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**NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

**GB/T 6418-2008**

Replacing GB/T 6418-2008

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**Copper base brazing filler metals - Part 1: Solid brazing filler  
metals**

**(English Translation)**

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## Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 1 of GB/T 6418 "Copper-based solders". GB/T 6418 has been published in the following parts.

--- Part 1: Solid solder this document replaces GB/T 6418-2008 "Copper-based solder". Compared with GB/T 6418-2008, except for structural adjustments and editorial changes, in addition, the main technical changes are as follows.

--- Deleted the solder classification table (see 3.1 of the 2008 edition);

--- Added 9 solder types and their chemical composition requirements.  
BCu58ZnFeSn(Mn)(Si), BCu59ZnSnNiMn(Si),

--- Added some product form requirements (see 5.1);

--- Changed the main elements, impurity elements and melting temperature range in the chemical composition of some solders (see Table 1 to Table 4, 2008 Edition

Table 2 to Table 5);

- Deleted the minimum brazing temperature of copper-phosphorus brazing alloy (see Table 4 of the 2008 edition);
  - Added the requirements for the range of Si elements added to copper-phosphorus brazing filler metals (see Table 3);
  - Added the requirements for "surface quality" of copper solder and its test methods (see 5.3 and 6.2);
  - Added the size requirements for foil strip solder with nominal width >.200mm (see 5.4.1);
  - Added the dimensional requirements for foil strip solder with a nominal thickness of
- Introduction Copper-based solder is a key connecting material for core components in the manufacturing industry. It has a moderate melting temperature, excellent brazing processability, and high Strength, good electrical conductivity, thermal conductivity, wear resistance, in power generation equipment, aerospace, automobile, chemical, machinery, electronics and home appliances and other fields Copper-based brazing filler metals are widely used in brazing connections of metal materials, and their quality directly affects the use of products.

The performance and connection quality of the product are of great significance.

Brazing is one of the key basic technologies in the manufacturing industry. As the manufacturing industry develops towards green, intelligent and high-end directions, the demand for brazing materials the technology has put forward new demands and higher challenges. Conventional copper-based solid brazing materials such as wire and sheet can no longer meet the market demand.

In order to meet the market demand, new composite copper-based solders such as flux-cored solder, flux-coated solder, paste solder, and slurry solder developed have great room for development.

GB/T 6418 "Copper-based solder" is a universal product standard for hard solders and is intended to consist of the following parts.

- Part 1: Solid brazing filler metals. The purpose is to specify the requirements for solid copper-based brazing filler metal products applicable to brazing.
- Part 2: Flux-cored brazing filler metals. The purpose is to specify the requirements for flux-cored copper-based brazing filler metal products applicable to brazing.
- Part 3: Coated brazing filler metals. The purpose is to specify the requirements for coated copper-based brazing filler metal products applicable to brazing.
- Part 4: Paste solder. The purpose is to specify the requirements for paste 9677 copper-based solder products suitable for brazing.

GB/T 6418 was first independently formulated in 1986 and revised in 1993 and 2008. Its

technical content has always been at the forefront of international GB/T 6418-2008 has been issued and implemented for more than ten years. During this period, the preparation technology of copper-based solid solder in my country has been improved and the research and development of new products has played an important role in promoting the application, especially in my country's power generation equipment, aerospace and other basic manufacturing equipment, home appliances, refrigeration the high-quality key connection material for industries such as copper-based solid solder has a more significant significance. At present, with the research and development of non-ferrous materials with the rapid progress of metallurgical technology, copper-based solder, as a common connecting material for copper and copper alloys, has been gradually used in the electronic information industry.

Circuit lead frames, electronic countermeasures and radar materials for national defense equipment, overhead wires for high-speed rail transit, materials for new energy vehicles, etc.

Connection of new products. New products developed successively have higher requirements for integration, functionality, miniaturization, etc.

This revision of GB/T 6418 focuses on the technical requirements for high-end equipment manufacturing and adds more miniaturized foil strip solder.

Dimensional indicators to meet the needs of integrated, functional and miniaturized products. With the changes in solder composition and analysis technology, some the main elements, impurity elements content and melting temperature range of the solder chemical composition are added, and new types of solder for engineering applications are added.

The chemical composition requirements are more reasonable, and the ingredient list is more in line with the product's own requirements, thereby promoting the improvement and quality of my country's copper-based solid solder products.

The improvement of industrial structure will promote the adjustment of industrial structure and provide important guarantees for the high-quality development of my country's brazing industry.

Copper-based solders. Part 1: Solid solders

## **1 Scope**

This document specifies the model, technical requirements, test methods, rounding rules, inspection rules and packaging, marking, Quality certification requirements, etc.

This document applies to copper-based solid solder (hereinafter referred to as copper solder) used in the brazing method.

## 2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 1480 Metal powder dry sieving method for particle size determination GB/T 8170-2008 Rules for rounding off values and expression and determination of limit values GB/T 11363 Brazing joint strength test method GB/T 11364 Test method for wettability of solder GB/T 19077 Particle size distribution laser diffraction method

## 3 Terms and definitions

There are no terms or definitions that require definition in this document.

### 4.1 Model compilation method

The copper brazing material model consists of two parts.

- a) The first part uses "B" to indicate brazing filler metal.
- b) The second part consists of the chemical element symbols of the main alloy components. The first chemical element symbol Cu represents copper solder.

The basic component of Cu is indicated by its nominal mass fraction after the Cu element symbol, and the value should be an integer.

- c) The symbols of other elements are arranged in descending order according to their mass fractions. When several elements have the same mass fraction, they are arranged in order of their atomic mass fractions.

Arranged in ordinal order.

- d) Elements with a mass fraction of less than 1% do not need to be listed in the model. If an element is a key component of copper brazing alloy and must be listed, the chemical element symbol is indicated in brackets.

- e) Copper solders of the same type are distinguished by the suffix letters A or B.

### 4.2 Model Examples

The comparison of copper solder types in this document and other relevant standards is shown in Appendix A. Examples of copper solder types in this document are as follows.