



BSI Standards Publication

Additive manufacturing of metals — Process characteristics and performance — Metal powder bed fusion process to meet critical applications

National foreword

This British Standard is the UK implementation of EN ISO/ASTM 52904:2024. It is identical to ISO/ASTM 52904:2024. It supersedes BS EN ISO/ASTM 52904:2020, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee AMT/8, Additive manufacturing.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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English Version

**Additive manufacturing of metals - Process characteristics
and performance - Metal powder bed fusion process to
meet critical applications (ISO/ASTM 52904:2024)**

Fabrication additive de métaux - Caractéristiques et performances du procédé - Procédé de fusion sur lit de poudre métallique en vue de répondre aux applications critiques (ISO/ASTM 52904:2024)

Additive Fertigung von Metallen - Prozessanforderungen und Qualifizierung - Pulverbettbasiertes Schmelzen von Metallen für kritische Anwendungen (ISO/ASTM 52904:2024)

This European Standard was approved by CEN on 12 July 2024.

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European foreword

This document (EN ISO/ASTM 52904:2024) has been prepared by Technical Committee ISO/TC 261 "Additive manufacturing" in collaboration with Technical Committee CEN/TC 438 "Additive Manufacturing" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2025, and conflicting national standards shall be withdrawn at the latest by January 2025.

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Endorsement notice

The text of ISO/ASTM 52904:2024 has been approved by CEN as EN ISO/ASTM 52904:2024 without any modification.

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Foreword

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This document was prepared by Technical Committee ISO/TC 261, *Additive manufacturing technologies*, based on a partnership agreement between ISO and ASTM International with the aim to create a common set of ISO/ASTM standards on additive manufacturing, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 438, *Additive manufacturing*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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This second edition cancels and replaces the first edition (ISO/ASTM 52904:2019), which has been technically revised.

The main changes are as follows:

- The structure of the document is modified to reflect the following workflow: Personnel – Digital data – PBF equipment – Feedstock – Qualification – Manufacturing plan;
- Original [Clauses 8](#) “Control of machine operating system software”, [Clauses 9](#) “Auxiliary tools and contamination” and [Clauses 11](#) “External environmental controls” have been merged to a new [Clause 6](#) “PBF equipment requirements”;
- New structure and examples for the manufacturing plan, consistent with the new workflow;
- [9.2](#) “Documentation” is added to the manufacturing plan;
- [Figure 1](#) was updated.

Introduction

Operation and production control of machines and processes for powder bed fusion (PBF) in critical applications are described in this document. Critical applications can be subject to regulation. This is one way of meeting quality requirements. The supplier/manufacturer can also ensure quality of components through validation and verification of the AM process, as per internal procedures and requirements, and inspection of the CTQs (critical to quality) of the AM components, as per customer agreement.