl. 2.0	180°	Close contact	—	—
			0.30 or over up to and incl. 30		40 min.					
		C 2600 R-O [d] C 2600 RS-O [d]	0.10 or over to and excl. 0.30		35 min.					
			0.30 or over up to and incl. 3.0		40 min.					
	1/4H	C 2600 P-1/4H [d]	0.10 or over to and excl. 0.30	325 to 420	30 min.	0.10 or over up to and incl. 2.0	180°	Thickness × 0.5	0.20 or over up to and incl. 30	75 to 125 [e]
			0.30 or over up to and incl. 30	325 to 410	35 min.					
		C 2600 R-1/4H [d] C 2600 RS-1/4H [d]	0.10 or over to and excl. 0.30	325 to 420	30 min.				0.20 or over up to and incl. 3.0	
			0.30 or over up to and incl. 3.0	325 to 410	35 min.					
	1/2H	C 2600 P-1/2H [d]	0.10 or over to and excl. 0.30	355 to 450	23 min.	0.10 or over up to and incl. 2.0	180° or W	Thickness × 1	0.20 or over up to and incl. 20	85 to 145 [e]
			0.30 or over up to and incl. 20	355 to 440	28 min.					
		C 2600 R-1/2H [d] C 2600 RS-1/2H [d]	0.10 or over to and excl. 0.30	355 to 450	23 min.				0.20 or over up to and incl. 3.0	
			0.30 or over up to and incl. 3.0	355 to 440	28 min.					

Table 3 (continued)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 2600	$^3/_4$H	C 2600 P-$^3/_4$H [d]	0.10 or over to and excl. 0.30	375 to 490	10 min.	0.10 or over up to and incl. 2.0	180° or W	Thickness × 1.5	0.20 or over up to and incl. 20	95 to 160 [e]
			0.30 or over up to and incl. 20		20 min.					
		C 2600 R-$^3/_4$H [d] C 2600 RS-$^3/_4$H [d]	0.10 or over to and excl. 0.30		10 min.				0.20 or over up to and incl. 3.0	
			0.30 or over up to and incl. 3.0		20 min.					
	H	C 2600 P-H [d]	0.10 or over up to and incl. 10	410 to 540	—	0.10 or over up to and incl. 2.0	180° or W	Thickness × 1.5	0.20 or over up to and incl. 10	105 to 175 [e]
		C 2600 R-H [d] C 2600 RS-H [d]	0.10 or over up to and incl. 3.0						0.20 or over up to and incl. 3.0	
	EH	C 2600 P-EH [d]	0.10 or over up to and incl. 10	520 to 620	—	—	—	—	0.10 or over up to and incl. 10	145 to 195 [e]
		C 2600 R-EH [d] C 2600 RS-EH [d]	0.10 or over up to and incl. 3.0						0.10 or over up to and incl. 3.0	
	SH	C 2600 P-SH [d]	0.10 or over up to and incl. 10	570 to 670	—	—	—	—	0.10 or over up to and incl. 10	165 to 215 [e]
		C 2600 R-SH [d] C 2600 RS-SH [d]	0.10 or over up to and incl. 3.0						0.10 or over up to and incl. 3.0	
	ESH [h]	C 2600 P-ESH [d]	0.10 or over up to and incl. 10	620 min.	—	—	—	—	0.10 or over up to and incl. 10	180 min. [e]
		C 2600 R-ESH [d] C 2600 RS-ESH [d]	0.10 or over up to and incl. 3.0						0.10 or over up to and incl. 3.0	
C 2680	O	C 2680 P-O [d]	0.10 or over to and excl. 0.30	275 min.	35 min.	0.10 or over up to and incl. 2.0	180°	Close contact	—	—
			0.30 or over up to and incl. 30		40 min.					
		C 2680 R-O [d] C 2680 RS-O [d]	0.10 or over to and excl. 0.30		35 min.					
			0.30 or over up to and incl. 3.0		40 min.					

Table 3 (continued)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 2680	1/4H	C 2680 P-1/4H [d]	0.10 or over to and excl. 0.30	325 to 420	30 min.	0.10 or over up to and incl. 2.0	180°	Thickness × 0.5	0.20 or over up to and incl. 30	75 to 125 [e]
			0.30 or over up to and incl. 30	325 to 410	35 min.					
		C 2680 R-1/4H [d] C 2680 RS-1/4H [d]	0.10 or over to and excl. 0.30	325 to 420	30 min.				0.20 or over up to and incl. 3.0	
			0.30 or over up to and incl. 3.0	325 to 410	35 min.					
	1/2H	C 2680 P-1/2H [d]	0.10 or over to and excl. 0.30	355 to 450	23 min.	0.10 or over up to and incl. 2.0	180° or W	Thickness × 1	0.20 or over up to and incl. 20	85 to 145 [e]
			0.30 or over up to and incl. 20	355 to 440	28 min.					
		C 2680 R-1/2H [d] C 2680 RS-1/2H [d]	0.10 or over to and excl. 0.30	355 to 450	23 min.				0.20 or over up to and incl. 3.0	
			0.30 or over up to and incl. 3.0	355 to 440	28 min.					
	3/4H	C 2680 P-3/4H [d]	0.10 or over to and excl. 0.30	375 to 490	10 min.	0.10 or over up to and incl. 2.0	180° or W	Thickness × 1.5	0.20 or over up to and incl. 20	95 to 165 [e]
			0.30 or over up to and incl. 20		20 min.					
		C 2680 R-3/4H [d] C 2680 RS-3/4H [d]	0.10 or over to and excl. 0.30		10 min.				0.20 or over up to and incl. 3.0	
			0.30 or over up to and incl. 3.0		20 min.					
	H	C 2680 P-H [d]	0.10 or over up to and incl. 10	410 to 540	—	0.10 or over up to and incl. 2.0	180° or W	Thickness × 1.5	0.20 or over up to and incl. 10	105 to 175 [e]
		C 2680 R-H [d] C 2680 RS-H [d]	0.10 or over up to and incl. 3.0						0.20 or over up to and incl. 3.0	
	EH	C 2680 P-EH [d]	0.10 or over up to and incl. 10	520 to 620	—	—	—	—	0.10 or over up to and incl. 10	145 to 195 [e]
		C 2680 R-EH [d] C 2680 RS-EH [d]	0.10 or over up to and incl. 3.0						0.10 or over up to and incl. 3.0	
	SH	C 2680 P-SH [d]	0.10 or over up to and incl. 10	570 to 670	—	—	—	—	0.10 or over up to and incl. 10	165 to 215 [e]
		C 2680 R-SH [d] C 2680 RS-SH [d]	0.10 or over up to and incl. 3.0						0.10 or over up to and incl. 3.0	

Table 3 (continued)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 2680	ESH [h]	C 2680 P-ESH [d]	0.10 or over up to and incl. 10	620 min.	—	—	—	—	0.10 or over up to and incl. 10	180 min. [e]
		C 2680 R-ESH [d] C 2680 RS-ESH [d]	0.10 or over up to and incl. 3.0						0.10 or over up to and incl. 3.0	
C 2720	O	C 2720 P-O	0.30 or over up to and incl. 1.0	275 min.	40 min.	0.30 or over up to and incl. 2.0	180°	Close contact	—	—
			Over 1.0 up to and incl. 30		50 min.					
		C 2720 R-O C 2720 RS-O	0.30 or over up to and incl. 1.0	275 min.	40 min.					
			Over 1.0 up to and incl. 3.0		50 min.					
	1/4H	C 2720 P-1/4H	0.30 or over up to and incl. 30	325 to 410	35 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 0.5	0.30 or over up to and incl. 30	75 to 125 [f]
		C 2720 R-1/4H C 2720 RS-1/4H	0.30 or over up to and incl. 3.0						0.30 or over up to and incl. 3.0	
	1/2H	C 2720 P1/2H	0.30 or over up to and incl. 20	355 to 440	28 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 1	0.30 or over up to and incl. 20	85 to 145 [f]
		C 2720 R-1/2H C 2720 RS-1/2H	0.30 or over up to and incl. 3.0						0.30 or over up to and incl. 3.0	
	H	C 2720 P-H	0.30 or over up to and incl. 10	410 min.	—	0.30 or over up to and incl. 2.0	180°	Thickness × 1.5	0.30 or over up to and incl. 10	105 min. [f]
		C 2720 R-H C 2720 RS-H	0.30 or over up to and incl. 3.0						0.30 or over up to and incl. 3.0	
C 2801	O	C 2801 P-O [d]	0.30 or over up to and incl. 1.0	325 min.	35 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 1	—	—
			Over 1.0 up to and incl. 30		40 min.					
		C 2801 R-O [d] C 2801 RS-O [d]	0.30 or over up to and incl. 1.0		35 min.					
			Over 1.0 up to and incl. 3.0		40 min.					

Table 3 (continued)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 2801	1/4H	C 2801 P-1/4H [d]	0.30 or over up to and incl. 30	355 to 440	25 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 1.5	0.30 or over up to and incl. 30	85 to 145 [f]
		C 2801 R-1/4H [d] C 2801 RS-1/4H [d]	0.30 or over up to and incl. 3.0						0.30 or over up to and incl. 3.0	
	1/2H	C 2801 P-1/2H [d]	0.30 or over up to and incl. 20	410 to 490	15 min.	0.30 or over up to and incl. 2.0	180°	Thickness × 1.5	0.30 or over up to and incl. 20	105 to 160 [f]
		C 2801 R-1/2H [d] C 2801 RS-1/2H [d]	0.30 or over up to and incl. 3.0						0.30 or over up to and incl. 3.0	
	H	C 2801 P-H [d]	0.30 or over up to and incl. 10	470 min.	—	0.30 or over up to and incl. 2.0	90°	Thickness × 1	0.30 or over up to and incl. 10	130 min. [f]
		C 2801 R-H [d] C 2801 RS-H [d]	0.30 or over up to and incl. 3.0						0.30 or over up to and incl. 3.0	
C 3710	1/4H	C 3710 P-1/4H	0.30 or over up to and incl. 10	375 to 460	20 min.	—	—	—	—	—
		C 3710 R-1/4H	0.30 or over up to and incl. 2.0							
	1/2H	C 3710 P-1/2H	0.30 or over up to and incl. 10	420 to 510	18 min.	—	—	—	—	—
		C 3710 R-1/2H	0.30 or over up to and incl. 2.0							
	H	C 3710 P-H	0.30 or over up to and incl. 10	470 min.	—	—	—	—	—	—
		C 3710 R-H	0.30 or over up to and incl. 2.0							
C 3713	1/4H	C 3713 P-1/4H	0.30 or over up to and incl. 10	375 to 460	18 min.	—	—	—	—	—
		C 3713 R-1/4H	0.30 or over up to and incl. 2.0							
	1/2H	C 3713 P-1/2H	0.30 or over up to and incl. 10	420 to 510	10 min.	—	—	—	—	—
		C 3713 R-1/2H	0.30 or over up to and incl. 2.0							
	H	C 3713 P-H	0.30 or over up to and incl. 10	470 min.	—	—	—	—	—	—
		C 3713 R-H	0.30 or over up to and incl. 2.0							

Table 3 (continued)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 4250	O	C 4250 P-O	0.30 or over up to and incl. 30	295 min.	35 min.	0.30 or over up to and incl. 1.6	180°	Thickness × 1	—	—
		C 4250 R-O C 4250 RS-O	0.30 or over up to and incl. 3.0							
	1/4H	C 4250 P-1/4H	0.30 or over up to and incl. 30	335 to 420	25 min.	0.30 or over up to and incl. 1.6	180°	Thickness × 1.5	0.30 or over up to and incl. 30	80 to 140 [f]
		C 4250 R-1/4H C 4250 RS-1/4H	0.30 or over up to and incl. 3.0						0.30 or over up to and incl. 3.0	
	1/2H	C 4250 P-1/2H	0.30 or over up to and incl. 20	390 to 480	15 min.	0.30 or over up to and incl. 1.6	180°	Thickness × 2	0.30 or over up to and incl. 20	110 to 170 [f]
		C 4250 R-1/2H C 4250 RS-1/2H	0.30 or over up to and incl. 3.0						0.30 or over up to and incl. 3.0	
	3/4H	C 4250 P-3/4H	0.30 or over up to and incl. 20	420 to 510	5 min.	0.30 or over up to and incl. 1.6	180°	Thickness × 2.5	0.30 or over up to and incl. 20	140 to 180 [f]
		C 4250 R-3/4H C 4250 RS-3/4H	0.30 or over up to and incl. 3.0						0.30 or over up to and incl. 3.0	
	H	C 4250 P-H	0.30 or over up to and incl. 10	480 to 570	—	0.30 or over up to and incl. 1.6	180°	Thickness × 3	0.30 or over up to and incl. 10	140 to 200 [f]
		C 4250 R-H C 4250 RS-H	0.30 or over up to and incl. 3.0						0.30 or over up to and incl. 3.0	
	EH	C 4250 P-EH	0.30 or over up to and incl. 10	520 min.	—	—	—	—	0.30 or over up to and incl. 10	150 min. [f]
		C 4250 R-EH C 4250 RS-EH	0.30 or over up to and incl. 3.0						0.30 or over up to and incl. 3.0	
C 4450	O	C 4450 R-O	0.30 or over up to and incl. 3.0	315 to 390	35 min.	—	—	—	0.30 or over up to and incl. 3.0	70 to 85 [f]

Table 3 (continued)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 4621	F	C 4621 P-F	0.80 or over up to and incl. 20	375 min.	20 min.	—	—	—	—	—
			Over 20 up to and incl. 40	345 min.						
			Over 40 up to and incl. 125	315 min.						
C 4640	F	C 4640 P-F	0.80 or over up to and incl. 20	375 min.	25 min.	—	—	—	—	—
			Over 20 up to and incl. 40	345 min.						
			Over 40 up to and incl. 125	315 min.						
C 6140	F	C 6140 P-F	4.0 or over up to and incl. 50	480 min.	35 min.	—	—	—	—	—
			Over 50 up to and incl. 125	450 min.						
	O	C 6140 P-O	4.0 or over up to and incl. 50	480 min.	35 min.	—	—	—	—	—
			Over 50 up to and incl. 125	450 min.						
	H	C 6140 P-H	4.0 or over up to and incl. 12	550 min.	25 min.	—	—	—	—	—
			Over 12 up to and incl. 25	480 min.	30 min.					
C 6161	F	C 6161 P-F	0.80 or over up to and incl. 50	490 min.	30 min.	—	—	—	—	—
			Over 50 up to and incl. 125	450 min.	35 min.					
	O	C 6161 P-O	0.80 or over up to and incl. 50	490 min.	35 min.	0.80 or over up to and incl. 2.0	180°	Thickness × 1	—	—
			Over 50 up to and incl. 125	450 min.	35 min.	—	—	—		
	$^1/_2$H	C 6161 P-$^1/_2$H	0.80 or over up to and incl. 50	635 min.	25 min.	0.80 or over up to and incl. 2.0	180°	Thickness × 2	—	—
			Over 50 up to and incl. 125	590 min.	20 min.	—	—	—		
	H	C 6161 P-H	0.80 or over up to and incl. 50	685 min.	10 min.	0.80 or over up to and incl. 2.0	180°	Thickness × 3	—	—
C 6280	F	C 6280 P-F	0.80 or over up to and incl. 50	620 min.	10 min.	—	—	—	—	—
			Over 50 up to and incl. 90	590 min.						
			Over 90 up to and incl. 125	550 min.						

Table 3 (concluded)

Alloy No.	Temper	Product designation	Tensile test			Bend test [a]			Hardness test [a] (informative)	
			Thickness mm	Tensile strength [b] N/mm^2	Elongation [b] %	Thickness mm	Bending angle [c]	Internal radius [c]	Thickness mm	Vickers hardness [b] HV
C 7060	F	C 7060 P-F	0.50 or over up to and incl. 50	275 min.	30 min.	—	—	—	—	—
C 7150	F	C 7150 P-F	0.50 or over up to and incl. 50	345 min.	35 min.	—	—	—	—	—
C 7250	O	C 7250 PS-O C 7250 RS-O	0.10 or over up to and incl. 1.0	420 max.	30 min.	0.10 or over up to and incl. 1.0	180°	Close contact	0.20 or over up to and incl. 1.0	120 max. [e]
	1/4H	C 7250 PS-1/4H C 7250 RS-1/4H	0.10 or over up to and incl. 1.0	345 to 515	10 min.	0.10 or over up to and incl. 1.0	180° or W	Thickness × 0.5	0.10 or over up to and incl. 1.0	85 to 170 [e]
	1/2H	C 7250 PS-1/2H C 7250 RS-1/2H	0.10 or over up to and incl. 0.15	410 to 550	5 min.	0.10 or over up to and incl. 1.0	180° or W	Thickness × 1	0.10 or over up to and incl. 1.0	115 to 180 [e]
			Over 0.15 up to and incl. 1.0		9 min.					
	H	C 7250 PS-H C 7250 RS-H	0.10 or over up to and incl. 0.15	465 to 625	5 min.	0.10 or over up to and incl. 1.0	180° or W	Thickness × 1	0.10 or over up to and incl. 1.0	140 to 210 [e]
			Over 0.15 up to and incl. 1.0		7 min.					
	EH	C 7250 PS-EH C 7250 RS-EH	0.10 or over up to and incl. 1.0	515 to 655	5 min.	0.10 or over up to and incl. 1.0	180° or W	Thickness × 1.5	0.10 or over up to and incl. 1.0	160 to 220 [e]
	SH	C 7250 PS-SH C 7250 RS-SH	0.10 or over up to and incl. 1.0	550 to 690	5 min.	0.10 or over up to and incl. 1.0	180° or W	Thickness × 1.5	0.10 or over up to and incl. 1.0	170 to 230 [e]
	ESH [h]	C 7250 PS-ESH C 7250 RS-ESH	0.10 or over up to and incl. 1.0	600 to 725	5 min.	—	—	—	0.10 or over up to and incl. 1.0	185 to 240 [e]
	SSH [i]	C 7250 PS-SSH C 7250 RS-SSH	0.10 or over up to and incl. 1.0	690 min.	—	—	—	—	0.10 or over up to and incl. 1.0	220 min. [e]

NOTE 1 N/mm^2 = 1 MPa

Notes [a] The bend test and the hardness test are not applicable to the plates and strips, if their thicknesses deviate from the values required in the relevant tests.

[b] The values shall be rounded to the integers.

[c] Test conditions of bend test. “W” indicates the W bend test.

[d] Applicable to the plates and strips for the electric conduction.

[e] The minimum test force shall be 1.961 N.

[f] The minimum test force shall be 4.903 N.

[g] According to the mechanical properties after annealing.

[h] Given greater tensile strength than SH by work-hardening.

[i] Given greater tensile strength than ESH by work-hardening.

Table 4 Mechanical properties of plates and strips used for pressure vessels

Alloy No.	Temper	Product designation	Thickness mm	Tensile strength [a] N/mm^2	0.2 % proof stress [a] N/mm^2	Elongation [a] %
C 1100	O	C 1100 PV-O	0.10 or over to and excl. 0.15	195 min.	69 min.	20 min.
		C 1100 PSV-O	0.15 or over to and excl. 0.50			30 min.
			0.50 or over up to and incl. 30			35 min.
		C 1100 RV-O	0.10 or over to and excl. 0.15			20 min.
		C 1100 RSV-O	0.15 or over to and excl. 0.50			30 min.
			0.50 or over up to and incl. 4.0			35 min.
C 1220	O	C 1220 PV-O	0.10 or over to and excl. 0.15	195 min.	69 min.	20 min.
		C 1220 PSV-O	0.15 or over to and excl. 0.30			30 min.
			0.30 or over up to and incl. 30			35 min
		C 1220 RV-O	0.10 or over to and excl. 0.15			20 min.
		C 1220 RSV-O	0.15 or over to and excl. 0.30			30 min.
			0.30 or over up to and incl. 3.0			35 min.
C 4640	F	C 4640 PV-F	0.80 or over up to and incl. 20	375 min.	138 min.	25 min.
			Over 20 up to and incl. 40	345 min.		
			Over 40 up to and incl. 75	315 min.		
			Over 75 up to and incl. 125		125 min.	
C 6140	O	C 6140 PV-O	4.0 or over up to and incl. 50	480 min.	207 min.	35 min.
			Over 50 up to and incl. 125	450 min.	193 min.	
C 7060	F	C 7060 PV-F	0.50 or over up to and incl. 50	275 min.	103 min.	30 min.
C 7150	F	C 7150 PV-F	0.50 or over up to and incl. 50	345 min.	138 min.	35 min.

NOTE 1 N/mm^2 = 1 MPa

Note [a] The values shall be rounded to the integers.

5.4 Grain size

The grain size of plates and strips shall be tested by **7.5**, and the minimum and maximum grain size values corresponding to the nominal grain size shall be as given in Table 5. The grain size shall be applied only when the nominal grain size is specified by the purchaser. In this case, the tensile strength and the elongation are not applicable.

Table 5 Grain size of plates and strips

Unit: mm

Alloy No.	Temper	Product designation	Thickness [a] mm	Grain size		
				Nominal	Min.	Max.
C 1020 C 1201 C 1220	O	C 1020 P-O, C 1020 PS-O C 1201 P-O, C 1201 PS-O C 1220 P-O, C 1220 PS-O	0.10 or over up to and incl. 30	—	—	0.050
		C 1020 R-O, C 1020 RS-O	0.10 or over up to and incl. 4.0			
		C 1201 R-O, C 1201 RS-O C 1220 R-O, C 1220 RS-O	0.10 or over up to and incl. 3.0			
C 2100 C 2200	O	C 2100 P-O C 2200 P-O	0.30 or over up to and incl. 30	0.050	0.035	0.090
				0.035	0.025	0.050
				0.025	0.015	0.035
				0.015	—	0.025
		C 2100 R-O, C 2100 RS-O C 2200 R-O, C 2200 RS-O	0.30 or over up to and incl. 3.0	0.050	0.035	0.090
				0.035	0.025	0.050
				0.025	0.015	0.035
				0.015	—	0.025
C 2300 C 2400	O	C 2300 P-O C 2400 P-O	0.30 or over up to and incl. 30	0.070	0.050	0.100
				0.050	0.035	0.070
				0.035	0.025	0.050
				0.025	0.015	0.035
				0.015	0.010	0.025
				0.010	—	0.015
		C 2300 R-O, C 2300 RS-O C 2400 R-O, C 2400 RS-O	0.30 or over up to and incl. 3.0	0.070	0.050	0.100
				0.050	0.035	0.070
				0.035	0.025	0.050
				0.025	0.015	0.035
				0.015	0.010	0.025
				0.010	—	0.015
C 2600 C 2680	O	C 2600 P-O C 2680 P-O	0.10 or over up to and incl. 30	0.120	0.070	—
				0.070	0.050	0.120
				0.050	0.035	0.070
				0.035	0.025	0.050
				0.025	0.015	0.035
				0.015	0.010	0.025
				0.010	—	0.015
		C 2600 R-O, C 2600 RS-O C 2680 R-O, C 2680 RS-O	0.10 or over up to and incl. 3.0	0.120	0.070	—
				0.070	0.050	0.120
				0.050	0.035	0.070
				0.035	0.025	0.050
				0.025	0.015	0.035
				0.015	0.010	0.025
				0.010	—	0.015

Note [a] The test is not applicable to the plates and strips, if their thicknesses deviate from the values required in the relevant tests.

5.5 Electric conductivity and volume resistivity

The plates and strips for the electric conduction shall be tested by **7.6**, and the resultant electric conductivity and volume resistivity shall be as given in Table 6 and Table 7. These electric conductivity and volume resistivity are applicable only when requested by the purchaser.

Table 6 Electric conductivity of plates and strips for electric conduction

Alloy No.	Temper	Product designation	Thickness [a] mm	Electric conductivity (20 °C) %IACS [b] [c]
C 1020 C 1100	O	C 1020 PC-O, C 1020 PSC-O C 1100 PC-O, C 1100 PSC-O	0.10 or over up to and incl. 0.30	98 min.
			Over 0.30 up to and incl. 0.50	99 min.
			Over 0.50 up to and incl. 30	100 min.
		C 1020 RC-O, C 1020 RSC-O C 1100 RC-O, C 1100 RSC-O	0.10 or over up to and incl. 0.30	98 min.
			Over 0.30 up to and incl. 0.50	99 min.
			Over 0.50 up to and incl. 4.0	100 min.
	1/4H	C 1020 PC-1/4H, C 1020 PSC-1/4H C 1100 PC-1/4H, C 1100 PSC-1/4H	0.10 or over up to and incl. 2.0	97 min.
			Over 2.0 up to and incl. 30	98 min.
		C 1020 RC-1/4H, C 1020 RSC-1/4H C 1100 RC-1/4H, C 1100 RSC-1/4H	0.10 or over up to and incl. 2.0	97 min.
			Over 2.0 up to and incl. 4.0	98 min.
	1/2H	C 1020 PC-1/2H, C 1020 PSC-1/2H C 1100 PC-1/2H, C 1100 PSC-1/2H	0.10 or over up to and incl. 2.0	97 min.
			Over 2.0 up to and incl. 20	98 min.
		C 1020 RC-1/2H, C 1020 RSC-1/2H C 1100 RC-1/2H, C 1100 RSC-1/2H	0.10 or over up to and incl. 2.0	97 min.
			Over 2.0 up to and incl. 4.0	98 min.
	H	C 1020 PC-H, C 1020 PSC-H C 1100 PC-H, C 1100 PSC-H	0.10 or over up to and incl. 2.0	96 min.
			Over 2.0 up to and incl. 10	97 min.
		C 1020 RC-H, C 1020 RSC-H C 1100 RC-H, C 1100 RSC-H	0.10 or over up to and incl. 2.0	96 min.
			Over 2.0 up to and incl. 4.0	97 min.
C 1441	O	C 1441 PSC-O, C 1441 RSC-O	0.10 or over up to and incl. 3.0	78 min.
	1/4H	C 1441 PSC-1/4H, C 1441 RSC-1/4H		
	1/2H	C 1441 PSC-1/2H, C 1441 RSC-1/2H		
	H	C 1441 PSC-H, C 1441 RSC-H		
C 1510	1/4H	C 1510 PSC-1/4H, C 1510 RSC-1/4H	0.10 or over up to and incl. 3.0	90 min.
	1/2H	C 1510 PSC-1/2H, C 1510 RSC-1/2H		
	3/4H	C 1510 PSC-3/4H, C 1510 RSC-3/4H		
	H	C 1510 PSC-H, C 1510 RSC-H		
	EH	C 1510 PSC-EH, C 1510 RSC-EH		
	SH	C 1510 PSC-SH, C 1510 RSC-SH		
C 1921	O	C 1921 PSC-O, C 1921 RSC-O	0.10 or over up to and incl. 3.0	85 min.
	1/4H	C 1921 PSC-1/4H, C 1921 RSC-1/4H		
	1/2H	C 1921 PSC-1/2H, C 1921 RSC-1/2H		
	H	C 1921 PSC-H, C 1921 RSC-H		
	SH	C 1921 PSC-SH, C 1921 RSC-SH	0.10 or over up to and incl. 3.0	83 min.

Table 6 (concluded)

Alloy No.	Temper	Product designation	Thickness [a] mm	Electric conductivity (20 °C) %IACS [b] [c]
C 1940	O3	C 1940 PSC-O3, C 1940 RSC-O3	0.10 or over up to and incl. 3.0	60 min.
	O2	C 1940 PSC-O2, C 1940 RSC-O2		
	O1	C 1940 PSC-O1, C 1940 RSC-O1		
	1/2H	C 1940 PSC-1/2H, C 1940 RSC-1/2H		
	H	C 1940 PSC-H, C 1940 RSC-H		
	EH	C 1940 PSC-EH, C 1940 RSC-EH		
	SH	C 1940 PSC-SH, C 1940 RSC-SH		
	ESH	C 1940 PSC-ESH, C 1940 RSC-ESH		
	SSH	C 1940 PSC-SSH, C 1940 RSC-SSH	0.10 or over up to and incl. 3.0	50 min.

Notes [a] The test is not applicable to the plates and strips, if their thicknesses deviated from the values required in the relevant tests.

[b] IACS refers to International Annealed Copper Standard, of which the electric conductivity is defined as being 100 %IACS.

[c] The values shall be rounded to the integers.

Table 7 Volume resistivity of plates and strips for electric conduction

Alloy No.	Product designation	Thickness [a)] mm	Volume resistivity (20 °C) [b)] μΩcm
C 2600	C 2600 PC-O, C 2600 PC-1/4H	0.10 or over up to and incl. 30	$6.3^{+0.7}_{-0.3}$
	C 2600 PC-1/2H, C 2600 PC-3/4H	0.10 or over up to and incl. 20	
	C 2600 PC-H, C 2600 PC-EH C 2600 PC-SH, C 2600 PC-ESH	0.10 or over up to and incl. 10	
	C 2600 RC-O, C 2600 RSC-O C 2600 RC-1/4H, C 2600 RSC-1/4H C 2600 RC-1/2H, C 2600 RSC-1/2H C 2600 RC-3/4H, C 2600 RSC-3/4H C 2600 RC-H, C 2600 RSC-H C 2600 RC-EH, C 2600 RSC-EH C 2600 RC-SH, C 2600 RSC-SH C 2600 RC-ESH, C 2600 RSC-ESH	0.10 or over up to and incl. 3.0	
C 2680	C 2680 PC-O, C 2680 PC-1/4H	0.10 or over up to and incl. 30	$6.5^{+0.7}_{-0.3}$
	C 2680 PC-1/2H, C 2680 PC-3/4H	0.10 or over up to and incl. 20	
	C 2680 PC-H, C 2680 PC-EH C 2680 PC-SH, C 2680 PC-ESH	0.10 or over up to and incl. 10	
	C 2680 RC-O, C 2680 RSC-O C 2680 RC-1/4H, C 2680 RSC-1/4H C 2680 RC-1/2H, C 2680 RSC-1/2H C 2680 RC-3/4H, C 2680 RSC-3/4H C 2680 RC-H, C 2680 RSC-H C 2680 RC-EH, C 2680 RSC-EH C 2680 RC-SH, C 2680 RSC-SH C 2680 RC-ESH, C 2680 RSC-ESH	0.10 or over up to and incl. 3.0	
C 2801	C 2801 PC-O, C 2801 PC-1/4H	0.30 or over up to and incl. 30	$6.4^{+0.7}_{-0.3}$
	C 2801 PC-1/2H	0.30 or over up to and incl. 20	
	C 2801 PC-H	0.30 or over up to and incl. 10	
	C 2801 RC-O, C 2801 RSC-O C 2801 RC-1/4H, C 2801 RSC-1/4H C 2801 RC-1/2H, C 2801 RSC-1/2H C 2801 RC-H, C 2801 RSC-H	0.30 or over up to and incl. 3.0	

Notes [a)] The test is not applicable to the plates and strips, if their thicknesses deviate from the values required in the relevant tests.

[b)] Values shall be rounded to the first decimal place.

5.6 Hydrogen embrittlement

Plates and strips of C 1020 and C 1201, when the hydrogen embrittlement test specified in **7.7** is carried out, shall not develop the numerous bubbles from the vicinity of grain boundaries or the structure indicating grain boundary separations typical to the hydrogen embrittlement. However, for plates and strips of C 1201, this test shall be applied only when requested by the purchaser.

5.7 Mechanical properties and other properties

The items of mechanical properties (tensile strength, proof stress, elongation, bendability and hardness) and other properties applicable to the plates and strips are shown in Annex A for reference.

6 Dimensions and tolerances, and permissible value on shape

6.1 Dimensions

The dimensions of plates and strips are within the applicable dimension range given in Table 8.

The representative dimensions of plates are as given in Table B.1.

6.2 Internal diameters of coil of strips

The representative internal diameters of coil of strips are as given in Table B.2.

6.3 Dimensional tolerances

The dimensional tolerances of plates and strips are as given in Table 8 according to each alloy No. and applicable dimensions.

Table 8 Tables specifying tolerances for applicable dimensions of plates and strips

Unit: mm

Shape	Alloy No.	Applicable dimensions				Tables for applicable tolerances			
		Thickness	Width	Length	Diameter (circular plate)	Thick-ness	Width	Length	Diameter (circular plate)
Plate	C 1020	0.10 or over up to and incl. 30	1 250 max.	3 500 max.	—	Table 9 [a)]	Table 15	Table 21	—
	C 1100, C 1201, C 1220	0.10 or over up to and incl. 30	2 500 max.	3 500 max.	2 500 max.	Table 10 [b)]			Table 19
	C 1441, C 1510, C 1921, C 1940	0.10 or over up to and incl. 3.0	700 max.	3 500 max.	—	Table 10			—
	C 7250	0.10 or over up to and incl. 1.0							
	C 2100, C 2200, C 2300, C 2400	0.30 or over up to and incl. 30	2 500 max.	3 500 max.	2 500 max.	Table 9			Table 19
	C 2600, C 2680	0.10 or over up to and incl. 30							
	C 2720, C 2801	0.30 or over up to and incl. 30			—				—
	C 4250								
	C 3710, C 3713	0.30 or over up to and incl. 10	1 000 max.	3 000 max.	—				
	C 4621, C 4640	0.80 or over up to and incl. 125	4 000 max.	7 000 max.	3 500 max.				Table 20
	C 6140, C 6161, C 6280	0.80 or over up to and incl. 125	3 000 max.	7 000 max.	3 000 max.	Table 11			
	C 7060, C 7150	0.50 or over up to and incl. 50	3 000 max.	7 000 max.	3 000 max.				

Table 8 (concluded)

Unit: mm

Shape	Alloy No.	Applicable dimensions				Tables for applicable tolerances			
		Thickness	Width	Length	Diameter (circular plate)	Thick-ness	Width	Length	Diameter (circular plate)
Strip	C 1020, C 1100	0.10 or over up to and incl. 4.0	700 max.	—	—	Table 12 [a)]	Table 16 [a)]	—	—
	C 1201, C 1220	0.10 or over up to and incl. 3.0				Table 13 [b)]	Table 17 [b)]		
	C 2100, C 2200, C 2300, C 2400	0.30 or over up to and incl. 3.0							
	C 2600, C 2680	0.10 or over up to and incl. 3.0							
	C 2720, C 2801, C 4250	0.30 or over up to and incl. 3.0							
	C 1441, C 1510, C 1921, C 1940	0.10 or over up to and incl. 3.0	700 max.	—	—	Table 13	Table 17		
	C 7250	0.10 or over up to and incl. 1.0							
	C 2051	0.20 or over up to and incl. 0.60	100 max.	—	—	Table 14	Table 18		
	C 3710, C 3713	0.30 or over up to and incl. 2.0	700 max.	—	—	Table 12	Table 16		
	C 4450	0.30 or over up to and incl. 3.0	700 max.	—	—				

Notes [a)] Applicable to plates and strips of common class.
[b)] Applicable to plates and strips of special class.

a) **Tolerances on thickness** The tolerances on thickness of plates and strips shall be as given in Table 9 to Table 14.

Table 9 Tolerances on thickness of plates (common class)

This table is applicable to the designations, C 1020 P, C 1100 P, C 1201 P, C 1220 P, C 2100 P, C 2200 P, C 2300 P, C 2400 P, C 2600 P, C 2680 P, C 2720 P, C 2801 P, C 3710 P, C 3713 P, C 4250 P, C 4621 P and C 4640 P.

Unit: mm

Thickness	Width or diameter (circular plate)									
	400 or under	Over 400 up to and incl. 700	Over 700 up to and incl. 1 000	Over 1 000 up to and incl. 1 250	Over 1 250 up to and incl. 1 500	Over 1 500 up to and incl. 1 750	Over 1 750 up to and incl. 2 000	Over 2 000 up to and incl. 2 500	Over 2 500 up to and incl. 3 000	Over 3 000 up to and incl. 4 000
0.10 or over up to and incl. 0.15	±0.02	—	—	—	—	—	—	—	—	—
Over 0.15 up to and incl. 0.25	±0.02	±0.03	—	—	—	—	—	—	—	—
Over 0.25 up to and incl. 0.35	±0.03	±0.04	±0.06	—	—	—	—	—	—	—
Over 0.35 up to and incl. 0.50	±0.04	±0.05	±0.07	±0.08	—	—	—	—	—	—
Over 0.50 up to and incl. 0.80	±0.04	±0.06	±0.08	±0.10	±0.15	—	—	—	—	—
Over 0.80 up to and incl. 1.2	±0.05	±0.08	±0.10	±0.12	±0.16	—	—	—	—	—
Over 1.2 up to and incl. 2.0	±0.06	±0.10	±0.12	±0.15	±0.18	±0.28	±0.35	—	—	—
Over 2.0 up to and incl. 3.2	±0.08	±0.12	±0.15	±0.18	±0.22	±0.33	±0.40	±0.50	—	—
Over 3.2 up to and incl. 5	±0.10	±0.15	±0.18	±0.22	±0.28	±0.40	±0.45	±0.60	—	—
Over 5 up to and incl. 8	±0.13	±0.18	±0.23	±0.26	±0.34	±0.45	±0.55	±0.80	—	—
Over 8 up to and incl. 12	±0.18	±0.25	±0.28	±0.33	±0.40	±0.60	±0.70	±1.0	±1.3	±1.5
Over 12 up to and incl. 20	±0.23	±0.32	±0.35	±0.40	±0.50	±0.75	±0.85	±1.2	±1.5	±1.7
Over 20 up to and incl. 125	±1.3 % a)	±1.8 % a)	±2.2 % a)	±2.5 % a)	±3.3 % a)	±3.8 % a)	±4.3 % a)	±6.0 % a)	±7.5 % a)	±8.5 % a)

Note a) The percentage value indicates the ratio to the thickness.

Table 10 Tolerances on thickness of plates (special class)

This table is applicable to the designations, C 1020 PS, C 1100 PS, C 1201 PS, C 1220 PS, C 1441 PS, C 1510 PS, C 1921 PS, C 1940 PS and C 7250 PS.

Unit: mm

Thickness	Width		
	100 or under	Over 100 up to and incl. 300	Over 300 up to and incl. 700
0.10 or over up to and incl. 0.15	±0.008	±0.010	±0.015
Over 0.15 up to and incl. 0.25	±0.010	±0.015	±0.020
Over 0.25 up to and incl. 0.35	±0.015	±0.020	±0.025
Over 0.35 up to and incl. 0.50	±0.020	±0.025	±0.030
Over 0.50 up to and incl. 0.80	±0.025	±0.030	±0.035
Over 0.80 up to and incl. 1.2	±0.030	±0.035	±0.040
Over 1.2 up to and incl. 2.0	±0.040	±0.045	±0.050
Over 2.0 up to and incl. 3.0	±0.050	±0.055	±0.060

Table 11 Tolerances on thickness of plates

This table is applicable to the designations, C 6140 P, C 6161 P, C 6280 P, C 7060 P and C 7150 P.

Unit: mm

Thickness	Width or diameter (circular plate)						
	400 or under	Over 400 up to and incl. 700	Over 700 up to and incl. 1 000	Over 1 000 up to and incl. 1 250	Over 1 250 up to and incl. 1 500	Over 1 500 up to and incl. 2 500	Over 2 500 up to and incl. 3 000
0.50 or over up to and incl. 0.80	±0.07	±0.10	±0.13	—	—	—	—
Over 0.80 up to and incl. 1.2	±0.08	±0.13	±0.16	—	—	—	—
Over 1.2 up to and incl. 2.0	±0.12	±0.17	±0.20	±0.24	±0.30	—	—
Over 2.0 up to and incl. 3.2	±0.15	±0.21	±0.25	±0.28	±0.35	—	—
Over 3.2 up to and incl. 5	±0.24	±0.26	±0.30	±0.36	±0.40	—	—
Over 5 up to and incl. 8	±0.30	±0.30	±0.35	±0.40	±0.45	—	—
Over 8 up to and incl. 12	±0.50	±0.50	±0.60	±0.70	±0.70	±1.0	±1.2
Over 12 up to and incl. 20	±0.70	±0.70	±0.80	±0.80	±0.80	±1.0	±1.2
Over 20 up to and incl. 35	±0.90	±0.90	±1.0	±1.0	±1.0	±1.2	±1.2
Over 35 up to and incl. 50	±1.1	±1.1	±1.2	±1.4	±1.4	±1.6	±1.7
Over 50 up to and incl. 75	±1.3	±1.3	±1.4	±1.6	±1.6	±3.5 % [a)]	±4.5 % [a)]
Over 75 up to and incl. 125	±1.5	±1.5	±1.5	±1.6	±1.6	±3.5 % [a)]	±4.5 % [a)]
Note [a)] The percentage value indicates the ratio to the thickness.							

Table 12 Tolerances on thickness of strips (common class)

This table is applicable to the designations, C 1020 R, C 1100 R, C 1201 R, C 1220 R, C 2100 R, C 2200 R, C 2300 R, C 2400 R, C 2600 R, C 2680 R, C 2720 R, C 2801 R, C 3710 R, C 3713 R, C 4250 R and C 4450 R.

Unit: mm

Thickness	Width			
	200 or under	Over 200 up to and incl. 300	Over 300 up to and incl. 400	Over 400 up to and incl. 700
0.10 or over up to and incl. 0.15	±0.01	±0.02	±0.02	±0.02
Over 0.15 up to and incl. 0.25	±0.02	±0.02	±0.02	±0.03
Over 0.25 up to and incl. 0.35	±0.02	±0.03	±0.03	±0.04
Over 0.35 up to and incl. 0.50	±0.03	±0.03	±0.04	±0.05
Over 0.50 up to and incl. 0.80	±0.03	±0.04	±0.04	±0.06
Over 0.80 up to and incl. 1.2	±0.04	±0.05	±0.05	±0.07
Over 1.2 up to and incl. 2.0	±0.05	±0.06	±0.06	±0.08
Over 2.0 up to and incl. 3.0	±0.06	±0.07	±0.08	±0.10
Over 3.0 up to and incl. 4.0	±0.07	±0.08	±0.10	±0.12

Table 13 Tolerances on thickness of strips (special class)

This table is applicable to the designations, C 1020 RS, C 1100 RS, C 1201 RS, C 1220 RS, C 1441 RS, C 1510 RS, C 1921 RS, C 1940 RS, C 2100 RS, C 2200 RS, C 2300 RS, C 2400 RS, C 2600 RS, C 2680 RS, C 2720 RS, C 2801 RS, C 4250 RS and C 7250 RS.

Unit: mm

Thickness	Width		
	100 or under	Over 100 up to and incl. 300	Over 300 up to and incl. 700
0.10 or over up to and incl. 0.15	±0.008	±0.010	±0.015
Over 0.15 up to and incl. 0.25	±0.010	±0.015	±0.020
Over 0.25 up to and incl. 0.35	±0.015	±0.020	±0.025
Over 0.35 up to and incl. 0.50	±0.020	±0.025	±0.030
Over 0.50 up to and incl. 0.80	±0.025	±0.030	±0.035
Over 0.80 up to and incl. 1.2	±0.030	±0.035	±0.040
Over 1.2 up to and incl. 2.0	±0.040	±0.045	±0.050
Over 2.0 up to and incl. 3.0	±0.050	±0.055	±0.060

Table 14 Tolerances on thickness of strips

This table is applicable to the designation, C 2051 R.

Unit: mm

Thickness	Width	
	50 or under	Over 50 up to and incl. 100
0.20 or over up to and incl. 0.40	±0.015	±0.020
Over 0.40 up to and incl. 0.50	±0.020	±0.025
Over 0.50 up to and incl. 0.60	±0.025	±0.030

b) **Tolerances on width** The tolerances on width of plates shall be as given in Table 15 according to the cutting method.

The tolerances on the width of strips (except alloy No. C 2051) shall be as given in Table 16 or Table 17. The tolerances on width of alloy No. C 2051 shall be as given in Table 18.

Table 15 Tolerances on width of plates

This table is applicable to the designations, C 1020 P, C 1100 P, C 1201 P, C 1220 P, C 2100 P, C 2200 P, C 2300 P, C 2400 P, C 2600 P, C 2680 P, C 2720 P, C 2801 P, C 3710 P, C 3713 P, C 4250 P, C 4621 P, C 4640 P, C 6140 P, C 6161 P, C 6280 P, C 7060 P, C 7150 P, C 1020 PS, C 1100 PS, C 1201 PS, C 1220 PS, C 1441 PS, C 1510 PS, C 1921 PS, C 1940 PS and C 7250 PS.

Unit: mm

Thickness	Cutting method and width								
	Slittering			Shearing			Sawing		
	300 or under	Over 300 up to and incl. 700	Over 700 up to and incl. 1 250	1 000 or under	Over 1 000 up to and incl. 2 500	Over 2 500 up to and incl. 4 000	1 500 or under	Over 1 500 up to and incl. 2 500	Over 2 500 up to and incl. 4 000
0.10 or over up to and incl. 0.35	±0.3	±0.8	—	+3 0	—	—	—	—	—
Over 0.35 up to and incl. 0.80	±0.4	±0.8	±1.5	+3 0	+5 0				
Over 0.80 up to and incl. 3.0	±0.5	±0.8	±1.5	+5 0	+10 0				
Over 3.0 up to and incl. 5	±0.8	±1.0	±1.5						
Over 5 up to and incl. 8	—	—					±2		
Over 8 up to and incl. 25				+10 0	+15 0	+12 % 0 [a)]	±2	±3	±5
Over 25 up to and incl. 125				—	—	—			
Note [a)] The percentage value indicates the ratio to the width.									

Table 16 Tolerances on width of strips (common class)

This table is applicable to the designations, C 1020 R, C 1100 R, C 1201 R, C 1220 R, C 2100 R, C 2200 R, C 2300 R, C 2400 R, C 2600 R, C 2680 R, C 2720 R, C 2801 R, C 3710 R, C 3713 R, C 4250 R and C 4450 R.

Unit: mm

Thickness	Width				
	100 or under	Over 100 up to and incl. 200	Over 200 up to and incl. 300	Over 300 up to and incl. 600	Over 600 up to and incl. 700
0.10 or over up to and incl. 0.50	±0.2	±0.2	±0.3	±0.5	±0.8
Over 0.50 up to and incl. 2.0	±0.3	±0.3	±0.4	±0.6	±0.8
Over 2.0 up to and incl. 3.0	±0.5	±0.5	±0.5	±0.6	±0.8
Over 3.0 up to and incl. 4.0	±0.6	±0.7	±0.8	±0.8	±1.0

Table 17 Tolerances on width of strips (special class)

This table is applicable to the designations, C 1020 RS, C 1100 RS, C 1201 RS, C 1220 RS, C 1441 RS, C 1510 RS, C 1921 RS, C 1940 RS, C 2100 RS, C 2200 RS, C 2300 RS, C 2400 RS, C 2600 RS, C 2680 RS, C 2720 RS, C 2801 RS, C 4250 RS and C 7250 RS.

Unit: mm

Thickness	Width			
	50 or under	Over 50 up to and incl. 100	Over 100 up to and incl. 300	Over 300 up to and incl. 700
0.10 or over up to and incl. 0.50	±0.08	±0.10	±0.2	±0.5
Over 0.50 up to and incl. 1.0	±0.10	±0.15	±0.2	±0.5
Over 1.0 up to and incl. 3.0	±0.15	±0.20	±0.3	±0.5

Table 18 Tolerances on width of strips

This table is applicable to the designation, C 2051 R.

Unit: mm

Thickness	Width	
	50 or under	Over 50 up to and incl. 100
0.20 or over up to and incl. 0.40	+0.25 0	+0.40 0
Over 0.40 up to and incl. 0.60	+0.40 0	+0.60 0

c) **Tolerances on diameter** The tolerances on diameter of circular plates shall be as given in Table 19 and Table 20.

Table 19 Tolerances on diameter of circular plates

This table is applicable to the designations, C 1100 P, C 1201 P, C 1220 P, C 2100 P, C 2200 P, C 2300 P, C 2400 P, C 2600 P, C 2680 P, C 2720 P and C 2801 P.

Unit: mm

Processing method	Diameter				
	400 or under	Over 400 up to and incl. 700	Over 700 up to and incl. 1 000	Over 1 000 up to and incl. 2 000	Over 2 000 up to and incl. 2 500
Cutting	±0.5	±0.6	±0.8	±1.0	±1.5
Punching or shearing	±0.8	±1.2	±2.8	—	—

Table 20 Tolerances on diameter of circular plates

This table is applicable to the designations, C 4621 P, C 4640 P, C 6140 P, C 6161 P, C 6280 P, C 7060 P and C 7150 P.

Unit: mm

Processing method	Diameter	Tolerances
Cutting	1 000 or under	+1.5 0
	Over 1 000 up to and incl. 2 000	+2.0 0
	Over 2 000 up to and incl. 3 000	+3.0 0
	Over 3 000 up to and incl. 3 500	+4.0 0

d) **Tolerances on length of plates** The tolerances on length of plates shall be as given in Table 21.

Table 21 Tolerances on length of plates

This table is applicable to the designations, C 1020 P, C 1100 P, C 1201 P, C 1220 P, C 2100 P, C 2200 P, C 2300 P, C 2400 P, C 2600 P, C 2680 P, C 2720 P, C 2801 P, C 3710 P, C 3713 P, C 4250 P, C 4621 P, C 4640 P, C 6140 P, C 6161 P, C 6280 P, C 7060 P, C 7150 P, C 1020 PS, C 1100 PS, C 1201 PS, C 1220 PS, C 1441 PS, C 1510 PS, C 1921 PS, C 1940 PS and C 7250 PS.

Unit: mm

Thickness	Length			
	2 000 or under	Over 2 000 up to and incl. 3 500	Over 3 500 up to and incl. 5 000	Over 5 000 up to and incl. 7 000
0.10 or over up to and incl. 0.80	+5 0	+10 0	—	—
Over 0.80 up to and incl. 8	+10 0	+15 0	—	—
Over 8 up to and incl. 125	+15 0	+15 0	+20 0	+25 0

6.4 Permissible value on camber of strips

The permissible values on camber of strips shall be as given in Table 22 and Table 23. The camber of strip is defined as the depth of arc over any reference length of 1 000 mm, as given in Figure 1.

The permissible value of camber for the strips of under 6 mm in width shall be at the discretion of the manufacturer. If specially required, it may be upon the agreement between the purchaser and the manufacturer.

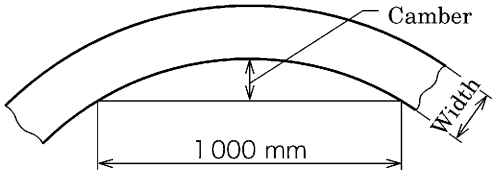

Figure 1 Camber of strip

Table 22 Permissible values on camber of strips (common class)

This table is applicable to the designations, C 1020 R, C 1100 R, C 1201 R, C 1220 R, C 2051 R, C 2100 R, C 2200 R, C 2300 R, C 2400 R, C 2600 R, C 2680 R, C 2720 R, C 2801 R, C 3710 R, C 3713 R, C 4250 R and C 4450 R.

Unit: mm

Width	Permissible value (in any 1 000 reference length)	
	Thickness	
	0.10 or over up to and incl. 0.60	Over 0.60 up to and incl. 4.0
6 or over up to and incl. 9	9 max.	12 max.
Over 9 up to and incl. 13	6 max.	10 max.
Over 13 up to and incl. 25	4 max.	7 max.
Over 25 up to and incl. 50	3 max.	5 max.
Over 50 up to and incl. 100	2 max.	4 max.
Over 100 up to and incl. 700	1 max.	3 max.

Table 23 Permissible values on camber of strips (special class)

This table is applicable to the designations, C 1020 RS, C 1100 RS, C 1201 RS, C 1220 RS, C 1441 RS, C 1510 RS, C 1921 RS, C 1940 RS, C 2100 RS, C 2200 RS, C 2300 RS, C 2400 RS, C 2600 RS, C 2680 RS, C 2720 RS, C 2801 RS, C 4250 RS and C 7250 RS.

Unit: mm

Width	Permissible value (in any 1 000 reference length)
	Thickness 0.10 or over up to and incl. 3.0
6 or over up to and incl. 9	5 max.
Over 9 up to and incl. 13	4 max.
Over 13 up to and incl. 50	3 max.
Over 50 up to and incl. 100	2 max.
Over 100 up to and incl. 700	1 max.

6.5 Permissible value of flatness of plates

The permissible value of flatness of plates shall be as given in Table 24.

The flatness of a plate is determined as the depth of an arc over any 1 000 mm reference length of the plate, measured with the plate placed on a flat surface with its face up as given in Figure 2.

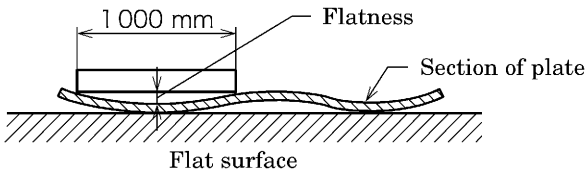

Figure 2 Flatness of plate

Table 24 Permissible value of flatness of plates

This table is applicable to the designations, C 4621 P, C 4640 P, C 6140 P, C 6161 P, C 6280 P, C 7060 P and C 7150 P.

Unit: mm

Finishing method	Thickness	Length or diameter	Permissible value (in any 1 000 length)		
			C 4621 P, C 4640 P	C 6140 P, C 6161 P, C 6280 P	C 7060 P, C 7150 P
Rolling	5 or over up to and incl. 20	2 500 or under	3.0 max.	4.0 max.	3.0 max.
		Over 2 500 up to and incl. 3 500	3.5 max.	4.5 max.	3.5 max.
		Over 3 500 up to and incl. 5 000	3.5 max.	5.0 max.	4.5 max.
		Over 5 000 up to and incl. 7 000	4.0 max.	5.0 max.	5.0 max.
	Over 20 up to and incl. 125	1 000 or under	1.2 max.	—	—
		Over 1 000 up to and incl. 1 500	1.6 max.		
		Over 1 500 up to and incl. 2 500	2.5 max.		
		Over 2 500 up to and incl. 3 500	3.0 max.		
		Over 3 500 up to and incl. 5 000	3.5 max.		
		Over 5 000 up to and incl. 7 000	5.0 max.		
Surface sharpening	15 or over up to and incl. 125	1 000 or under	1.2 max.	1.2 max.	1.2 max.
		Over 1 000 up to and incl. 1 500	1.6 max.	1.6 max.	1.6 max.
		Over 1 500 up to and incl. 2 500	2.5 max.	2.5 max.	2.5 max.
		Over 2 500 up to and incl. 3 500	3.0 max.	3.0 max.	3.0 max.
		Over 3 500 up to and incl. 5 000	3.5 max.	—	—

7 Tests

7.1 Chemical analysis

The chemical analysis shall be as follows.

a) **Sampling for chemical analysis** For chemical analysis, the sample of required amount for analysis shall be taken at the time of casting.

Alternatively, the sample may be taken from an ingot or a product.

b) **Analysis method** The chemical analysis shall be in accordance with the following standards.

JIS H 1051, **JIS H 1052**, **JIS H 1053**, **JIS H 1054**, **JIS H 1055**, **JIS H 1056**, **JIS H 1057**, **JIS H 1058**, **JIS H 1062** and **JIS H 1074**

In addition, **JIS H 1292** is applicable if the elements to be determined are specified in the said standard and they are within the determination range.

The emission spectrochemical analysis is applicable as agreed between the purchaser and the manufacturer.

7.2 Tensile test

The tensile test shall be carried out in accordance with **JIS Z 2241**. For this test, the test piece shall be taken in the rolling direction or perpendicular to the rolling direction as given in Table 25.

In the case where the sampling of tensile test piece having the specified dimensions is impracticable, the tensile test method shall be as agreed between the purchaser and the manufacturer.

Table 25 Test pieces

Unit: mm

Thickness	Test piece
20 or under	No. 5
Over 20	No. 4

7.3 Bend test

The bend test shall be as follows.

a) **Test method and sampling of test pieces** The bend test shall be carried out by the 90° bend test, 180° bend test or W bend test. The test piece used for this test shall be No. 3 test piece specified in **JIS Z 2248**, taken in the rolling direction of plate or strip. In the case of W bend test, the test piece shall be not less than 30 mm in length. The selection shall be as agreed between the purchaser and the manufacturer.

b) **90° bend test and 180° bend test** The 90° bend test and 180° bend test shall be carried out in accordance with **JIS Z 2248**.

c) **W bend test** The W bend test shall be as follows.

1) The shape and dimensions of test jig shall be as given in Figure 3.

The width of test jig shall be not less than 20 mm.

Unit: mm

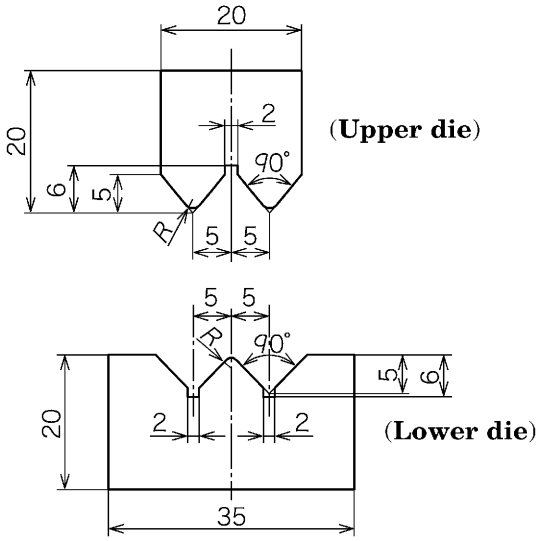

Figure 3 Jig for W bend test

2) In the W bend test, the test jig of which the radius does not exceed the internal radius of bend test specified in Table 3 shall be used.

3) The test piece shall be placed on the lower die of the test jig, the upper die is applied onto the lower die, then they are pressed and bent by hand or hydraulic pressure to the specified form. In this case, the top surface of upper die and the bottom surface of lower die of the test jig shall be parallel to each other.

7.4 Hardness test

The hardness test shall be carried out on the surface (upper surface or lower surface) of plates or strips, in accordance with **JIS Z 2244**.

7.5 Grain size test

The grain size test shall be carried out on the plane parallel to the surface (upper surface or lower surface) of plates or strips in accordance with **JIS H 0501**.

7.6 Electric conductivity test and volume resistivity test

The electric conductivity test and the volume resistivity test shall be carried out in accordance with **JIS H 0505**. In the case where the sampling of test pieces for the electric conductivity test and the volume resistivity test is impracticable, the tests may be carried out by using the eddy current conductivity meter.

7.7 Hydrogen embrittlement test

The hydrogen embrittlement test shall be carried out in such a way that the heating furnace is filled with hydrogen, the test piece is heated at 850 °C ± 25 °C for 30 min to 120 min, and the surface of the heated test piece is polished and etched to examine the grain boundaries with a microscope of 75 to 200 magnifications.

The shape of test piece, as far as it can be accommodated in the heating furnace, is not particularly specified.

8 Inspection

The inspection shall be in accordance with **JIS H 0321**, and as follows.

a) The interval between inspections shall be at the discretion of the manufacturer unless otherwise specified between the purchaser and the manufacturer.

b) The appearance shall comply with the specifications given in **5.1**.

c) The chemical composition shall comply with the specifications given in **5.2**.

d) The mechanical properties and other properties (grain size, electric conductivity and volume resistivity, and hydrogen embrittlement) shall comply with the specifications given in **5.3** to **5.6**.

e) The dimensions and dimensional tolerances shall comply with the specifications given in Clause **6**.

9 Marking

Each package, coil or product of plates and strips shall be marked by a suitable means such as labelling with the following information.

a) Number of this Standard and product designation

Example **JIS H 3100** C 1020 PS-$^1/_2$H

b) Dimensions

Example 1 For plates 0.5 mm × 365 mm × 1 200 mm (thickness × width × length)

Example 2 For strips 0.25 mm × 25.0 mm (thickness × width)

Example 3 For circular plates 5.0 mm × ϕ500 mm (thickness × diameter)

c) Serial number

d) Manufacturer's name or its identifying brand

10 Report

The manufacturer shall submit, when requested at the time of order from the purchaser, the report (certificate) containing the results of the test and/or the inspection as agreed between the purchaser and the manufacturer.

Annex A (informative)
Mechanical properties and other properties

A.1 Mechanical properties and other properties

The mechanical properties (tensile strength, proof stress, elongation, bendability and hardness) and other properties applicable to the plates and strips are given in Table A.1. In Table A.1, ○ indicates the general applicable test items, △ indicates test items requested by the purchaser, and □ indicates test items shown for reference. In the case where the item is marked with ○ but the value is not specified in Table 3, the test is not applicable.

Table A.1 Mechanical properties and other properties

Alloy No.	Mechanical properties and other properties							
	Tensile strength	Proof stress [a)]	Elonga-tion	Bendability	Hardness	Grain size [b)]	Electric conductivity Volume resistivity	Hydrogen embrittle-ment
C 1020	○	–	○	△	□	△	△	○
C 1100	○	△	○	△	□	–	△	–
C 1201	○	–	○	△	□	△	–	△
C 1220	○	△	○	△	□	△	–	–
C 1441	○	–	○	△	□	–	△	–
C 1510	○	–	○	–	□	–	△	–
C 1921	○	–	○	△	□	–	△	–
C 1940	○	–	○	–	□	–	△	–
C 2051	○	–	○	–	–	–	–	–
C 2100	○	–	○	△	–	△	–	–
C 2200	○	–	○	△	–	△	–	–
C 2300	○	–	○	△	–	△	–	–
C 2400	○	–	○	△	–	△	–	–
C 2600	○	–	○	△	□	△	△	–
C 2680	○	–	○	△	□	△	△	–
C 2720	○	–	○	△	□	–	–	–
C 2801	○	–	○	△	□	–	△	–
C 3710	○	–	○	–	–	–	–	–
C 3713	○	–	○	–	–	–	–	–
C 4250	○	–	○	△	□	–	–	–
C 4450	○	–	○	–	–	–	–	–
C 4621	○	–	○	–	–	–	–	–
C 4640	○	△	○	–	–	–	–	–
C 6140	○	△	○	–	–	–	–	–
C 6161	○	–	○	△	–	–	–	–
C 6280	○	–	○	–	–	–	–	–
C 7060	○	△	○	–	–	–	–	–
C 7150	○	△	○	–	–	–	–	–
C 7250	○	–	○	△	□	–	–	–

Notes [a)] The proof stress shall apply only to the plates and strips used for the pressure vessels (see **JIS B 8265**, **JIS B 8266** or **JIS B 8267**).

[b)] If the grain size requirement is applied, the tensile strength and the elongation requirements are not applicable.

Annex B (informative)
Representative dimensions of plates and representative internal diameters of coil of strips

B.1 Representative dimensions of plates

The representative dimensions of plates are as given in Table B.1.

NOTE The representative dimensions mean those commonly distributed in the market.

Table B.1 Representative dimensions of plates

Unit: mm

Thick-ness	Width × length		Thick-ness	Width × length	
	365 × 1 200	1 000 × 2 000		365 × 1 200	1 000 × 2 000
0.10	○	–	1.2	○◎	○
0.15	○	–	1.5	○◎	○
0.20	○	–	2.0	○◎	○
0.25	○	–	2.5	○◎	○
0.30	○	–	3.0	○◎	○
0.35	○	–	3.5	○◎	○
0.40	○◎	–	4	○◎	○
0.45	○◎	–	5	○◎	○
0.50	○◎	○	6	○◎	○
0.60	○◎	○	7	○◎	○
0.70	○◎	○	8	○◎	○
0.80	○◎	○	10	○	○
1.0	○◎	○			

The symbol ○ indicates the representative dimensions of plates of alloy numbers C 1020, C 1100, C 1201, C 1220, C 2100, C 2200, C 2300, C 2400, C 2600, C 2680, C 2720 and C 2801.

The symbol ◎ indicates the representative dimensions of plates of C 3710 and C 3713.

B.2 Representative internal diameters of coil of strips

The representative internal diameters of coil of strips are as given in Table B.2.

NOTE The representative internal diameters mean those commonly distributed in the market.

Table B.2 Representative internal diameters of coil of strips

Unit: mm

Thickness	Internal diameter of coil						
	150	200	250	300	400	450	500
0.30 or under	○	○	○	○	○	○	○
Over 0.30 up to and incl. 0.80	—	○	○	○	○	○	○
Over 0.80 up to and incl. 1.5	—	—	—	○	○	○	○
Over 1.5 up to and incl. 4.0	—	—	—	—	○	○	○
The symbol ○ indicates the representative internal diameters of coil.							

Bibliography

JIS B 8265 *Construction of pressure vessel—General principles*

JIS B 8266 *Alternative standard for construction of pressure vessels*

JIS B 8267 *Construction of pressure vessel*

Errata for JIS (English edition), if any, can be downloaded in PDF format at Webdesk (purchase information page) of our website (http://www.jsa.or.jp/).

In addition, printed errata are available in our journal of *Standardization and Quality Control*, and also in *Monthly Information* that is distributed to the subscribers of JIS (English edition).

For inquiry, please contact:
Publication and Information Unit, Japanese Standards Association
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN
TEL. 03-4231-8550 FAX. 03-4231-8665