INTERNATIONAL STANDARD

ISO 3677

Third edition
2016-09-15

Filler metal for soldering and brazing — Designation

Métaux d'apport de brasage tendre et de brasage fort — Désignation

Reference number
ISO 3677:2016(E)

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

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 documents 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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html

The committee responsible for this document is ISO/TC 44, *Welding and allied processes*, Subcommittee SC 13, *Brazing materials and processes*.

This third edition cancels and replaces the second edition (ISO 3677:1992), which has been technically revised.

Filler metal for soldering and brazing — Designation

1 Scope

This International Standard specifies designations for filler materials for soldering and brazing, on the basis of their chemical composition. For brazing materials only, the designation includes their solidus/liquidus temperatures. This International Standard deals with the metallic part of filler materials used in soldering and brazing products, e.g. foils, wires, rods, pastes, flux coated rods/wires, flux cored rods/wires, etc.

2 Symbols and requirements

2.1 General

The designation is divided into two parts for soldering filler metals and three parts for brazing filler metals. In each case, the parts are separated by a dash.

2.2 First part (applicable to all materials)

The first part consists of a letter denoting the type of use of the material, as follows:

a) "S" shall be used for all soldering filler metals;

b) "B" shall be used for all brazing filler metals.

NOTE For solders for electronic applications, see also 2.3.6.

2.3 Second part (applicable to all materials)

2.3.1 The second part consists of a group of symbols, in accordance with the classification given in 2.3.2 to 2.3.6, indicating the various metals or metalloids making up the filler metal.

2.3.2 The chemical symbol of the major element in the filler metal is placed first. This is followed by the nominal mass percentage of the element concerned. This value shall be expressed as a whole number with an accuracy of ±1.

When a range is specified for an element in the alloy, the nominal value to be used in the designation should be the mean of the range, rounded to the nearest whole number, or rounded to the nearest even number if the mean is halfway between two whole numbers. When only a minimum value is specified, however, the rounded-off minimum percentage should be used as the nominal value in the designation.

2.3.3 The chemical symbols of the other metals or metalloids specified in the alloy are given in decreasing order of their nominal percentage. In addition, for soldering filler metals only, each chemical symbol shall be followed by the nominal mass percentage of the element concerned (see 2.3.2). If two or more elements have the same nominal mass percentage they shall be classified in order of decreasing atomic number.

2.3.4 Metals or metalloids with a nominal specified value (see 2.3.2) less than 1 % by mass shall not be indicated in the designation, unless these elements are functional components of the alloy; in which case, they shall be indicated by:

a) for soldering filler metals, their chemical symbols only;

b) for brazing filler metals, their chemical symbols enclosed in parentheses.

2.3.5 Only the chemical symbols of the first six constituents shall be indicated.

2.3.6 For solders for electronic applications, the letter "E" shall be added immediately after the second part.

2.4 Third part (for brazing filler metals only)

The third part indicates the temperatures, expressed in degrees Celsius, at the beginning and end of solidification. The solidus temperature shall be placed first, followed by the liquidus temperature. The temperatures shall be separated by an oblique stroke (slash).

3 Examples

3.1 Solders

3.1.1 A tin-base alloy (60 %) with 39 % lead and 0,4 % antimony, with a solidus/liquidus temperature of S 183 °C–L 191 °C, shall be designated as follows:

S-Sn60Pb40Sb

3.1.2 A tin-base alloy (63 %) with 37 % lead of high purity, for use in special applications (e.g. in the electronics industry), with a melting temperature of 183 °C shall be designated as follows:

S-Sn63Pb37E

3.2 Brazing filler materials

3.2.1 A binary eutectic filler metal with 72 % silver and 28 % copper, with a melting temperature of 780 °C, shall be designated as follows:

B-Ag72Cu-780

A similar alloy, but containing lithium (less than 1 %) as a functional element, shall be designated as follows:

B-Ag72Cu(Li)-780

3.2.2 A nickel-base filler metal (63 %) with 16 % tungsten, 10 % chromium, 3,8 % iron, 3,2 % silicon, 2,5 % boron, 0,5 % carbon, 0,6 % phosphorus, 0,1 % manganese and 0,2 % cobalt, with a solidus/liquidus temperature of S 970 °C–L 1105 °C shall be designated as follows:

B-Ni63WCrFeSiB-970/1105

3.2.3 A copper-base alloy (59 %) with 40 % zinc, 0,5 % tin, 0,2 % silicon, 0,2 % manganese and 0,1 % nickel, with a solidus/liquidus temperature of S 850 °C–L 885 °C, shall be designated as follows:

B-Cu59Zn-850/885

ICS 25.160.50

Price based on 2 pages