

ICS 77.160
CCS H 57



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

GB/T 46187-2025

Additive manufacturing - Material - Stainless steel powder

增材制造 材料 不锈钢粉末

Issued on: August 29, 2025

Implemented on: March 1, 2026

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

Table of Contents

Foreword

1 Scope

2 Normative references

3 Terms and Definitions

4 Technical Requirements

4.1 Brand and Chemical Composition

11.00 18.00~

14.00 16.00~

3.00 S51380 04Cr13Ni8Mo2Al ≤ 0.05 ≤ 0.10 ≤ 0.20 ≤ 0.010 ≤ 0.008

8.50 12.30~

3.00 S51550 05Cr15Ni5Cu4Nb ≤ 0.07 ≤ 1.00 ≤ 1.00 ≤ 0.030 ≤ 0.015

5.50 14.00~

5.00 15.00~

1.35 - ≤ 0.03 ≤ 0.04 - - -

0.45 ≤ 0.04 ≤ 0.04 - - -

0.45 ≤ 0.04 ≤ 0.04 - - -

4.2 Powder Properties

4.2.1 Particle size

4.2.2 Loose packing density

4.2.3 Tap density

4.2.4 Liquidity

4.2.5 Appearance Quality

4.2.6 Other

4.3 Part Performance

5 Test Methods

5.1 Chemical composition

5.2 Particle size

5.3 Loose packing density

5.4 Tap density

5.5 Liquidity

5.6 Sphericity

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 Iron and Steel Association.

This document was prepared by the National Technical Committee on Steel Standardization (SAC/TC183) and the National Technical Committee on Additive Manufacturing Standardization (SAC/TC562). Under the same jurisdiction.

This document was drafted by: China Iron & Steel Research Institute Co., Ltd., Xi'an Ouzhong Materials Technology Co., Ltd., and GRINM Additive Manufacturing Technology Co., Ltd.

Company, Xi'an Sailong Additive Manufacturing Technology Co., Ltd., Changzhou Steel Research Aurora Additive Manufacturing Co., Ltd., Anderun (Chongqing) Materials Technology Co., Ltd.

Company, Liaoning Guanda New Material Technology Co., Ltd., AVIC Mite Additive Manufacturing Technology (Beijing) Co., Ltd., Beikuang New Material Technology Co., Ltd., Harbin Zengyi Technology Co., Ltd., Northwestern Polytechnical University, China Machinery Research Institute (Beijing) Co., Ltd., and Metallurgical Industry Information and Standardization Research Institute.

The main drafters of this document are: Zhang Shaoming, Liang Jianxiong, Lan Jian, Hu Qiang, Wang Changjun, Tan Jianjun, Zhou Xingchen, Yu Hai, Wang Yifan, Wang Wei, and Che Pengcheng.

Ma Yao, Chu Weihang, Lin Xin, Zuo Zhenbo, Li Jishen, Feng Han, Qiu Sha, Zhang Xiwen, Zhao Shuyuan, Ying Hua, Chen Xin, He Huaizhi, Hu Yu, Wang Lin, He Jianguo Liu Shifeng and Sun Pingsheng.

Additive manufacturing material stainless steel powder

1 Scope

This document specifies the technical requirements, test methods, inspection rules, marking, packaging, transportation, and storage of stainless steel powder used in additive manufacturing.

And accompanying documents and order details.

This document applies to additive manufacturing processes such as laser powder bed

melting, electron beam powder bed melting, and laser-directed energy deposition.

Stainless steel powder for artistic use (hereinafter referred to as "powder").

2 Normative references

GB/T 223

GB/T 1479.1

GB/T 1480

GB/T 1482

GB/T 5162

GB/T 5314

GB/T 11170

GB/T 11261

GB/T 19077

GB/T 20123

GB/T 20124

GB/T 34208

GB/T 35351

GB/T 41978

3 Terms and Definitions

The terms and definitions defined in GB/T 5314 and GB/T 35351 apply to this document.

4.1 Brand and Chemical Composition

The grade and chemical composition of the powder should conform to the specifications in Table 1. Other ingredients may also be provided upon negotiation between the supplier and the buyer, and as specified in the contract. The powder.

Table 1. Grades and Chemical Composition Unified number character code Brand Chemical composition (mass fraction)/% C Si Mn PS Ni Cr Mo S30408 06Cr19Ni10 ≤ 0.08 ≤ 1.00 ≤ 2.00 ≤ 0.045 ≤ 0.030 8.00~

11.00 18.00~

S31603 022Cr17Ni12Mo2 ≤ 0.030 ≤ 1.00 ≤ 2.00 ≤ 0.045 ≤ 0.030 10.00~

14.00 16.00~

2.00~

3.00 S51380 04Cr13Ni8Mo2Al ≤0.05 ≤0.10 ≤0.20 ≤0.010 ≤0.008

7.50~

8.50 12.30~

2.00~

3.00 S51550 05Cr15Ni5Cu4Nb ≤0.07 ≤1.00 ≤1.00 ≤0.030 ≤0.015

3.50~

5.50 14.00~**≤0.50 S51740 05Cr17Ni4Cu4Nb ≤0.07 ≤1.00 ≤1.00 ≤0.040 ≤0.030 3.00~****5.00 15.00~**

Unified number character code Grade Cu Al Nb NO - - - S30408 06Cr19Ni10 - - - ≤0.08
 ≤0.06 - - - S31603 022Cr17Ni12Mo2 - - - ≤0.08 ≤0.06 - - - S51380 04Cr13Ni8Mo2Al -
 0.90~

1.35 - ≤0.03 ≤0.04 - - -

S51550 05Cr15Ni5Cu4Nb 2.50~ 0.15~

0.45 ≤0.04 ≤0.04 - - -

S51740 05Cr17Ni4Cu4Nb 3.00~ - 0.15~

4.2.1 Particle size

The particle size of the powder should conform to the specifications in Table 2. If the buyer has other special requirements regarding particle size, these can be negotiated between the supplier and the buyer and specified in the contract. Please note. Table 2 Particle size The unit is micrometers.

Category Powder Specifications Particle Size Composition Particle Size Distribution
 Recommended Application Process Category I. 15~53, >53, not exceeding 5% D10≥15,
 25≤D50≤45 D90≤65 Laser powder bed melting process Class II 45~150 ≤45, not
 greater than 5% >150, not greater than 5% - Electron beam powder bed melting process
 Class III, 53-180 ≤53, not greater than 5% >180, not greater than 5% - Laser-directed