



BSI Standards Publication

Brazing — Filler metals

National foreword

This British Standard is the UK implementation of EN ISO 17672:2024. It is identical to ISO 17672:2024. It supersedes BS EN ISO 17672:2016, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee WEE/19, Brazing and braze welding.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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European foreword

This document (EN ISO 17672:2024) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding and allied processes" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2024, and conflicting national standards shall be withdrawn at the latest by November 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 17672:2016.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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Endorsement notice

The text of ISO 17672:2024 has been approved by CEN as EN ISO 17672:2024 without any modification.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 13, *Brazing materials and processes*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding and allied processes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 17672:2016), which has been technically revised.

The main changes are as follows:

- in Clause 6, the spatter test was added;
- in 8.2.2, a NOTE on foils with a width of less than 3 mm was added;
- in Table 6, four new silver brazing filler metals were added;
- in Table 7, the range of Si was changed to 0,01 up to 0,25 (mass fraction %) if intentionally added;
- in Table 11, two new Ni-Cr-P-Si alloys were added;
- in Table A.1, the codes were updated and corresponding GB codes were added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html. Official interpretations of ISO/TC 44 documents, where they exist, are available from this page: <https://committee.iso.org/sites/tc44/home/interpretation.html>.

Brazing — Filler metals

1 Scope

This document specifies the compositional ranges of a series of filler metals used for brazing. The filler metals are divided into seven classes, related to their composition but not necessarily to the major element present.

NOTE 1 For the major element(s) present, see [Annex A](#).

In the case of composite products, such as flux-coated rods, pastes or plastics tapes, this document covers only the filler metal that forms parts of such products. The melting temperatures given in the tables are only approximate, as they necessarily vary within the compositional range of the filler metal. Therefore, they are given only for information. Technical delivery conditions are given for brazing filler metals and products containing brazing filler metals with other constituents such as flux and/or binders.

NOTE 2 For some applications, such as precious metal jewellery, aerospace and dental, filler metals other than those included in this document are often used. These are covered by other International Standards to which reference can be made.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 80000-1:2022, *Quantities and units — Part 1: General*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Composition

The filler metal shall have a composition in accordance with [Tables 5](#) to [13](#) for the particular type, except as modified for special vacuum requirements (see [Clause 4](#) and [Table 1](#)).

If the values for an element range from 0 (—) to a defined value, the element may be, but does not have to be, in that brazing filler metal.

For the purposes of determining compliance with composition limits, any value obtained from the analysis shall be rounded to the same number of decimal places as used in this document in expressing the specified limit. The following rules shall be used for rounding:

- a) When the figure immediately after the last figure to be retained is less than five, then the last figure to be retained shall be kept unchanged.

- b) When the figure immediately after the last figure to be retained is either:
- 1) greater than five; or
 - 2) equal to five and followed by at least one figure other than zero,
- the last figure to be retained shall be increased by one.
- c) When the figure immediately after the last figure to be retained is equal to five and followed by zeros only, then the last figure to be retained shall be left unchanged if even and increased by one if odd. For the purposes of determining conformity to the requirements of this document, the actual test values obtained shall be subjected to the rounding-off instructions given in ISO 80000-1:2022, Annex B.

NOTE The chemical analysis is of the bulk material, but the material can be composed of discrete powders with different individual compositions or multiple layers of roll-clad foils, where each layer can have a different individual composition.

5 Special vacuum requirement

In a few instances, which are most likely to apply to Ag 272, Pd 287, Pd 387, Pd 388, Pd 481, Pd 483, Pd 484, Pd 587, Pd 647 and Au 295, Au 375, Au 625, Au 752, Au 801 and Au 827, lower impurity limits can be required for brazing in vacuum or service in vacuum and these limits shall be as given in [Table 1](#).

Filler metals conforming to [Table 1](#) shall have the letter V added as a suffix to the codification plus the digit 1 or 2 to indicate the grade.

NOTE Grade 1 is intended for the most demanding duties, Grade 2 for less demanding duties.

Table 1 — Impurity limits for special vacuum requirements

Impurity	Limit max. mass fraction %	
	Grade 1	Grade 2
C ^a	0,005	0,005
Cd	0,001	0,002
P	0,002	0,002 ^b
Pb	0,002	0,002
Zn	0,001	0,002
Mn ^c	0,001	0,002
In ^c	0,002	0,003
All other elements where vapour pres- sure at 500 °C is > 1,3 × 10 ⁻⁵ Pa ^d	0,001	0,002
^a For filler metal Ag 272 (see Table 6), lower levels can be available by agreement between the purchaser and the supplier.		
^b For filler metal Ag 272, 0,02 % maximum.		
^c Except where otherwise specified in Tables 5 to 13 .		
^d Examples of such elements are Ca, Cs, K, Li, Mg, Na, Rb, S, Sb, Se, Sr, Te and Tl. For such elements (including Cd, Pb and Zn), the total is limited to 0,010 %.		

6 Chemical analysis

Chemical analyses shall be carried out by any suitable method but, in the case of many brazing alloys, the use of reference materials can be essential, as agreed between the purchaser and the supplier. Analysis is only required to be carried out routinely for those elements for which specific limits are shown. If, however, the presence of other elements is suspected or in the course of routine analysis is indicated to be in excess of

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the limits laid down for unnamed elements or would bring the total of impurities above the specified limit, further analyses shall be carried out for such elements.

To determine the oxide content of brazing filler metals for vacuum applications, a spatter test may be performed, see Reference [3].

7 Designation

The filler metal shall be designated by the description “filler metal,” reference to this document (i.e. ISO 17672) and a code. Details of the two options for the code system used are given in [Annex A](#).

As an example, the designations of an aluminium filler metal containing 11 % to 13 % Si, in accordance with this document, can be made in one of the following ways:

EXAMPLE 1 Filler metal ISO 17672-Al 112

where

“Filler metal”	is the description;
“ISO 17672”	is the reference to this document;
“Al 112”	is the short code given in Tables 5 to 13 .

EXAMPLE 2 Filler metal ISO 17672-B-Al88Si-575/585

where

“Filler metal”	is the description;
“ISO 17672”	is the reference to this document;
“B”	denotes brazing;
“Al88Si-575/585”	is the code in accordance with ISO 3677.

8 Technical delivery conditions

8.1 Types of product

The form of the material shall be agreed between the purchaser and the manufacturer or supplier at the time of placing the order.

NOTE Brazing filler metals are available as rod, wire, foil (or preforms made from them) or powder, although not all filler metals are necessarily available in every type of product. They are also available as a constituent of brazing pastes or, particularly in the case of aluminium brazing filler metals, clad onto one or both sides of an alloy sheet. Rods and wire can be completely or partially coated or cored with flux.

8.2 Dimensions

8.2.1 General

Dimensions and tolerances for foils (see [8.2.2](#)), rods (see [8.2.3](#)) and, to a lesser extent, wires (see [8.2.4](#)) are defined. For other forms and dimensions not listed in the respective tables, the purchaser and the manufacturer or supplier shall agree on the dimensions and tolerances at the time of placing the order.

8.2.2 Foils

The tolerances for thickness, width and camber are given in [Tables 2, 3](#) and [4](#).

Table 2 — Thickness tolerance for foils

Thickness nominal size mm		Limits of thickness related to width over 1 mm (nominal size)
over	to	
—	0,05	±10 %
0,05	0,1	±0,005 mm
0,1	0,2	±0,010 mm
0,2	0,3	±0,015 mm
0,3	0,4	±0,018 mm
0,4	0,5	±0,020 mm
0,5	0,8	±0,025 mm
0,8	1,2	±0,030 mm
1,2	2,0	±0,035 mm

Table 3 — Width tolerance for foils

Thickness nominal size mm		Limits of width related to width (nominal size) mm		
over	to	to 50 mm	over 50 mm to 100 mm	over 100 mm
—	0,1	+0,2 0	+0,3 0	+0,4 0
0,1	1,0	+0,2 0	+0,3 0	+0,4 0
1,0	2,0	+0,3 0	+0,4 0	+0,5 0

Table 4 — Camber tolerance for foils

Thickness nominal size mm		Max. camber for width nominal size mm/m				
over	to	from 3 mm to 10 mm	over 10 mm to 15 mm	over 15 mm to 30 mm	over 30 mm to 50 mm	over 50 mm
—	0,5	10	7	4	3	3
0,5	2,0	15	10	6	4	4

NOTE Foils with a width of less than 3 mm cannot be measured due to their very easy deformability, as they straighten out even under the slightest force. Therefore, the reproducibility of the values based on the existing measuring methods – and possibilities – is not given.

8.2.3 Rods

For rods, the preferred diameters are 1 mm, 1,5 mm, 2 mm, 2,5 mm, 3 mm and 5 mm and the preferred lengths are 500 mm and 1 000 mm. The tolerance on diameter shall be ±3 % for drawn rods and ±0,3 mm for other fabrication processes. The tolerance on length shall be ±5 mm.

8.2.4 Wires

For wires, there are no preferred diameters and the tolerance on diameter shall be ±3 %.

8.3 Condition

The surface of brazing filler metals shall be free from contamination which could adversely affect brazing. With flux-coated rods, the coating shall firmly adhere to the rod and shall not break off during proper handling and usage. Welds, when present, shall have been made so as not to interfere with uniform, uninterrupted feeding of filler metal on automatic and semiautomatic brazing.

8.4 Marking

Since in many cases the marking of brazing filler metals themselves is impracticable, reliance shall be placed on the marking of packets. The outside of each smallest unit package shall be clearly marked with the following information:

- a) the designation in accordance with [Clause 6](#);
- b) the name of the manufacturer or supplier;
- c) the trade name (if any);
- d) the quantity of material and, if applicable, the dimensions;
- e) the supplier's batch number;
- f) any hazard warnings as applicable.

8.5 Packaging

Brazing filler metals or products containing them shall be packed to provide a sufficient safeguard against damage and deterioration during transportation and storage.

8.6 Product certificates

If certificates of conformity and/or analysis (e.g. those specified in ISO 14344) are required, the purchaser and the manufacturer or supplier shall agree on the details at the time of placing the order.

9 Health and safety precautions

When working with filler metals, refer to the manufacturer safety data sheet (SDS) before use.

NOTE National legislation regarding transportation, storage, use and disposal of filler metals and regarding limiting exposure to metal hazards, for example fume, can exist. This is particularly important when using brazing filler metals containing cadmium as an alloying element.

Table 5 — Class Al: aluminium and magnesium brazing filler metals

Code	Composition mass fraction %								Melting temperature (approximate)			
	Si	Fe	Cu	Mn	Mg	Zn	Others	Non-defined elements	Al	Solidus °C	Liquidus °C	
	min./max.	min./max.	min./max.	min./max.	min./max.	min./max.	min./max.	Each max.	Total max.	min./max.		
Al-Si alloys												
Al 105	4,5/6,0	—/0,6	—/0,30	—/0,15	—/0,20	—/0,10	Ti: —/0,15	0,05	0,15	Remainder	575	630
Al 107	6,8/8,2	—/0,8	—/0,25	—/0,10	—/—	—/0,20	—/—	0,05	0,15	Remainder	575	615
Al 110	9,0/11,0	—/0,8	—/0,30	—/0,05	—/0,05	—/0,10	Ti: —/0,20	0,05	0,15	Remainder	575	590
Al 112	11,0/13,0	—/0,8	—/0,30	—/0,15	—/0,10	—/0,20	—/—	0,05	0,15	Remainder	575	585
Al-Si-Cu alloys												
Al 210	9,3/10,7	—/0,8	3,3/4,7	—/0,15	—/0,15	—/0,20	Cr: —/0,15	0,05	0,15	Remainder	520	585
Al-Si-Mg alloys												
Al 310	9,0/10,5	—/0,8	—/0,25	—/0,10	1,0/2,0	—/0,20	—/—	0,05	0,15	Remainder	555	590
Al 311	9,0/10,5	—/0,8	—/0,25	—/0,10	1,0/2,0	—/0,20	Bi: 0,02/0,20	0,05	0,15	Remainder	555	590
Al 315	9,5/11,0	—/0,8	—/0,25	—/0,10	0,20/1,0	—/0,20	—/—	0,05	0,15	Remainder	559	591
Al 317	11,0/13,0	—/0,8	—/0,25	—/0,10	0,10/0,50	—/0,20	—/—	0,05	0,15	Remainder	562	582
Al 319	10,5/13,0	—/0,8	—/0,25	—/0,10	1,0/2,0	—/0,20	—/—	0,05	0,15	Remainder	559	579
Al-Si-Zn alloys												
Al 410	9,0/11,0	—/0,8	—/0,3	—/0,05	—/0,05	0,50/3,0	—/—	0,05	0,15	Remainder	576	588
Al 415	6,8/8,2	—/0,8	—/0,25	—/0,10	—/—	0,50/3,0	—/—	0,05	0,15	Remainder	576	609
Mg alloys												
Mg 001	—/0,05	—/0,005	—/0,05	0,15/1,5	Remainder	1,7/2,3	Be: 0,000 2/0,000 8 Ni: —/0,005	0,05	0,30	8,3/9,7	443	599
Maximum impurity limits applicable to all types are mass fractions Cd 0,010 and Pb 0,025.												

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Table 6 — Class Ag: silver brazing filler metals

Code	Composition mass fraction %								Melting temperature (approximate)	
	Ag min./max.	Cu min./max.	Zn min./max.	Cd min./max.	Sn min./max.	Ni min./max.	Mn min./max.	Others min./ max.	Solidus °C	Liquidus °C
Ag-Cu-Zn-Sn alloys										
Ag 125	24,0/26,0	39,0/41,0	31,0/35,0	—/—	1,5/2,5	—/—	—/—	—/—	680	760
Ag 130	29,0/31,0	35,0/37,0	30,0/34,0	—/—	1,5/2,5	—/—	—/—	—/—	665	755
Ag 134	33,0/35,0	35,0/37,0	25,5/29,5	—/—	2,0/3,0	—/—	—/—	—/—	630	730
Ag 138	37,0/39,0	31,0/33,0	26,0/30,0	—/—	1,5/2,5	—/—	—/—	—/—	650	720
Ag 140	39,0/41,0	29,0/31,0	26,0/30,0	—/—	1,5/2,5	—/—	—/—	—/—	650	710
Ag 145	44,0/46,0	26,0/28,0	23,5/27,5	—/—	2,0/3,0	—/—	—/—	—/—	640	680
Ag 155	54,0/56,0	20,0/22,0	20,0/24,0	—/—	1,5/2,5	—/—	—/—	—/—	630	660
Ag 156	55,0/57,0	21,0/23,0	15,0/19,0	—/—	4,5/5,5	—/—	—/—	—/—	620	655
Ag 160	59,0/61,0	29,0/31,0	—/—	—/—	9,5/10,5	—/—	—/—	—/—	600	730
Ag-Cu-Zn alloys										
Ag 205	4,0/6,0	54,0/56,0	38,0/42,0	—/—	—/—	—/—	—/—	Si: 0,05/0,25	820	870
Ag 212	11,0/13,0	47,0/49,0	38,0/42,0	—/—	—/—	—/—	—/—	Si: 0,05/0,25	800	830
Ag 220	19,0/21,0	43,0/45,0	34,0/38,0	—/—	—/—	—/—	—/—	Si: 0,05/0,25	690	810
Ag 225	24,0/26,0	39,0/41,0	33,0/37,0	—/—	—/—	—/—	—/—	—/—	700	790
Ag 230	29,0/31,0	37,0/39,0	30,0/34,0	—/—	—/—	—/—	—/—	—/—	680	765
Ag 230A	29,0/31,0	35,0/37,0	29,5/34,0	—/—	—/—	2,0/2,5	—/—	Si: 0,05/0,15	675	790
Ag 235	34,0/36,0	31,0/33,0	31,0/35,0	—/—	—/—	—/—	—/—	—/—	685	755
Ag 244	43,0/45,0	29,0/31,0	24,0/28,0	—/—	—/—	—/—	—/—	—/—	675	735
Ag 245	44,0/46,0	29,0/31,0	23,0/27,0	—/—	—/—	—/—	—/—	—/—	665	745
Ag 250	49,0/51,0	33,0/35,0	14,0/18,0	—/—	—/—	—/—	—/—	—/—	690	775
Ag 250A ^a	49,0/51,0	49,0/51,0	—/—	—/—	—/—	—/—	—/—	—/—	780	870
Ag 260	59,0/61,0	25,0/27,0	—/—	—/—	—/—	—/—	—/—	In: 13,0/15,0	605	710
Ag 261 ^a	60,5/62,5	23,0/25,0	—/—	—/—	—/—	—/—	—/—	In: 14,0/15,0	625	710
Ag 265	64,0/66,0	19,0/21,0	13,0/17,0	—/—	—/—	—/—	—/—	—/—	670	720
Ag 270	69,0/71,0	19,0/21,0	8,0/12,0	—/—	—/—	—/—	—/—	—/—	690	740
Ag 272 ^a	71,0/73,0	27,0/29,0	—/—	—/—	—/—	—/—	—/—	—/—	780	780
Ag-Cu-Zn-Cd alloys										
Ag 326	24,0/26,0	29,0/31,0	25,5/29,5	16,5/18,5	—/—	—/—	—/—	—/—	605	720
Ag 330	29,0/31,0	27,0/29,0	19,0/23,0	19,0/23,0	—/—	—/—	—/—	—/—	600	690
Ag 335	34,0/36,0	25,0/27,0	19,0/23,0	17,0/19,0	—/—	—/—	—/—	—/—	610	700
Ag 340	39,0/41,0	18,0/20,0	19,0/23,0	18,0/22,0	—/—	—/—	—/—	—/—	595	630
Ag 345	44,0/46,0	14,0/16,0	14,0/18,0	23,0/25,0	—/—	—/—	—/—	—/—	605	620
Ag 350	49,0/51,0	14,5/16,5	14,5/18,5	17,0/19,0	—/—	—/—	—/—	—/—	620	640
Ag 351	49,0/51,0	14,5/16,5	13,5/17,5	15,0/17,0	—/—	2,5/3,5	—/—	—/—	635	655
Ag-Cu-Zn-Ni-Mn alloys										
Ag 425	24,0/26,0	37,0/39,0	31,0/35,0	—/—	—/—	1,5/2,5	1,5/2,5	—/—	705	800
Ag 427	26,0/28,0	37,0/39,0	18,0/22,0	—/—	—/—	5,0/6,0	8,5/10,5	—/—	680	830
Ag 440	39,0/41,0	29,0/31,0	26,0/30,0	—/—	—/—	1,5/2,5	—/—	—/—	670	780
Ag 449	48,0/50,0	15,0/17,0	21,0/25,0	—/—	—/—	4,0/5,0	7,0/8,0	—/—	680	705
Maximum impurity limits applicable to all types are mass fractions Al 0,001, Bi 0,030, Cd 0,010, P 0,008, Pb 0,025; Si 0,05; total of all impurities = 0,15; total of all impurities for Ag 427, Ag 449 and Ag 485 = 0,30.										
If Si is intentionally added to all alloys of Table 6 , the range shall be between 0,05 and 0,25 (mass fraction).										
The filler metals then have to be designated additionally by description Si at the end.										
For example, Filler metal ISO 17672-Ag 155Si or Filler metal ISO 17672-B-Ag55ZnCuSn(Si)-630/660.										
^a For special vacuum applications, see Table 1 .										

Table 6 (continued)

Code	Composition mass fraction %								Melting temperature (approximate)	
	Ag min./max.	Cu min./max.	Zn min./max.	Cd min./max.	Sn min./max.	Ni min./max.	Mn min./max.	Others min./ max.	Solidus °C	Liquidus °C
Ag 450	49,0/51,0	19,0/21,0	26,0/30,0	—/—	—/—	1,5/2,5	—/—	—/—	660	705
Ag 454	53,0/55,0	37,5/42,5	4,0/6,0	—/—	—/—	0,5/1,5	—/—	—/—	720	855
Ag 456	55,0/57,0	41,0/43,0	—/—	—/—	—/—	1,5/2,5	—/—	—/—	770	895
Ag 456A	55,0/57,0	26,25/28,25	—/—	—/—	—/—	2,0/2,5		In: 13,5/15,5	600	710
Ag 463	62,0/64,0	27,5/29,5	—/—	—/—	5,0/7,0	2,0/3,0	—/—	—/—	690	800
Ag 471 ^a	70,5/72,5	27,0/29,0	—/—	—/—	—/—	0,3/0,8	—/—	—/—	780	795
Ag 485	84,0/86,0	—/—	—/—	—/—	—/—	—/—	14,0/16,0	—/—	960	970

Maximum impurity limits applicable to all types are mass fractions Al 0,001, Bi 0,030, Cd 0,010, P 0,008, Pb 0,025; Si 0,05; total of all impurities = 0,15; total of all impurities for Ag 427, Ag 449 and Ag 485 = 0,30.

If Si is intentionally added to all alloys of [Table 6](#), the range shall be between 0,05 and 0,25 (mass fraction).

The filler metals then have to be designated additionally by description Si at the end.

For example, Filler metal ISO 17672-Ag 155Si or Filler metal ISO 17672-B-Ag55ZnCuSn(Si)-630/660.

^a For special vacuum applications, see [Table 1](#).

Table 7 — Class CuP: copper-phosphorus brazing filler metals

Code	Composition mass fraction %				Melting temperature (approximate)	
	Cu	P min./max.	Ag min./max.	Other min./max.	Solidus °C	Liquidus °C
Cu P alloys						
CuP 178	Remainder	4,8/5,3	—/—	—/—	710	925
CuP 179	Remainder	5,9/6,5	—/—	—/—	710	890
CuP 180	Remainder	6,6/7,4	—/—	—/—	710	820
CuP 181	Remainder	7,0/7,5	—/—	—/—	710	793
CuP 182	Remainder	7,5/8,1	—/—	—/—	710	770
Ag-Cu-P alloys						
CuP 279	Remainder	5,9/6,7	1,5/2,5	—/—	645	825
CuP 280	Remainder	6,8/7,2	1,8/2,2	—/—	645	788
CuP 281	Remainder	5,8/6,2	4,8/5,2	—/—	645	815
CuP 281A	Remainder	5,7/6,3	4,5/5,5	—/—	645	815
CuP 282	Remainder	6,5/7,0	4,8/5,2	—/—	645	771
CuP 283	Remainder	7,0/7,5	5,8/6,2	—/—	645	720
CuP 283A	Remainder	7,0/7,5	5,8/6,2	Ni 0,05/0,15	645	720
CuP 284	Remainder	4,8/5,2	14,5/15,5	—/—	645	800
CuP 285	Remainder	6,0/6,7	17,2/18,0	—/—	645	666

Maximum impurity limits applicable to all types are mass fractions Al 0,01, Bi 0,030, Cd 0,010, Pb 0,025, Zn 0,05, Zn + Cd 0,05; total of all impurities = 0,25.

If Si is intentionally added to the alloys of [Table 7](#), the range shall be between 0,01 and 0,25 (mass fraction %) unless it is specified in [Table 7](#).

The filler metals then shall be designated additionally by description Si at the end.

For example, Filler metal ISO 17672-CuP 279Si or Filler metal ISO 17672-B-Cu92PAg(Si)-645/825.

These filler metals should never be used on ferrous metals, nickel alloys or copper alloys containing nickel.

NOTE Unlike the majority of filler metals in this document, which only flow satisfactorily at, around or above the liquidus, most copper phosphorus filler metals are sufficiently fluid for brazing at a temperature significantly below the liquidus.

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Table 7 (continued)

Code	Composition mass fraction %				Melting temperature (approximate)	
	Cu	P min./max.	Ag min./max.	Other min./max.	Solidus °C	Liquidus °C
CuP 286	Remainder	6,6/7,5	17,0/19,0	—/—	645	645
Cu-Sn-Si-Sb alloys						
CuP 385	Remainder	6,0/7,0	—/—	Sn 6,0/7,0	635	675
				Si 0,01/0,4		
CuP 386	Remainder	6,4/7,2	—/—	Sn 6,5/7,5	650	700
CuP 389	Remainder	5,6/6,4	—/—	Sb 1,8/2,2	690	825
Maximum impurity limits applicable to all types are mass fractions Al 0,01, Bi 0,030, Cd 0,010, Pb 0,025, Zn 0,05, Zn + Cd 0,05; total of all impurities = 0,25. If Si is intentionally added to the alloys of Table 7, the range shall be between 0,01 and 0,25 (mass fraction %) unless it is specified in Table 7. The filler metals then shall be designated additionally by description Si at the end. For example, Filler metal ISO 17672-CuP 279Si or Filler metal ISO 17672-B-Cu92PAg(Si)-645/825. These filler metals should never be used on ferrous metals, nickel alloys or copper alloys containing nickel. NOTE Unlike the majority of filler metals in this document, which only flow satisfactorily at, around or above the liquidus, most copper phosphorus filler metals are sufficiently fluid for brazing at a temperature significantly below the liquidus.						

Table 8 — Class Cu: copper brazing filler metals — High Cu alloys

Code	Composition mass fraction %							Melting temperature (approximate)	
	Cu (including Ag) min.	Sn min./max.	Ag min./max.	Ni min./max.	P min./max.	Others min./max.	Cu ₂ O min./max.	Total impurity limits ^a max.	Solidus °C Liquidus °C
Copper-cuprous oxide									
Cu 087	86,50	—/—	—/—	—/—	—/—	—/—	Remainder	0,50	1 083 1 083
Cu 099	99,00	—/—	—/—	—/—	—/—	—/—	Remainder	0,30 (excluding O)	1 083 1 083
Copper (99,9 min.)									
Cu 102	99,95	—/—	—/—	—/—	—/—	—/—	—/—	0,03 (excluding Ag)	1 083 1 083
Cu 110	99,90	—/—	—/—	—/—	—/—	—/—	—/—	0,04 (excluding O and Ag)	1 083 1 083
Cu 141	Remainder	—/—	—/—	—/—	—/0,075	—/—	—/—	0,060 (excluding Ag, As and Ni)	1 083 1 083
Cu-Ag alloy									
Cu 188	Remainder	—/—	0,8/1,2	—/—	—/—	Bi: —/0,1	—/—	0,3 (including Bi 0,1 max.)	1 070 1 080
Cu-Ni alloys									
Cu 186	Remainder	—/—	—/—	2,5/3,5	—/—	B: 0,02/0,05	—/—	0,15 (excluding Ag)	1 085 1 100
Cu-Sn alloys									
Cu 922	Remainder	5,5/7,0	—/—	—/—	0,01/0,40	—/—	—/—	Al 0,005	910 1 040
Cu 925	Remainder	11,0/13,0	—/—	—/—	0,01/0,40	—/—	—/—	Zn 0,05, others 0,1; total 0,4	825 990
^a Maximum impurity limits applicable to all types are mass fractions Al 0,02 (except Cu 922), Cd 0,010 and Pb 0,025.									

Table 9 — Class Cu: copper brazing filler metals — Cu-Zn alloys

Code	Composition mass fraction %							Melting temperature (approximate)	
	Cu min./max.	Zn	Sn min./max.	Si min./max.	Mn min./max.	Ni min./max.	Fe min./max.	Solidus °C	Liquidus °C
Cu 470	57,0/61,0	Remainder	0,2/0,5	—/—	—/—	—/—	—/—	875	895
Cu 470A	58,5/61,5	Remainder	—/—	0,2/0,4	—/—	—/—	—/—	875	895
Cu 471	56,0/60,0	Remainder	0,2/0,5	0,15/0,2	0,05/0,25	—/—	—/—	870	900
Cu 670	58,5/61,5	Remainder	—/0,2	0,15/0,4	0,05/0,25	—/—	—/—	870	900
Cu 671	56,0/62,0	Remainder	0,5/1,5	0,1/0,5	0,2/1,0	0,2/1,5	—/—	870	890
Cu 680	56,0/60,0	Remainder	0,8/1,1	0,04/0,20	0,01/0,50	0,20/0,80	0,2/1,2	866	882
Cu 681	56,0/60,0	Remainder	0,8/1,1	0,04/0,15	0,01/0,50	—/—	0,2/1,2	866	888
Cu 773	46,0/50,0	Remainder	—/—	0,15/0,2	—/—	9,0/11,0	—/—	890	920
Maximum impurity limits applicable to all types are mass fractions Al 0,01, As 0,01, Bi 0,01, Cd 0,010, Fe 0,25, Pb 0,025, Sb 0,01; total impurities (excluding Fe) 0,2.									

Table 10 — Class Cu: copper brazing filler metals — Cu special alloys

Code	Composition mass fraction %										Melting temperature (approximate)	
	Cu	Al	Fe	Mn	Ni	P	Si	Sn	Zn	Total impurities max.	Solidus °C	Liquidus °C
Cu-Si-Mn alloys												
Cu 511	Remainder	—/0,01	—/0,03	0,1/0,4	—/0,1	—/0,020	0,1/0,4	0,5/1,0	—	0,1	1 020	1 050
Cu 521	Remainder	—/0,01	—/0,1	0,5/1,5	—/—	—/0,02	1,5/2,0	0,1/0,3	—/0,2	0,5	1 030	1 050
Cu 541	Remainder	—/0,05	—/0,2	0,7/1,3	—/—	—/0,05	2,7/3,2	—	—/0,4	0,5	980	1 035
Cu-Al alloys												
Cu 551	Remainder	4,5/5,5	—/0,5	0,1/1,0	1,0/2,5	—/—	—/0,1	—	—/0,2	0,5	1 040	1 075
Cu 561	Remainder	7,0/9,0	—/0,5	—/0,5	—/0,5	—/—	—/0,2	—/0,1	—/0,2	0,2	1 030	1 040
Cu 565	Remainder	8,5/11,5	0,5/1,5	—/—	—/—	—/—	—/0,1	—	—/0,02	0,5	1 030	1 040
Cu-Mn-Ni alloys												
Cu 571	Remainder	7,0/8,5	2,0/4,0	11,0/14,0	1,5/3,0	—/—	—/0,1	—	—/0,15	0,5	945	985
Cu 595	Remainder	—/0,01	—/—	11,0/14,0	1,5/5,0	—/—	0,10/0,25	—/—	—/—	0,5	965	1 000
Maximum impurity limits applicable to all types are mass fractions Cd 0,010 and Pb 0,025.												

Table 11 — Classes Ni: nickel (and cobalt brazing) filler metals

Code	Composition mass fraction %											Melting temperature (approximate)			
	Ni min./ max.	Co min./ max.	Cr min./ max.	Si min./ max.	B min./ max.	Fe min./ max.	C min./ max.	P min./ max.	W min./ max.	Cu min./ max.	Mn min./ max.	Mo min./ max.	Nb min./ max.	Solidus °C	Liquidus °C
Ni-Cr-B alloys															
Ni 600	Rem.	—/0,10	13,0/15,0	4,0/5,0	2,75/3,50	4,0/5,0	0,60/0,90	—/0,02	—/—	—/—	—/—	—/—	—/—	980	1 060
Ni 610	Rem.	—/0,10	13,0/15,0	4,0/5,0	2,75/3,50	4,0/5,0	—/0,06	—/0,02	—/—	—/—	—/—	—/—	—/—	980	1 070
Ni 612	Rem.	—/0,10	13,5/16,5	—/—	3,25/4,0	—/1,5	—/0,06	—/0,02	—/—	—/—	—/—	—/—	—/—	1 055	1 055
Ni 620	Rem.	—/0,10	6,0/8,0	4,0/5,0	2,75/3,50	2,5/3,5	—/0,06	—/0,02	—/—	—/—	—/—	—/—	—/—	970	1 000
Ni-Si-B alloys															
Ni 630	Rem.	—/0,10	—/—	4,0/5,0	2,75/3,50	—/0,5	—/0,06	—/0,02	—/—	—/—	—/—	—/—	—/—	980	1 040
Ni 631	Rem.	—/0,10	—/—	3,0/4,0	1,50/2,20	—/1,5	—/0,06	—/0,02	—/—	—/—	—/—	—/—	—/—	980	1 070
Ni-Cr-Si alloys															
Ni 650	Rem.	—/0,10	18,5/19,5	9,75/10,50	—/0,03	—/—	—/0,06	—/0,02	—/—	—/—	—/—	—/—	—/—	1 080	1 135
Ni 660	Rem.	—/0,10	18,5/19,5	7,0/7,5	1,0/1,5	—/0,5	—/0,10	—/0,02	—/—	—/—	—/—	—/—	—/—	1 065	1 150
Ni 661	Rem.	—/1,0	14,5/15,5	7,0/7,5	1,1/1,6	—/1,0	—/0,06	—/0,02	—/—	—/—	—/—	—/—	—/—	1 030	1 125
Ni-W-Cr alloys															
Ni 670	Rem.	—/0,10	10,0/13,0	3,0/4,0	2,0/3,0	2,5/4,5	0,40/0,55	—/0,02	15,0/17,0	—/—	—/—	—/—	—/—	970	1 105
Ni 671	Rem.	—/0,10	9,0/11,75	3,35/4,25	2,2/3,1	2,5/4,0	0,30/0,50	—/0,02	11,5/12,75	—/—	—/—	—/—	—/—	970	1 095
Ni-P alloys															
Ni 700	Rem.	—/0,10	—/—	—/—	—/—	—/—	—/0,06	10,0/12,0	—/—	—/—	—/—	—/—	—/—	875	875
Ni 710	Rem.	—/0,10	13,0/15,0	—/0,10	—/0,02	—/0,2	—/0,06	9,7/10,5	—/—	—/—	—/0,04	—/—	—/—	890	890
Ni 720	Rem.	—/0,10	24,0/26,0	—/0,10	—/0,02	—/0,2	—/0,06	9,0/11,0	—/—	—/—	—/—	—/—	—/—	880	950
Ni-Cr-P-Si alloys															
Ni 740	Rem.	—/0,10	27,5/32,0	3,8/4,2	—/0,1	—/0,5	—/0,06	5,5/6,5	—/—	—/—	—/—	—/—	—/—	980	1 030
Ni 741	Rem.	—/0,10	21,0/23,0	6,0/7,0	—/0,1	—/0,5	—/0,16	3,5/4,5	—/—	—/—	—/—	—/—	—/—	980	1 070
Ni 742	Rem.	—/—	28,0/30,0	6,0/7,0	—/—	—/—	—/0,10	5,5/6,5	—/—	—/—	—/—	—/—	—/—	990	1 105
Ni-Mn-Si-Cu alloys															
Ni 800	Rem.	—/0,10	—/—	6,0/8,0	—/—	—/—	—/0,06	—/0,02	—/—	4,0/5,0	21,5/24,5	—/—	—/—	980	1 010
Ni-Cr-B-Si-Cu-Mo-Nb alloys															
Maximum impurity limits applicable to all types are mass fractions Al 0,05, Cd 0,010, Pb 0,025, S 0,02, Se 0,005, Ti 0,05, Zr 0,05; if elements other than those given here are found to be present, the amount of these elements shall be determined; the total of such elements shall not exceed 0,50 %.															
NOTE Ni-Cr-P-Si group has been established in this document. Ni 741 is equivalent to and replaced Ni 655.															

Table 11 (continued)

Code	Composition mass fraction %												Melting temperature (approximate)		
	Ni min./ max.	Co min./ max.	Cr min./ max.	Si min./ max.	B min./ max.	Fe min./ max.	C min./ max.	P min./ max.	W min./ max.	Cu min./ max.	Mn min./ max.	Mo min./ max.	Nb min./ max.	Solidus °C	Liquidus °C
Ni 810	Rem.	—/0,10	7,0/9,0	3,8/4,8	2,75/3,50	—/0,4	—/0,06	—/0,02	—/—	2,0/3,0	—/—	1,5/2,5	1,5/2,5	970	1 080
Co-Ni-Si-W alloys															
Co 900	16,0/18,0	Rem.	18,0/20,0	7,5/8,5	0,70/0,90	—/1,0	0,35/0,45	—/0,02	3,5/4,5	—/—	—/—	—/—	—/—	1 120	1 150
Maximum impurity limits applicable to all types are mass fractions Al 0,05, Cd 0,010, Pb 0,025, S 0,02, Se 0,005, Ti 0,05, Zr 0,05; if elements other than those given here are found to be present, the amount of these elements shall be determined; the total of such elements shall not exceed 0,50 %.															
NOTE Ni-Cr-P-Si group has been established in this document. Ni 741 is equivalent to and replaced Ni 655.															

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Table 12 — Class Pd: palladium-bearing brazing filler metals

Code	Composition mass fraction %						Melting temperature (approximate)	
	Ag min./max.	Cu min./max.	Pd min./max.	Mn min./max.	Ni min./max.	Co min./max.	Solidus °C	Liquidus °C
Pd 287 ^a	67,0/69,0	26,0/27,0	4,5/5,5	—/—	—/—	—/—	805	810
Pd 288 ^a	94,5/95,5	—/—	4,5/5,5	—/—	—/—	—/—	970	1 010
Pd 387 ^a	57,0/59,0	31,0/33,0	9,5/10,5	—/—	—/—	—/—	825	850
Pd 388 ^a	67,0/68,0	22,0/23,0	9,5/10,5	—/—	—/—	—/—	830	860
Pd 481 ^a	64,5/65,5	19,5/20,5	14,5/15,5	—/—	—/—	—/—	850	900
Pd 483 ^a	—/—	81,5/82,5	17,5/18,5	—/—	—/—	—/—	1 080	1 090
Pd 484 ^a	51,5/52,5	27,5/28,5	19,5/20,5	—/—	—/—	—/—	875	900
Pd 485 ^a	74,5/75,5	—/—	19,5/20,5	4,5/5,5	—/—	—/—	1 000	1 120
Pd 496 ^a	—/—	—/—	20,5/21,5	30,5/31,5	47,0/49,0	—/—	1 120	1 120
Pd 587 ^a	53,0/55,0	20,5/21,5	24,5/25,5	—/—	—/—	—/—	900	950
Pd 597 ^a	63,0/65,0	—/—	32,0/33,5	2,5/3,5	—/—	—/—	1 180	1 200
Pd 647 ^a	—/—	—/—	59,5/60,5	—/—	39,5/40,5	—/—	1 235	1 235
Pd 657 ^a	—/—	—/—	64,0/66,0	—/—	—/0,06	34,0/36,0	1 235	1 252
For Pd 287, Pd 288, Pd 387, Pd 388, Pd 481, Pd 483, Pd 484, Pd 587 and Pd 657, maximum impurity limits applicable are mass fractions Al 0,001 0, P 0,008, Ti 0,002, Zr 0,002; total of all impurities = 0,15.								
For Pd 485 and Pd 597, maximum impurity limits are mass fractions Al 0,010, Ti 0,01, Zr 0,01; total of all impurities = 0,30.								
^a For special vacuum applications, see Table 1 .								

Table 13 — Class Au: gold-bearing brazing filler metals

Code	Composition mass fraction %						Melting temperature (approximate)	
	Au min./max.	Cu min./max.	Ni min./max.	Pd min./max.	Ag min./max.	Others min./max.	Solidus °C	Liquidus °C
Au 295 ^a	29,5/30,5	69,5/70,5	—/—	—/—	—/—	—/—	995	1 020
Au 300	29,5/30,5	—/—	35,5/36,5	33,5/34,5	—/—	—/—	1 135	1 165
Au 351	34,5/35,5	61,0/63,0	2,5/3,5	—/—	—/—	—/—	975	1 030
Au 354	34,5/35,5	64,5/65,5	—/—	—/—	—/—	—/—	990	1 010
Au 375 ^a	37,0/38,0	62,0/63,0	—/—	—/—	—/—	—/—	980	1 000
Au 503	49,5/50,5	49,5/50,5	—/—	—/—	—/—	—/—	955	970
Au 507	49,5/50,5	—/—	24,5/25,5	24,0/26,0	—/—	Co —/0,06	1 100	1 120
Au 625 ^a	62,0/63,0	37,0/38,0	—/—	—/—	—/—	—/—	930	940
Au 700	69,5/70,5	—/—	21,5/22,5	7,5/8,5	—/—	—/—	1 005	1 045
Au 752 ^a	74,5/75,5	—/—	24,5/25,5	—/—	—/—	—/—	950	990
Au 755	74,5/75,5	11,5/13,5	—/—	—/—	12,0/13,0	—/—	880	895
Au 800	79,5/80,5	19,5/20,5	—/—	—/—	—/—	—/—	890	890
Au 801 ^a	79,5/80,5	18,5/19,5	—/—	—/—	—/—	Fe 0,5/1,5	905	910
Au 827 ^a	81,5/82,5	—/—	17,5/18,5	—/—	—/—	—/—	950	950
Au 927	91,0/93,0	—/—	—/—	7,0/9,0	—/—	—/—	1 200	1 240
Maximum impurity limits applicable to all types are mass fractions Al 0,001 0, Cd 0,010, P 0,008, Pb 0,025, Ti 0,002, Zr 0,002; total of all impurities = 0,15.								
^a For special vacuum applications, see Table 1 .								

Annex A
(informative)

Codification

Two systems for the codification of filler metals are used in this document. For the purposes of identifying a filler metal conforming to this document, for example in other International Standards, in orders, in brazing procedures or on drawings, any of these systems can be used.

The first system divides the filler metals into seven classes. The class to which a filler metal is assigned is based, in most cases, on the major element present, but in some instances, it has been decided by the similarity of the filler metal to others in the same class.

The seven classes are:

- a) Al: filler metals containing aluminium as the major element;
- b) Ag: filler metals containing silver as a significant addition, even if not the major element;
- c) CuP: filler metals containing copper as the major element with an addition of phosphorus;
- d) Cu: filler metals containing copper as the major element, not elsewhere classified;
- e) Ni: filler metals containing nickel as the major element; one is based on cobalt;
- f) Pd: filler metals containing palladium, in any amount;
- g) Au: filler metals containing gold, in any amount.

The code for each filler metal consists of the two letters for the class, followed by three digits.

The second system is that given in ISO 3677. However, this system can assign the same code to filler metals which differ only slightly in chemical composition but significantly in behaviour.

The relationship between these two systems and the former systems is given in [Table A.1](#).

Table A.1 — Codification systems

ISO	ISO 3677	AWS (US stand- ard)	GB (Chinese National Stand- ard)	JIS (Japanese Industrial Standard)
Aluminium brazing filler metals				
Al 105	B-Al95Si-575/630		BAI95Si	
Al 107	B-Al92Si-575/615	BAISi-2	BAI92Si	BA4343
Al 110	B-Al90Si-575/590	BAISi-5	BAI90Si	BA4045
Al 112	B-Al88Si-575/585	BAISi-4	BAI88Si	BA4047
Al 210	B-Al86SiCu-520/585	BAISi-3	BAI86SiCu	BA4145
Al 310	B-Al89SiMg-555/590	BAISi-7	BAI89SiMg	BA4004
Al 311	B-Al89SiMg(Bi)-555/590	BAISi-11	BAI89SiMg(Bi)	BA4104
Al 315	B-Al90Si-559/591		BAI89Si(Mg)	BA4005
Al 317	B-Al88SiMg-562/582	BAISi-9	BAI88Si(Mg)	
Al 319	B-Al89SiMg-559/579		BAI87SiMg	BA4N04
^a For special vacuum applications, see Table 1 .				

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Table A.1 (continued)

ISO	ISO 3677	AWS (US stand- ard)	GB (Chinese National Stand- ard)	JIS (Japanese Industrial Standard)
Al 410	B-Al87SiZn-576/588		BA187SiZn	BA4N45
Al 415	B-Al90SiZn-576/609		BA185SiZn	BA4N43
Mg 001	B-Mg88AlZnMn-443/599	BMg-1		
Silver brazing filler metals				
Ag 125	B-Cu40ZnAgSn-680/760	B-Ag-37	B-Ag25CuZnSn	B-Ag-7B
Ag 130	B-Cu36ZnAgSn-665/755		B-Ag30CuZnSn	
Ag 134	B-Cu36AgZnSn-630/730		B-Ag34CuZnSn	
Ag 138	B-Ag38CuZnSn-650/720	B-Ag-34	B-Ag38CuZnSn	
Ag 140	B-Ag40CuZnSn-650/710	B-Ag-28	B-Ag40CuZnSn	B-Ag-7A
Ag 145	B-Ag45CuZnSn-640/680	B-Ag-36	B-Ag45CuZnSn	
Ag 155	B-Ag55ZnCuSn-630/660		B-Ag55ZnCuSn	
Ag 156	B-Ag56CuZnSn-620/655	B-Ag-7	B-Ag56CuZnSn	
Ag 160	B-Ag60CuSn-600/730	B-Ag-18	B-Ag60CuSn	B-Ag-18
Ag 205	B-Cu55ZnAg(Si)-820/870		B-Ag5CuZn(Si)	B-Ag-20A
Ag 212	B-Cu48ZnAg(Si)-800/830		B-Ag12CuZn(Si)	
Ag 220	B-Cu43ZnAg(Si)-690/810		B-Ag20CuZn(Si)	
Ag 225	B-Cu40ZnAg-700/790		B-Ag25CuZn	
Ag 230	B-Cu38ZnAg-680/765	B-Ag-20	B-Ag30CuZn	B-Ag-20
Ag 230A	B-CuZnAgNi-676/788		B-Ag30CuZnNi(Si)	
Ag 235	B-Ag35ZnCu-685/755	B-Ag-35	B-Ag35ZnCu	B-Ag-5
Ag 244	B-Ag44CuZn-675/735		B-Ag44CuZn	
Ag 245	B-Ag-45CuZn-665/745	B-Ag-5	B-Ag45CuZn	
Ag 250	B-Ag50CuZn-690/775	B-Ag-6	B-Ag50CuZn	
Ag 250A ^a	B-Ag50Cu-780/870		B-Ag50Cu	B-Ag-6
Ag 261 ^a	B-Ag62CuIn-625/710		B-Ag62CuIn	
Ag 265	B-Ag65CuZn-670/720	B-Ag-9	B-Ag65CuZn	
Ag 270	B-Ag70CuZn-690/740	B-Ag-10	B-Ag70CuZn	
Ag 272	B-Ag72Cu-780	B-Ag-8	B-Ag72Cu	B-Ag-8
Ag 326	B-Cu30ZnAgCd-605/720	B-Ag-33	B-Ag25CuZnCd	B-Ag-2
Ag 330	B-Ag30CuCdZn-600/690		B-Ag30CuZnCd	
Ag 335	B-Ag35CuZnCd-610/700	B-Ag-2	B-Ag35CuZnCd	
Ag 340	B-Ag40ZnCdCu-595/630		B-Ag40CuZnCd	
Ag 345	B-Ag45CdZnCu-605/620	B-Ag-1	B-Ag45CdZnCu	B-Ag-1
Ag 350	B-Ag50CdZnCu-620/640	B-Ag-1a	B-Ag50CdZnCu	B-Ag-1A
Ag 351	B-Ag50CdZnCuNi-635/655	B-Ag-3	B-Ag50ZnCdCuNi	B-Ag-3
Ag 425	B-Cu38ZnAgNiMn-705/800	B-Ag-26	B-Ag25CuZnMnNi	B-Ag-4
Ag 427	B-Cu38AgZnMnNi-680/830		B-Ag27CuZnMnNi	
Ag 440	B-Ag40CuZnNi-670/780	B-Ag-4	B-Ag40CuZnNi	
Ag 449	B-Ag49ZnCuMnNi-680/705	B-Ag-22	B-Ag49ZnCuMnNi	
Ag 450	B-Ag50ZnCuNi-660/705	B-Ag-24	B-Ag50ZnCuNi	B-Ag-24
Ag 454	B-Ag54CuZnNi-720/855	B-Ag-13	B-Ag54CuZn(Ni)	

^a For special vacuum applications, see [Table 1](#).

Table A.1 (continued)

ISO	ISO 3677	AWS (US stand- ard)	GB (Chinese National Stand- ard)	JIS (Japanese Industrial Standard)	
Ag 456	B-Ag56CuNi-770/895	B-Ag-13a	B-Ag56CuNi	B-Ag-21	
Ag 456A	B-Ag56CuInNi-600/710		B-Ag56CuInNi		
Ag 463	B-Ag63CuSnNi-690/800	B-Ag-21	B-Ag63CuSnNi		
Ag 471 ^a	B-Ag72CuNi-780/795				
Ag 485	B-Ag85Mn-960/970	B-Ag-23	B-Ag85Mn		
Copper-phosphorus brazing filler metals					
CuP 178	B-Cu95P-710/925	BCuP-2	BCu95P	BCuP-1	
CuP 179	B-Cu94P-710/890		BCu94P	BCuP-2	
CuP 180	B-Cu93P-710/820		BCu93P-B		
CuP 181	B-Cu93P-710/793		BCu93P-A		
CuP 182	B-Cu92P-710/770		BCu92P	BCuP-6	
CuP 279	B-Cu92PAg-645/825	BCu92PAg			
CuP 280	B-Cu91PAg-643/788	BCu91PAg			
CuP 281	B-Cu89PAg-645/815	BCu89PAg			
CuP 281A	B-Cu89PAg-645/815		BCuP-3		
CuP 282	B-Cu88PAg-643/771	BCuP-7	BCu88PAg	BCuP-4	
CuP 283	B-Cu87PAg-643/720	BCuP-4	BCu87PAg		
CuP 283A	B-Cu87PAg(Ni)-643/720				
CuP 284	B-Cu80AgP-645/800	BCuP-5	BCu80AgP		
CuP 285	B-Cu76AgP-643/666	BCuP-8	BCu76AgP		
CuP 286	B-Cu75AgP-645		BCu75AgP	BCuP-5	
CuP 385	B-Cu87PSn(Si)-635/675	BCuP-9	BCu87PSn(Si)		
CuP 386	B-Cu86SnP-650/700		BCu86SnP		
CuP 389	B-Cu92PSb-690/825		BCu92PSb		
Copper brazing filler metals					
Cu 087	B-Cu87-1083	BCu-2	BCu87	BCu-2	
Cu 099	B-Cu99-1083	BCu-1a	BCu99	BCu-1	
Cu 102	B-Cu100-1083	BCu-3	BCu100-A	BCu-1A	
Cu 110	B-Cu100-1083	BCu-1b	BCu100-B		
Cu 141	B-Cu100(P)-1083	BCu-1	BCu100(P)		
Cu 186	B-Cu97Ni(B)-1083/1100	RBCuZn-A	BCu97Ni(B)	BCu-3	
Cu 188	B-Cu99Ag-1070/1080		BCu99(Ag)		
Cu 922	B-Cu94Sn(P)-910/1040		BCu94Sn(P)		
Cu 925	B-Cu88Sn(P)-825/990		BCu88Sn(P)	BCu-4	
Cu 470	B-Cu60Zn(Sn)-875/895		BCu59Zn(Sn)	BCu-5	
Cu 470A	B-Cu60Zn(Si)-875/895		BCu60Zn(Si)		
Cu 471	B-Cu58Zn(Sn)(Si)(Mn)-870/900		BCu58Zn(Sn)(Si)(Mn)		
Cu 670	B-Cu60Zn(Si)(Mn)-870/900			BCu60Zn(Si)(Mn)	BCu-6
Cu 671	B-Cu59ZnSn(Ni)(Mn)(Si)-870/890				BCu-7
Cu 680	B-Cu58ZnSn(Fe)(Ni)(Mn)-866/882	RBCuZn-B	BCu58ZnSn(Ni)(Mn)(Si)		
Cu 681	B-Cu58ZnSn(Fe)(Mn)(Si)-866/888	RBCuZn-C			

^a For special vacuum applications, see [Table 1](#).

^a For special vacuum applications, see [Table 1](#).

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Table A.1 (continued)

ISO	ISO 3677	AWS (US stand- ard)	GB (Chinese National Stand- ard)	JIS (Japanese Industrial Standard)
Cu 773	B-Cu48ZnNi(Si)-890/920	RBCuZn-D	BCu48ZnNi(Si)	BCu-8
Cu 511	B-Cu99(Sn)(Mn)(Si)-1020/1050		BCu98Sn(Si)(Mn)	
Cu 521	B-Cu97SiMn(Sn)-1030/1050		BCu97SiMn	
Cu 541	B-Cu96SiMn-980/1035		BCu96SiMn	
Cu 551	B-Cu92AlNi(Mn)-1040/1075		BCu92AlNi(Mn)	
Cu 561	B-Cu92Al-1030/1040		BCu92Al	
Cu 565	B-Cu89AlFe-1030/1040		BCu89AlFe	
Cu 571	B-Cu74MnAlFeNi-945/985		BCu74MnAlFeNi	
Cu 595	B-Cu84MnNi-965/1000		BCu84MnNi	
Nickel and cobalt brazing filler materials				
Ni 600	B-Ni73CrFeSiB(C)-980/1060	BNi-1	BNi73CrFeSiB(C)	BNi-1
Ni 610	B-Ni74CrFeSiB-980/1070	BNi-1a	BNi74CrFeSiB	BNi-1A
Ni 612	B-Ni81CrB-1055	BNi-9	BNi81CrB	
Ni 620	B-Ni82CrSiBFe-970/1000	BNi-2	BNi82CrSiBFe	BNi-2
Ni 630	B-Ni92SiB-980/1040	BNi-3	BNi92SiB	BNi-3
Ni 631	B-Ni95SiB-980/1070	BNi-4	BNi95SiB	BNi-4
Ni 650	B-Ni71CrSi-1080/1135	BNi-5	BNi71CrSi	BNi-5
Ni 660	B-Ni73CrSiB-1065/1150	BNi-5a	BNi73CrSiB	
Ni 661	B-Ni77CrSiBFe-1030/1125	BNi-5b	BNi77CrSiBFe	
Ni 670	B-Ni63WCrFeSiB-970/1105	BNi-10	BNi63WCrFeSiB	
Ni 671	B-Ni67WCrSiFeB-970/1095	BNi-11	BNi67WCrSiFeB	
Ni 700	B-Ni89P-875	BNi-6	BNi89P	BNi-6
Ni 710	B-Ni76CrP-890	BNi-7	BNi76CrP	BNi-7
Ni 720	B-Ni65CrP-880/950	BNi-12	BNi65CrP	
Ni 740	B-Ni60CrPSi-980/1030	BNi-15		
Ni 741	B-Ni68CrSiP-980/1070	BNi-14		
Ni 742	B-Ni58CrSiP-990/1105	BNi-16		
Ni 800	B-Ni66MnSiCu-980/1010	BNi-8	BNi66MnSiCu	
Ni 810	B-Ni78CrSiBCuMo-970/1080	BNi-13	BNi78CrSiBCuMoNb	
Co 900	B-Co51CrNiSiW(B)-1120/1150	BCo-1		
Palladium-bearing brazing filler metals				
Pd 287 ^a	B-Ag68CuPd-805/810	BVAg-30		BPd-1
Pd 288 ^a	B-Ag95Pd-970/1010			BPd-7
Pd 387 ^a	B-Ag58CuPd-825/850	BVAg-31		BPd-2
Pd 388 ^a	B-Ag68CuPd-830/860			BPd-3
Pd 481 ^a	B-Ag65CuPd-850/900			BPd-4
Pd 483 ^a	B-Cu82Pd-1080/1090			BPd-8
Pd 484 ^a	B-Ag52CuPd-875/900			BPd-5
Pd 485 ^a	B-Ag75PdMn-1000/1120			BPd-9
Pd 496 ^a	B-Ni48MnPd-1120			BPd-11
Pd 587 ^a	B-Ag54PdCu-900/950	BVAg-32		BPd-6

^a For special vacuum applications, see [Table 1](#).

^a For special vacuum applications, see [Table 1](#).

Table A.1 (continued)

ISO	ISO 3677	AWS (US stand- ard)	GB (Chinese National Stand- ard)	JIS (Japanese Industrial Standard)
Pd 597 ^a	B-Ag64PdMn-1180/1200			BPd-10
Pd 647 ^a	B-Pd60Ni-1235			BPd-14
Pd 657 ^a	BPd65Co-1235/1252	BPVPd-1		
Gold-bearing brazing filler metals				
Au 295 ^a	B-Cu70Au-995/1020			
Au 300	B-Ni36PdAu-1135/1165	BAu-5		BAu-5
Au 351	B-Cu62AuNi-975-1030	BAu-3		BAu-3
Au 354	B-Cu65Au-990/1010	BVAu-9		
Au 375 ^a	B-Cu62Au-980/1000	BAu-1		BAu-1
Au 503	B-Au50Cu-955/970	BVAu-10		BAu-11
Au 507	B-Au50NiPd-1100/1120	BVAu-7		
Au 625 ^a	B-Au62Cu-930/940			
Au 700	B-Au70NiPd-1005/1045	BAu-6		BAu-6
Au 752 ^a	B-Au75Ni-950/990			
Au 755	B-Au75AgCu-880/895			BAu-12
Au 800	B-Au80Cu-890	BAu-2		BAu-2
Au 801 ^a	B-Au80Cu(Fe)-905/910			
Au 827 ^a	B-Au82Ni-950	BAu-4		BAu-4
Au 927	B-Au92Pd-1200/1240	BVAu-8		
^a For special vacuum applications, see Table 1 .				

Bibliography

- [1] ISO 3677, *Filler metal for soft soldering and braze welding — Designation*
- [2] ISO 14344, *Welding consumables — Procurement of filler materials and fluxes*
- [3] AWS A5.8M/A5.8:2019, *Specification for Filler Metals for Brazing and Braze Welding*
- [4] GB/T 6418—2008, *Copper base brazing filler metals*
- [5] GB/T 10046—2018, *Silver brazing filler metals*
- [6] GB/T 10859—2008, *Nickel base brazing filler metals*
- [7] GB/T 13815—2008, *Aluminium base brazing filler metals*
- [8] JIS Z 3261:1998, *Silver brazing filler metals*
- [9] JIS Z 3262:1998, *Copper and copper alloy brazing filler metals*
- [10] JIS Z 3263:2002, *Aluminium alloy brazing filler metals and brazing sheets*
- [11] JIS Z 3264:1998, *Copper phosphorus brazing filler metals*
- [12] JIS Z 3265:1998, *Nickel brazing filler metals*
- [13] JIS Z 3266:1998, *Gold brazing filler metals*
- [14] JIS Z 3267:1998, *Palladium brazing filler metals*
- [15] JIS Z 3268:1998, *Precious brazing filler metals for vacuum service*

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