



**SLOVENSKI STANDARD**  
**SIST EN ISO 17672:2011**

**01-november-2011**

**Nadomešča:**  
**SIST EN 1044:2001**

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**Trdo spajkanje - Dodajni materiali (ISO 17672:2010)**

Brazing - Filler metals (ISO 17672:2010)

Hartlöten - Lötzusätze (ISO 17672:2010)

Brasage fort - Métaux d'apport (ISO 17672:2010)

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**Ta slovenski standard je istoveten z: EN ISO 17672:2011**

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**ICS:**

25.160.50      Trdo in mehko lotanje      Brazing and soldering

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN ISO 17672**

June 2010

ICS 25.160.50

Supersedes EN 1044:1999

English Version

## Brazing - Filler metals (ISO 17672:2010)

Brasage fort - Métaux d'apport (ISO 17672:2010)

Hartlöten - Lote (ISO 17672:2010)

This European Standard was approved by CEN on 12 May 2010.

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (EN ISO 17672:2010) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding" the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by December 2010, and conflicting national standards shall be withdrawn at the latest by December 2010.

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

This document supersedes EN 1044:1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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# INTERNATIONAL STANDARD

**ISO**  
**17672**

First edition  
2010-06-01

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## Brazing — Filler metals

*Brasage fort — Métaux d'apport*

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**ISO 17672:2010(E)****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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 17672 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*.

Requests for official interpretations of any aspect of this International Standard should be directed to the Secretariat of ISO/TC 44/WG 3 via your national standards body, a complete listing which can be found at <http://www.iso.org/>.

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# Brazing — Filler metals

## 1 Scope

This International Standard 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 International Standard covers only the filler metal that forms part 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, e.g. precious metal jewellery, aerospace and dental, filler metals other than those included in this International Standard are often used and these are covered by other International Standards to which reference can be made.

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## 2 Normative references

SIST EN ISO 17672:2011

The following referenced documents are indispensable for the application 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 3677:1992, *Filler metal for soft soldering, brazing and braze welding — Designation*

ISO 80000-1:2009, *Quantities and units — Part 1: General*

## 3 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).

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 International Standard 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.

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- 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 compliance with the requirements of this International Standard, the actual test values obtained shall be subjected to the rounding-off instructions given in ISO 80000-1:2009, 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.

#### 4 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 complying with 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.

**Table 1 — Impurity limits for special vacuum requirements**

Impurity	Limit (% by mass max.)	
	Grade 1	Grade 2
C <sup>a</sup>	0,005	0,005
Cd	0,001	0,002
P	0,002	0,002 <sup>b</sup>
Pb	0,002	0,002
Zn	0,001	0,002
Mn <sup>c</sup>	0,001	0,002
In <sup>c</sup>	0,002	0,003
All other elements where vapour pressure at 500 °C is > 1,3 × 10 <sup>-5</sup> Pa <sup>d</sup>	0,001	0,002
<p><sup>a</sup> For filler metal Ag 272 (see Table 6), lower levels may be available by agreement between the purchaser and the supplier.</p> <p><sup>b</sup> For filler metal Ag 272, 0,02 % maximum.</p> <p><sup>c</sup> Except where otherwise specified in Tables 5 to 13.</p> <p><sup>d</sup> 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 %.</p>		

#### 5 Chemical analysis

Chemical analyses shall be carried out by any suitable method, but it should be noted that in the case of many brazing alloys, the use of reference standards may 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 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.