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

GB/T 47934-2026

**Additive manufacturing of metals - Process characteristics and
performance - Metal powder bed fusion process to meet critical
applications**

金属增材制造 工艺特性和性能 满足关键应用的金属材料粉末床熔融工艺

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is modified to adopt ISO/ASTM 52904:2024 "Metal additive manufacturing process characteristics and performance to meet critical application requirements".

Metallic material powder bed melting process.

The technical differences between this document and ISO/ASTM 52904:2024, and the reasons therefor, are as follows.

---The file range has been changed (see Chapter 1);

---ISO/ASTM 52900 has been replaced with the normatively referenced GB/T 35351 (see Chapter 3 and 9.1), and normative references have been added.

GB/T 39254 (see Chapter 3) has removed the normative reference to ISO/ASTM 52926-1 (see Chapter 3) in order to continue using my...

The commonly used definitions of terms in the field of additive manufacturing in China are easy to use.

---Added personnel requirements for specific industry sectors (see Chapter 4) to meet the qualification requirements for personnel in my country's additive manufacturing application field.

Require;

---ISO 8573-1 (see 6.2.4) has been replaced with the normatively referenced GB/T 13277.1 to conform to my country's pollutant purification standards.

Require;

---ISO 17295 (see 8.4.3) has been replaced with the normatively referenced GB/T 41507 to adapt to the current state of additive manufacturing technology in my country.

Standard system.

The following editorial changes have been made to this document.

---The location of the warning has been changed (see Chapter 1);

--- The column numbering and symbols have been changed (see 8.4.3, 8.5.1);

---Use the informative references GB/T 47929.1, GB/T 47929.2, GB/T 47929.3, GB/T 19001, and GB/T 42061 instead.

Replaced with ISO/ASTM 52926-1, ISO/ASTM 52926-2, ISO/ASTM 52926-3, and ISO 9001.

ISO 13485 removed the informative references to ANSI/ASQCC1 and AS9100 from ISO/ASTM 52904:2024 and added...

The reference HB9100 is cited (see Chapter 4);

---The content related to protective gases in section 6.1 of ISO/ASTM 52904:2024 has been deleted to avoid duplication with section 6.2.2;

---Informative reference to ISO/ASTM TS52930:2021 has been removed from section 6.1 of ISO/ASTM 52904:2024;

---ISO 9044 and ASTM E11 have been replaced with GB/T 17492 (see 7.2), which is used for informational purposes.

---The recommended standard for preferred product acceptance method, ASTM E2910-12, has been removed from section 8.3.1 of ISO/ASTM 52904:2024;

---ISO/ASTM 52941 has been replaced with GB/T 43233 (see note 1 in 8.3.2) for informational purposes.

---ISO 6892-1 and ASTM E8/E8M have been replaced by GB/T 228.1, which is used as an informative reference.

GB/T 35022 replaces ISO/ASTM 52927 (see 8.4.3);

---Examples of foreign standards for part conformity declaration specifications in sections 8.5.1 and 8.5.2 of ISO/ASTM 52904:2024 have been removed.

EN10204:2004;

---ISO/ASTM 52901 has been replaced with GB/T 41508 (see note 8.5.2) for informational purposes;

---The "initial signature" in the header of the table in informative Appendix A of ISO/ASTM 52904:2024 has been removed.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Additive Manufacturing (SAC/TC562).

Introduction

This document describes the operation of related equipment and processes in key application scenarios of powder bed fusion (PBF) technology.

Operation and production control methods. When the failure of a part's function would pose a direct threat, it is considered a critical application scenario. Critical application scenarios may be subject to operational restrictions.

Industry regulation. The contents stipulated in this document are one way to ensure the quality requirements of components. In addition, suppliers/manufacturers can also do so through the following.

Methods to ensure component quality.

---In accordance with the company's internal processes and requirements, confirm and verify the additive manufacturing (AM) process;

---In accordance with the customer agreement, the critical quality characteristics (CTQs) of AM components are inspected.

Characteristics and performance of metal additive manufacturing processes Powder bed melting process for metallic materials to meet critical applications Warning---This document does not support addressing all security issues; if any, it is only relevant to the use of this document. The user of this document is responsible for its security.

Before use, establish appropriate safety and health measures and determine their applicability to regulatory restrictions.

1 Scope

This document specifies the operating procedures for powder bed melting equipment for metallic materials in critical applications (where component failure would pose an immediate threat).

Item list.

This document applies to the production of parts and mechanical property test specimens using laser and electron beam powder bed melting technologies.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 13277.1 Compressed air - Part 1: Pollutant purification levels (GB/T 13277.1-2023, ISO 8573-1.

2010, MOD)

GB/T 35351 Additive Manufacturing Terminology GB/T 39254 General Rules for Evaluation of Mechanical Properties of Additively Manufactured Metal Parts GB/T 41507 Additive