

ICS 25.030

CCS J 04



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

GB/T 47006-2026

**Additive manufacturing - Quality grading and testing
requirements for laser powder bed fusion metal parts**

增材制造 激光粉末床熔融金属制件质量分级与检测要求

Issued on: January 28, 2026

Implemented on: August 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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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. 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). This document was drafted by: Beijing Remote Sensing Equipment Research Institute, Beijing E-Plus 3D Technology Co., Ltd., and Wuxi Inspection, Testing and Certification Institute. Commercial Aircraft Corporation of China, Ltd. (COMAC) Beijing Civil Aircraft Technology Research Center, China General Nuclear Power Engineering Co., Ltd., and Siemens (China) Co., Ltd. Company, Xi'an Bright Laser Technologies Co., Ltd., Beijing Saiyi Technology Co., Ltd., China Machinery Research Institute of Standards and Technology (Beijing) Co., Ltd. Company, Zhejiang Tianxiong Industrial Technology Co., Ltd., Zhejiang Tiantai Additive Manufacturing Technology Co., Ltd., Ningbo Zhongke Xianglong Lightweight Technology Co., Ltd. Ningbo Branch of China Ordnance Science Research Institute, Shanghai Intelligent Manufacturing Functional Platform Co., Ltd., and Aerospace Science and Industry Defense Technology Research and Testing Center Luzhou Hanfei Aerospace Technology Development Co., Ltd., Xi'an National Research Institute of Additive Manufacturing Co., Ltd., Xi'an University of Technology, Guangdong Provincial Science Institute of New Materials, Academy of Sciences. The main drafters of this document are. Tang Ye, Wang Geng, Feng Yunlong, Su Qian, Gao Yunlai, Xiong Zhiliang, Li Changpeng, Yang Xudong, Hu Weifeng, and Ming Xianliang. Li Haibin, Wang Kai, Zhao Feng, Zhang Hao, Zhao Jie, Sun Yaoifei, Zhong Yingying, Qiu Shengsheng, Xu Ruiqi, Zhang Guojun, Yan Xingchen.

With additive manufacturing technology entering the stage of large-scale production, quality inspection of additively manufactured products has become a major concern. Laser powder. The transition from research and development to batch production of bed-melted metal parts generally involves stages such as metal part qualification, first article inspection, and

batch production delivery. The qualification stage typically requires... Conduct comprehensive functional and performance tests to verify the rationality of the metal component manufacturing process and whether its functional and performance characteristics meet the mission requirements. The testing involves numerous items and a long cycle; the first article stage generally only tests the performance of metal parts for conformity testing and production capacity assessment, and is separate from qualification testing. Compared to previous stages, the number of testing items can be significantly reduced; in the batch production and delivery stage, performance testing of metal parts can be completed through random sampling to evaluate... Compared to the first article test, the number of inspection items and samples can be further reduced to ensure production stability. Therefore, the inspection requirements for large-scale production are... There are significant differences between the research and development stages. If the testing requirements from the research and development stage are directly adopted, there will be problems such as a large number of testing items, high costs, and long cycles. This document is formulated to address the issues of high testing costs and long testing cycles for additively manufactured metal parts produced on a large scale. It is based on the characteristics of metal parts in... The degree of damage caused during use is used to classify the quality of laser powder bed molten metal parts, based on the process from research and development to mass production. The process is categorized into stages, clarifying the testing requirements for different levels and categories of metal parts, and guiding customers and suppliers in the testing of additive manufacturing metal parts. Conducting reasonable testing can effectively evaluate the quality of metal parts while reducing testing costs. This document, as the first domestic standard for quality grading and testing requirements of laser powder bed molten metal parts for large-scale production, will complete... A sound additive manufacturing testing standard system will provide technical support for related enterprises and testing institutions in the industry chain, and promote the development of laser powder bed molten metal parts. Large-scale application and high-quality development of the industry. Additive manufacturing of laser powder bed molten metal parts Quality grading and testing requirements

1 Scope

GB/T 47006-2026 is the Chinese national standard covering grading a printed metal part - the levels of internal soundness, dimensional accuracy and surface condition, and what has to be tested to claim each, which is how a buyer specifies quality without specifying the machine. First edition, with the endoscopic inspection atlas GB/T 47008-2026 and the titanium deposition specification GB/T 47005-2026. It was issued on 28 January 2026 and has been in force since 1 August 2026, as a first edition. The document is under the responsibility of the China Machinery Industry Federation. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself,

delivered in full with the English translation.

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 223 (all parts) Iron and Steel and Alloys

GB/T 1182 Product Geometric Specification (GPS) - Geometric Tolerances. Shape, Orientation, Position and Runout Tolerances

GB/T 1800.1 Product Geometric Specification (GPS) - Linear Dimensional Tolerances - ISO Notation System - Part

GB/T 19943 Basic Rules for Nondestructive Testing of Metallic Materials by X-ray and Gamma Ray Radiography

GB/T 20737 General Terms and Definitions for Nondestructive Testing

GB/T 20975 (all parts) Chemical analysis methods for aluminum and aluminum alloys

GB/T 29070 General requirements for nondestructive testing of industrial computed tomography (CT) inspection

GB/T 35022 Main characteristics and test methods for additive manufacturing parts and powder raw materials

GB/T 35351 Additive Manufacturing Terminology

GB/T 39254-2020 General Rules for Evaluation of Mechanical Properties of Additively Manufactured Metal Parts

GB/T 43615 Ultrasonic testing method for additively manufactured directionally deposited metal parts
YS/T 539 (all parts) Chemical Analysis Methods for Nickel-Based Alloy Powders

3 Terms and Definitions

The terms and definitions defined in GB/T 35351 and GB/T 20737, as well as the following terms and definitions, apply to this document.