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

GB/T 47929.1-2026

**Additive manufacturing of metals - Qualification principles of
operators - Part 1: General principles**

金属增材制造 操作员资格鉴定原则 第1部分：通则

(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 Part 1 of GB/T 47929, "Principles for the Qualification Assessment of Operators in Metal Additive Manufacturing". GB/T 47929 has been issued.

The following parts were laid out.

---Part 1: General Rules;

---Part 2: Laser Powder Bed Melting (PBF-LB) Operator;

---Part 3: Electron Beam Powder Bed Melting (PBF-EB) Operator;

---Part 4: Laser Directed Energy Deposition (DED-LB) Operator;

---Part 5: Directed Energy Deposition by Arc (DED-Arc) Operator.

"Qualification Appraisal".

The technical differences between this document and ISO/ASTM 52926-1:2023, and the reasons therefor, are as follows.

---ISO/ASTM 52900 (see Chapter 3) has been replaced with the normatively referenced GB/T 35351 to align with my country's additive manufacturing standards.

The conventional definition of domain terms is easy to use;

---Added content on raw material categories and Group E materials (see 4.2.3). Iron-based superalloys are commonly used materials in additive manufacturing;

---Employee ID/unique identifier has been replaced with ID document type and number; examiner's signature has been replaced with issuing authority's stamp;

Item j) Certificate Number (see Chapter 5) has been added to reflect the current situation of additive manufacturing enterprises in my country;

---The requalification exam format for ISO/ASTM 52926-1:2023 has been changed, merging the written and computer-based exams into a single theoretical exam.

The experiment (see 6.3) is designed to align with the current state of my country's additive manufacturing industry.

The following editorial changes have been made to this document.

---The standard title has been changed to "Principles for the Qualification Assessment of Metal Additive Manufacturing Operators Part 1: General Rules";

---The introductory information regarding the URLs to the ISO and IEC terminology databases in Chapter 3 of ISO/ASTM 52926-1:2023 has been removed.

content;

---Abbreviations have been added (see 3.2), and the titles and terminology entries in Chapter 3 of ISO/ASTM 52926-1:2023 have been revised accordingly.

serial number;

---The references GB/T 27024 and GB/T 19805-2005 have replaced ISO/IEC 17024 and ISO 19805-2005, respectively.

14732 (see 3.1.2);

---ISO/ASTM 52926 has been replaced with GB/T 47929 (see 4.1, 4.2.2, 4.3) for informational reference;

---ISO/ASTM 52900 has been replaced with GB/T 35351 (see 4.2.2) for informational

reference;

---The descriptions of ISO 17296-2 and ISO/ASTM 52900 appendices in ISO/ASTM 52926-1:2023 have been deleted.

The first and second paragraphs are merged into one paragraph (see 4.2.2);

---The informative reference ISO/ASTM 52942, which was duplicated in ISO/ASTM 52926-1:2023, has been removed; changes have been made.

The order of listing materials in groups E and F of ISO/ASTM 52926-1:2023 is specified, with other categories of materials mentioned last;

The symbol "X" in Table 1 should be changed to "sqrt" (see 4.2.3);

--- Combine items h) and i) from Chapter 5 of ISO/ASTM 52926-1:2023 into i);

---The content of informative appendix A in ISO/ASTM 52926-1:2023 has been amended to accommodate the needs of metal additive manufacturing operators in my country.

Example of a qualification certificate.

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

Additive manufacturing, as an emerging manufacturing process, is developing towards greater complexity, customization, and integration, and features decentralized production.

This places higher demands on efficiency and consistency. This is especially true in fields such as aerospace, automotive, rail transportation, and biomedicine, where there are stringent requirements for component quality and safety.

Strict requirements.

As with traditional manufacturing processes, when additive manufacturing is used to produce industrial parts, it must meet relevant quality and safety requirements.

Therefore, when designing the production process and planning the production environment, it is essential to ensure the consistency and repeatability of the process and the quality of the final product. Thus, it is necessary to ensure...

All personnel involved in the entire production process possess the corresponding capabilities.

GB/T 47929, "Principles for the Qualification Assessment of Metal Additive Manufacturing Operators," describes the capabilities of operators in the field of additive manufacturing technology and the responsibilities aim to provide guidance and standards for the qualification of operators in metal additive manufacturing applications in general industrial settings. For specific industries and application areas...

For domains (such as aerospace, automotive, rail transportation, biomedicine) or to meet regulatory requirements, industry-specific standards may be used in place of this document.

Metal additive manufacturing involves various manufacturing processes, and qualification depends on the process category. Therefore, additive manufacturing operators need to be qualified according to the process.

The qualification is based on the category and is only valid for that specific process category. GB/T 47929 consists of five parts.

---Part 1: General Rules. The purpose is to provide general requirements for the qualification of metal additive manufacturing operators.

---Part 2: Laser Powder Bed Fusion (PBF-LB) Operators. The aim is to provide qualification guidelines for PBF-LB operators.

Require.

---Part 3: Electron Beam Powder Bed Fusion (PBF-EB) Operators. The aim is to provide qualification guidelines for PBF-EB operators.

Require.

---Part 4: Laser Directed Energy Deposition (DED-LB) Operators. The purpose is to provide qualification guidelines for DED-LB operators.

Require.

---Part 5: Directed Electric Arc Deposition (DED-Arc) Operators. The purpose is to provide qualification guidelines for DED-Arc operators.

Require.

Part 1: General Rules

1 Scope

This document specifies the general requirements for qualification assessment of metal additive manufacturing operators, qualification certificates, and their validity.

This document applies to the qualification assessment of operators for all types of processes in metal additive manufacturing.