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

GB/T 46079-2025

**Additive manufacturing of polymers - Feedstock materials -
Qualification of materials for laser-based powder bed fusion of
parts**

聚合物增材制造 原材料 激光粉末床熔融用材料的鉴定
(English Translation)

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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.

This document is modified to adopt ISO/ASTM 52925:2022 "Materials for laser powder bed fusion of polymer additive manufacturing raw materials" Identification".

The technical differences between this document and ISO/ASTM 52925:2022 and their reasons are as follows.

--- The normative reference GB/T 35351 replaces ISO/ASTM 52900 (see Chapter 3) to follow the standards of my country's additive manufacturing field.

The domain terms are defined in a customary way, which is convenient for use;

--- Change the homogenization treatment requirement of used powder to a necessary requirement (see 5.3 Important Note) to conform to the actual production process;

--- Added the requirement for the placement time of powder before relative humidity measurement to reflect the sensitivity of the powder itself to humidity (see 7.3).

The following editorial changes have been made to this document.

--- Added the abbreviation "PBF-LB/P" (see 4.2);

--- Replace ASTM D 6779 with the informative reference GB/T 32363.1 (see 6.4);

--- Replaced ISO 6186 with GB/T 21060 as an informative reference, and replaced ISO 60 (see 7.2);

--- Replaced with informative references GB/T 19077, GB/T 21649.1, GB/T 21649.2, GB/T 6003 (all parts) ISO 13320, ISO 13322-1, ISO 13322-2, ISO 3310 (all parts) and ASTM D1921, which define particle size distribution as the paragraphs on the measurement methods are changed to items (see 7.4);

--- Replaced ISO 307 with the informative reference GB/T 12006.1 (see 8.2.2);

--- Added the symbol description in the calculation formula of relative viscosity etarel (see 8.2.2);

--- Added the heat flow direction of the DSC curve in Figure 1 (see 8.3);

--- Use the informative references GB/T 3682.1-2018 and GB/T 3682.2 to replace ISO 1133-1:2011 and ISO 1133-2 (see B.1, B.2, B.3 and B.5), replace ISO 1133-1 with the informative reference GB/T 3682.1 (see 8.2.3.1, B.1, B.4 and B.7);

--- Replaced ISO 11357-1 and ASTM D3418 with the informative reference GB/T 19466.1, and changed the heating and cooling rates Units (see 8.3);

- Replaced ISO 61 with the informative reference GB/T 39821, and replaced ISO 787-11 with the informative reference GB/T 5211.4 (See A.2);
- Replaced ISO 291 with the informative reference GB/T 2918 (see B.7);
- Changed the MVR determination cycle method for PA12 in Figure B.1 of ISO/ASTM 52925:2022 (see B.7).

1 Scope

This document specifies the sampling, factory inspection report, factors affecting forming performance and factors affecting parts quality of polymer laser powder bed fusion materials.

Parts quality factors.

This document is applicable to the identification of polyamide 12 (PA12) and polyamide 11 (PA11) for laser powder bed fusion and is not applicable to other laser Identification of polymers for powder bed fusion.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 35351 Terminology for Additive Manufacturing

3 Terms and Definitions

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

4.1 Notation

The symbols in Table 1 apply to this document.

Table 1 Symbols

Symbol physical quantity unit DV10 Particle size μm corresponding to the cumulative distribution of powder volume fraction reaching 10% DV50 Particle size μm corresponding to the cumulative distribution of powder volume fraction reaching 50% DV90 Particle size μm corresponding to the cumulative distribution of powder volume fraction reaching 90% HR Hausner Ratio -sr Repeatability standard deviation -sR Standard deviation of reproducibility -TB forming temperature range $^{\circ}\text{C}$ Tic initial crystallization temperature $^{\circ}\text{C}$

Tim initial melting temperature °C