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

GB/T 43484-2023

**Additive manufacturing - Superalloy powder used for laser
powder bed fusion**

增材制造 激光粉末床熔融用高温合金粉末

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Foreword

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Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

This document is proposed by China Machinery Industry Federation.

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Additive manufacturing

High temperature alloy powder for laser powder bed melting

1 Scope

GB/T 43484-2023 covers the high-temperature alloy powder that feeds a laser powder bed fusion machine, and follows it from production through inspection to the order form. Clause 4 fixes the technical requirements under eight headings: grade and chemical composition, which Table 1 sets out and whose permitted deviations follow GB/T 25829; particle size and oxygen content; bulk density; flowability; sphericity; hollow powder rate; spreadability, which is optional; and appearance quality. Clause 5 gives a test method for each of them. Clause 6 holds the inspection rules - inspection and acceptance, what counts as a batch, the inspection items and the sampling, and how a result is judged. Clause 7 deals with marking, packaging, transport, storage and the documents that travel with the powder, and clause 8 lists what the order form or contract has to state, including any special requirement the buyer has agreed. The reason the requirements run past chemistry into shape, flow and hollow content is that a powder bed machine has to spread the powder into an even layer before melting it, and two powders with the same analysis certificate can behave differently on the recoater, with the difference showing up in the part rather than on paper. For powder producers, additive manufacturing service bureaux, and buyers writing purchase specifications.

This document specifies the technical requirements, test methods, inspection rules, markings, and packaging of high-temperature alloy powders for laser powder bed fusion in additive manufacturing.

loading, transportation, storage, accompanying documents and order form (or contract) content.

This document applies to the production and inspection of high-temperature alloy powders for laser powder bed fusion for additive manufacturing.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations

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

this document.

GB/T 1479.1 Determination of bulk density of metal powders Part 1. Funnel method

GB/T 1482-2022 Standard funnel method for determination of flowability of metal powders (Hall flow meter)

GB/T 1724-2019 Determination of grinding fineness of paints, varnishes and printing inks

GB/T 11261 Determination of oxygen content of steel by pulse heating inert gas melting-infrared absorption

GB/T 19077 Particle size distribution laser diffraction method

GB/T 25829 Allowable deviations in chemical composition of finished high-temperature alloy products

GB/T 35351 Additive Manufacturing Terminology

GB/T 39251-2020 Performance characterization method of metal powders for additive manufacturing

GB/T 41978 Method for testing the hollow powder content of metal powders produced by additive manufacturing

HB20241 (all parts) Spectral analysis method of chemical composition of superalloys

YS/T 1297 Method for determination of sphericity of titanium and titanium alloy powders

3 Terms and definitions

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

3.1

spreadability

The ability of raw materials to be laid out in layers to meet the requirements of the additive manufacturing process.