

ICS 25.030
CCS H60/69



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

GB/T 45868-2025

**Additive manufacturing - Specification for titanium alloy
components by laser powder bed fusion**

增材制造 激光粉末床熔融钛合金制件技术规范

Issued on: August 1, 2025

Implemented on: November 1, 2025

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

Table of Contents

Preface	III
1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Technical Requirements	1
4.1 Powder	1
4.2 Forming process	2
4.3 Delivery heat treatment status	2
4.4 Chemical composition	2
4.5 Mechanical properties	2
4.6 Surface quality	3
4.7 Internal Quality	3
4.8 Microstructure	4
4.9 Size	4
4.10 Identification	4
5 Test methods	4
5.1 Chemical composition	4
5.2 Mechanical properties	4
5.3 Surface quality	4
5.4 Internal Quality	4
5.5 Microstructure	4
5.6 Size	4
5.7 Identification	4
6 Inspection Rules	4
6.1 Batch	4
6.2 Inspection items and sampling requirements	5
6.3 Determination of test results	5
7 Delivery Preparation	5
7.1 Packaging, labeling, transportation and storage	5
7.2 Quality Certification Documents	5
Appendix A (Informative) Recommended Process Parameters for Laser Powder Bed Fusion of Titanium Alloy Parts	7

Appendix B (Informative) Recommended annealing and hot isostatic pressing systems for laser powder bed fusion titanium alloy parts	8
References	9

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document was proposed by the China Machinery Industry Federation.

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

This document was drafted by: Aerospace Additive Technology (Beijing) Co., Ltd., Beijing Xinjinghe Additive Manufacturing Technology Co., Ltd., Xi'an Jiaotong University Yanqi Lake Basic Manufacturing Technology Research Institute (Beijing) Co., Ltd., Wuxi Inspection and Certification Research Institute, Beijing Hangxing Machinery Manufacturing Co., Ltd.

Company, Beijing Power Machinery Research Institute, Guangdong Hanbang Laser Technology Co., Ltd., Shenzhen Jinshi 3D Printing Technology Co., Ltd., Beijing Yuding Additive Manufacturing Research Institute Co., Ltd., China Machinery Research Institute of Standards and Technology (Beijing) Co., Ltd., Weichai Power Co., Ltd., South China University of Science and Technology, Xi'an National Research Institute of Additive Manufacturing Co., Ltd., China Aerospace Science and Technology Research Institute, AECC Beijing Institute of Aeronautical Materials Institute, Central Research Institute of Shanghai Electric Group Co., Ltd., Shandong Chuangrui Additive Manufacturing Industry Technology Research Institute Co., Ltd., China Aerospace Science and Technology Corporation Aviation Engine Co., Ltd., Beijing University of Science and Technology, Beijing Aikang Yicheng Medical Equipment Co., Ltd., Guangzhou Ruitong Additive Technology Co., Ltd.

Company, Baoji Yongshengtai Titanium Industry Co., Ltd.

The main drafters of this document are: Cui Zhaowen, Li Guangsheng, Fang Xuewei, Xiao Chengxiang, Hu Juan, Wang Zhimin, Ma Rui, Jiao Shikun, Huang Zhenghua, Wang Di, Qian Tingting, Hu Fan, Ni Yunqiang, Jiang Zexing, Chen Zhen, Li Xiaofei, Qian Yuanhong, Zhao Zijun, Fan Enxiang, Lü Zhongli, Liao Huanwen, Zhou Xianglin, Wang Caimei, Sun Yongming and Chen Bingfeng. Additive Manufacturing Technical specifications for titanium alloy parts produced by laser powder bed fusion

1 Scope

This document specifies the technical requirements, test methods, inspection rules and delivery preparation for titanium alloy parts produced by laser powder bed fusion.

This document is applicable to the trial production, production and acceptance of TC4 and TA15 titanium alloy parts manufactured by laser powder bed fusion.

2 Normative references

GB/T 228.1

GB/T 228.2

GB/T 3620.2

GB/T 4698

GB/T 5168

GB/T 5677

GB/T 6414-2017

GB/T 8180

GB/T 9443-2019

GB/T 20967

GB/T 29070

GB/T 34486-2017

GB/T 35351

GB/T 39254-2020

3 Terms and Definitions

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

3.1 buildbatch

Forming plate One or a group of parts formed within the same forming cycle of the laser powder bed fusion equipment.

4.1 Powder

4.1.1 TC4 and TA15 powders for laser powder bed fusion of titanium alloys shall comply with the requirements of Class I FTC4 and FTA15 in GB/T 34486-2017.