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

GB/T 6418.1-2025

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

铜基钎料 第1部分：实心钎料

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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.

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

--- Added the size requirements for foil strip solder with nominal width $> 200\text{mm}$ (see 5.4.1);

--- Added the dimensional requirements for foil strip solder with a nominal thickness of $< 0.05\text{ mm}$ (see 5.4.1);

1 Scope

Part 1 of China's national standard for copper-based brazing filler metals, covering the solid forms. Brazing joins metals with a filler that melts above 450 degrees C while the parent metal does not melt at all, and the joint's strength comes from the filler being drawn into a close gap by capillary action and alloying slightly with the surfaces on each side.

Copper-based fillers are the workhorses of the field: copper-phosphorus alloys that braze copper to copper with no flux at all, because the phosphorus reduces the oxide itself; copper-zinc brasses for steel and cast iron; and copper-silver alloys where a lower melting point or higher strength is needed. The choice governs the joint's temperature range, its strength and its corrosion behaviour - and copper-phosphorus fillers must never be used on ferrous or nickel alloys, where they form brittle phosphides. The standard specifies the designations, technical requirements, test methods, rounding rules, inspection rules, packaging, marking and quality certification for solid copper-based fillers.

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 Models

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: