

ICS 25.030

CCS H 64



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

GB/T 47005-2026

**Additive manufacturing - Specification for titanium alloy
components made by laser directed energy deposition**

增材制造 激光定向能量沉积钛合金制件技术规范

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: Northwestern Polytechnical University, Xi'an Bright Laser Technologies Co., Ltd., and China Machinery Research Institute of Standards and Technology. (Beijing) Co., Ltd., Beijing University of Aeronautics and Astronautics, Xi'an National Research Institute of Additive Manufacturing Co., Ltd., South China University of Technology, Xinjinghe Laser Technology Co., Ltd. Technology Group Corporation Limited, Nanjing University of Aeronautics and Astronautics, Ocean University of China, Tianjin Sino-German University of Applied Sciences, Beijing Hangxing Machinery Manufacturing Co., Ltd. Limited Company, Guangdong Academy of Sciences Institute of New Materials, Inner Mongolia First Machinery Group Co., Ltd., Huazhong University of Science and Technology, Xi'an Jiaotong University Beijing Yuding Additive Manufacturing Research Institute Co., Ltd., Guangdong Hanbang Laser Technology Co., Ltd., Wuxi Inspection, Testing and Certification Institute Hangzhou Himalaya Information Technology Co., Ltd., Shaanxi Dingyi Technology Co., Ltd., Changzhou Kexing Railway Equipment Co., Ltd., Zhejiang Tiantai Additive Manufacturing Co., Ltd. Manufacturing Technology Co., Ltd. The main drafters of this document are. Lin Xin, Yu Jun, Zhao Xiaoming, Li Haibin, Zhu Yanyan, Guo Wenhua, Wang Di, Li Guangsheng, Gu Dongdong, and Liu Yonghui. Xie Jiuming, He Zhi, Yan Xingchen, Zhao Fu, Liu Xinwang, Hou Ying, Liu Yang, Hu Fan, Qi Wenjun, Chang Bai, Zhao Qingyang, Liu Shaohui, Chen Wenge, Zhao Feng Cui Jianwei. Additive manufacturing laser-directed energy deposition Technical Specifications for Titanium Alloy Parts

1 Scope

GB/T 47005-2026 is the Chinese national standard covering titanium parts built by blowing powder into a laser melt pool - the feedstock, the atmosphere, the build and its thermal history, the anisotropy of the deposited metal, the heat treatment and hot isostatic pressing, and the inspection of a part whose microstructure was created layer by layer. It is the process used to repair and to grow large aerospace titanium structures. First edition. 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.

This document specifies the technical requirements, test methods, inspection rules, and delivery preparations for laser-directed energy deposition of titanium alloy parts. This document applies to the trial production and manufacturing of TA15, TC4, TC11, TC17, TC18, and TC21 titanium alloy parts produced by laser-directed energy deposition. and acceptance.

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 228.1 Metallic materials - Tensile testing - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 35351 and GB/T 39253 apply to this document.

4 Technical Requirements

4.1 Powder Laser-directed energy deposition of titanium alloy parts (hereinafter referred to as "parts") using TA15, TC4, TC11, TC17, TC18, and TC21 powders should be used.