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

GB/T 10859.1-2025

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

镍基钎料 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 10859 Nickel-based brazing alloys. GB/T 10859 has been published in the following parts.

1. Solid solder This document replaces GB/T 10859-2008 Nickel-based brazing alloys. Compared with GB/T 10859-2008, except for structural adjustments and editorial changes, In addition to the above, the main technical changes are as follows:

--- Deleted the solder classification table (see

3.1 of the 2008 edition);

--- Added 4 nickel brazing filler metal models and their chemical composition requirements. BNi66CrPCu, BNi68CrSiP, BNi60CrPSi, BNi58CrSiP (see Table 1);

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

--- Added the requirements for "surface quality" of nickel solder and its test methods (see

--- Changed the dimensional requirements for powder, foil, and rod nickel solder (see 5.2 of the 2008 edition);

--- Added the requirements for bending toughness of nickel foil strip solder and its test method (see

- Changed the "Chemical Composition" analysis method (see 6.1, 6.1 of the 2008 edition);
- Changed the size detection method of powdered nickel brazing alloy (see 6.3.1,

1 Scope

Part 1 of China's standard for nickel base brazing filler metals, covering the solid forms - the wire, rod, strip and preforms used to braze joints that have to survive at high temperature and in corrosive service. Nickel brazing is what holds together gas turbine components, heat exchangers, honeycomb seals, exhaust assemblies and the plate-fin exchangers of cryogenic and chemical plant; the joints are made in a vacuum or protected atmosphere furnace and are expected to be as strong and as corrosion resistant as the parent metal, at temperatures where a silver or copper braze would simply melt. It specifies the model designation, the technical requirements, the test methods, the rounding rules, the inspection rules, and the packaging, marking and quality certification requirements for solid nickel base brazing filler metals. The chemical composition is the substance of the standard, and more so here than in most filler metal specifications, because in a nickel braze the melting behaviour and the joint properties are set by a few elements present in small quantities: boron and silicon depress the melting point and make the alloy flow, but boron diffuses into the parent metal during the braze cycle and, in a thin section, can embrittle it - so the limits are not a purity matter but a design constraint. Around the composition sit the solidus and liquidus temperatures and the brazing temperature range, the forms and dimensions supplied and their tolerances, the surface condition and cleanliness, which governs whether the filler wets the joint at all, and the model designation by which an alloy is specified on a drawing. The test methods, the rounding rules and the inspection and certification provisions close the document. Issued on 28 March 2025 and in force since 1 October 2025.

This document specifies the model, technical requirements, test methods, rounding rules, inspection rules and packaging, marking, Quality certification requirements, etc. This document applies to nickel-based solid solder used for brazing (hereinafter referred to as nickel solder).

2 Normative references

The contents of the following documents constitute 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 Nickel brazing filler metal types consist 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 Ni represents the nickel solder. For basic components, the nominal mass fraction of Ni shall be indicated after the element symbol, and the value shall 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 nickel solder and must be listed, it should be The chemical element symbol is indicated in brackets.

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