

<b>STN</b>	<b>Aditívna výroba pri kovoch Všeobecné princípy Evidencia údajov získaných z monitorovania procesov a na kontrolu kvality (ISO/ASTM 52953: 2025)</b>	<b>STN EN ISO/ASTM 52953</b>  18 8528
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Additive manufacturing for metals - General principles - Registration of data acquired from process monitoring and for quality control (ISO/ASTM 52953:2025)

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

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## Additive manufacturing for metals - General principles - Registration of data acquired from process monitoring and for quality control (ISO/ASTM 52953:2025)

Fabrication additive de métaux - Principes généraux -  
Enregistrement de données acquises à partir de la  
surveillance du procédé et pour le contrôle qualité  
(ISO/ASTM 52953:2025)

Additive Fertigung von Metallen - Allgemeine  
Grundsätze - Registrierung von Daten aus der  
Prozessüberwachung und zur Qualitätskontrolle  
(ISO/ASTM 52953:2025)

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**EN ISO/ASTM 52953:2025 (E)**

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## **European foreword**

This document (EN ISO/ASTM 52953:2025) 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of an identical text or by endorsement, at the latest by February 2026, and conflicting national standards shall be withdrawn at the latest by February 2026.

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# International Standard

**ISO/ASTM 52953**

## **Additive manufacturing for metals — General principles — Registration of data acquired from process monitoring and for quality control**

*Fabrication additive de métaux — Principes généraux —  
Enregistrement de données acquises à partir de la surveillance du  
procédé et pour le contrôle qualité*

**First edition  
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**ISO/ASTM 52953:2025(en)****Foreword**

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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The committee responsible for this document is ISO/TC 261, *Additive manufacturing*, in cooperation with ASTM Committee F42, *Additive Manufacturing Technologies*, on the basis of 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).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

**ISO/ASTM 52953:2025(en)****Introduction**

Additive manufacturing (AM) is the general term for those technologies that successively join material to create physical objects as specified by their 3D design model data. Current AM technologies can fabricate parts layer-by-layer using different material types as inputs. The resulting parts have complex geometries that are needed for applications in a variety of manufacturing industries, where AM parts offer significant advantages or where the parts cannot be made using the traditional manufacturing technologies, such as machining and welding.

AM machines are being instrumented with various types of sensors which collect data throughout a build. Often, each sensor is designed to collect only one type of measurement dataset in a unique coordinate system. The use of this monitoring data for applications such as qualifying AM components is enhanced when a diverse range of sensor datasets are used and compared to post-process inspection. This requires multi-modal dataset registration including data alignment.

Registration of these datasets consists of recording necessary metadata and data alignment. A registered dataset allows the extraction of features from data from different sensors to be appropriately registered to post-process inspection. These features can be used for a range of applications including to control variations in feedstock, melt-pool geometry, thermal stability, layer integrity, defect detection, and part quality.

It is the intention of this document to provide a procedure and methods to register AM data, including:

- a) associating validated data with known time, locations, and origin, and
- b) data alignment for process monitoring and control.

Laser-based powder bed fusion for metals (PBF-LB/M) is used to demonstrate the data registration procedure. The procedure can be applied to monitor other AM processes, such as direct energy deposition, polymer or ceramic powder bed fusion, binder jetting, and photopolymerization.

# Additive manufacturing for metals — General principles — Registration of data acquired from process monitoring and for quality control

## 1 Scope

This document sets and defines the minimum requirements for registration of data acquired from process monitoring and for quality control in additive manufacturing (AM), including the description of a procedure.

Furthermore, this document comprises actions that users shall execute to register multi-modal AM data and store them in an appropriate repository.

This document is not applicable for data cleansing, sensor calibration, and image processing.

This document is only applicable for data gathered and generated from non-destructive test methods and sensors, e.g. X-ray computer tomography (XCT), thermal sensor, cameras and coordinate measuring machines (CMM).

This document is only applicable to metallic parts produced by means of laser-based powder bed fusion (PBF-LB); nevertheless, the procedures described in this document can be applied to monitor other AM processes and materials (e.g. directed energy deposition, polymer or ceramic powder bed fusion, binder jetting, and photopolymerization), but this document does not provide any data or case studies for them.

## 2 Normative reference

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/ASTM 52900, *Additive manufacturing — General principles — Fundamentals and vocabulary*

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