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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 20422-2018

Replacing GB/T 20422-2006

Lead-free solders

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 20422-2006 "Lead-free solder", compared with GB/T 20422-2006, the main technical changes are as follows.

--- Reconfirmed the validity of the cited standard (see Chapter 2);

---Modified terms and definitions (see Chapter 3);

--- Add the "Example of Lead-Free Solder Marking" to the "Model" chapter (see Chapter 3; 4.2.2 of the.2006 edition);

--- Added 8 new types of brazing filler metal (see 5.2; 4.1 edition of.2006);

--- Amend the "requirements" to "technical requirements" (see Chapter 5; Chapter 4 of the.2006 edition);

---The size and tolerance of the solder have been adjusted and tightened (see 5.3; 4.2.3 of the.2006 edition)

--- Added the chapter "Inspection Rules" (see Chapter 7).

This standard uses the redrafting method to modify the use of ISO 9453.2014 "chemical composition and morphology of solder alloys" (English version).

This standard has more structural adjustments than ISO 9453.2014. Appendix A lists the standards and ISO 9453.2014 chapters.

A list of comparisons.

The technical differences between this standard and ISO 9453.2014 and their reasons are as follows.

---About the normative reference documents, this standard has made technically different adjustments to adapt to China's technical conditions, adjustments

The situation is reflected in Chapter 2, "Regulatory References", and the specific adjustments are as follows.

* Removed the referenced international standard ISO 3677;

* Added references to GB/T 1480 (see 6.3), GB/T 8170 (see 5.2), GB/T 33148 (see Chapter 3), YS/T 746 (see 6.2).

--- Removed the composition requirements of Table 2 tin-lead solder, tin-lead solder does not fall within the scope of this standard;

--- Added the requirements for solder size and tolerance in Chapter 5 "Technical Requirements". Product size and tolerance are important techniques for product quality.

The technical indicators are also factors that have an important impact on product application;

--- Added Chapter 6 "Test Methods" and Chapter 7 "Inspection Rules" for solder test and acceptance requirements, test methods and test gauges

The requirement is an important basis for acceptance of product quality;

--- Added 8.1 "packaging" and 8.3 "quality certificate", packaging is an important factor to ensure the safety of products during transportation and storage.

Proof of quantity is the key to providing product quality;

--- Added the normative Appendix B "Test Method for Flux Content", the flux content is an important indicator of the quality of the core solder product, and its test

The method is an important basis for testing the flux content of the solder;

This standard has made the following editorial changes.

--- The standard name was changed to "Lead-free solder";

--- Deleted the informative Appendix A "ISO and IEC standards in the comparison of solder type code" and Appendix B "patent product list", this standard

The content of patented products is not involved in the quasi-medium.

This standard is proposed and managed by the National Welding Standardization Technical Committee (SAC/TC55).

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1 Scope

This standard specifies the type, technical requirements, test methods, inspection rules, and packaging, marking, and quality certificates of lead-free solder products.

This standard is applicable to lead-free solder used in the connection of lead wires and components such as electrical and electronic equipment and communication equipment.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

Determination of particle size by GB/T 1480 metal powder dry sieving method (GB/T 1480-2012, ISO 4497.1983, IDT)

GB/T 8170 Numerical Rounding Rules and Representation and Determination of Limit Values

GB/T 33148 brazing terminology (GB/T 33148-2016, ISO 857-2.2005, MOD)

YS/T 746 (all parts) Lead-free tin-based solder chemical analysis method

3 Terms and definitions

The following terms and definitions as defined in GB/T 33148 apply to this document.

3.1

Solder solder

A solder having a melting point below 450 °C.

3.2

Lead-free solder lead-freesolder

A general term for solders in which the tin element is the main chemical component of the solder alloy and the lead content is not more than 0.07% (mass fraction).

4.1 Model preparation method

4.1.1 The solder type consists of the chemical element symbols of the main alloy components. The first chemical element symbol indicates the basic composition of the solder.

The element symbols are listed in order of their mass scores. When several elements have the same mass score, they are arranged in the order of their atomic number.

4.1.2 Elements with a nominal mass fraction of less than 0.1% need not be marked in the model. If an element is a key component of the solder, it must be marked.

Only the chemical element symbol can be marked.

4.2 Model Example

The examples of complete solder types in this standard are as follows.

Sn96

Sn element and its content

Ag2.5BilCu0.5

Add element