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STN	**Aditívna výroba polymérov Zásady kvalifikácie Časť 1: Všeobecné zásady a príprava skúšobných vzoriek na PBF-LB (ISO/ASTM 52936-1: 2023)**	**STN EN ISO/ASTM 52936-1** 18 0059

Additive manufacturing of polymers - Qualification principles - Part 1: General principles and preparation of test specimens for PBF-LB (ISO/ASTM 52936-1:2023)

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

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English Version

Additive manufacturing of polymers - Qualification principles - Part 1: General principles and preparation of test specimens for PBF-LB (ISO/ASTM 52936-1:2023)

Fabrication additive de polymères - Principes de qualification - Partie 1: Principes généraux et préparation des éprouvettes pour PBF-LB (ISO/ASTM 52936-1:2023)

Additive Fertigung - Qualifizierungsgrundsätze - Laserbasiertes pulverbettbasiertes Schmelzen von Polymeren - Teil 1: Allgemeines und Herstellung von Prüfkörpern (ISO/ASTM 52936-1:2023)

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European foreword

This document (EN ISO/ASTM 52936-1:2023) 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of an identical text or by endorsement, at the latest by July 2023, and conflicting national standards shall be withdrawn at the latest by July 2023.

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INTERNATIONAL STANDARD

ISO/ASTM 52936-1

First edition
2023-01

Additive manufacturing of polymers — Qualification principles —

Part 1: General principles and preparation of test specimens for PBF-LB

Fabrication additive de polymères — Principes de qualification —

Partie 1: Principes généraux et préparation des éprouvettes pour PBF-LB

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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 documents 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).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by ISO/TC 261, *Additive manufacturing*, and ISO/TC 61/SC 9, 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, and 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).

This first edition of ISO/ASTM 52936-1 cancels and replaces ISO 27547-1:2010, which has been technically revised.

The main changes are as follows:

— new standard number and title to make clear its status as additive manufacturing standard;

— requirements for conditions revised to allow use of state of the art machines;

— Annex B deleted because this procedure is not state of the art anymore.

Introduction

Many factors in an additive manufacturing test specimen-preparation process can influence the properties of the test specimens prepared and hence the measured values obtained when the test specimens are used in a test method. The mechanical properties of such test specimens are in fact strongly dependent on the conditions of the process used to prepare the test specimens. Exact definition of each of the main parameters of the process is a basic requirement for reproducible operating conditions.

It is important in defining test specimen-preparation conditions to consider any influence the conditions could have on the properties to be determined. Test specimens prepared by additive manufacturing techniques can show differences in molecular morphology (as with crystalline and semicrystalline polymers), differences in powder morphology (after undergoing a sintering process, for instance), differences in thermal history and differences in thickness of the layers, test specimen orientation or test specimen location, used to prepare the specimen. Only if each of these is controlled can differences in the values of the properties measured be avoided.

INTERNATIONAL STANDARD **ISO/ASTM 52936-1:2023(E)**

Additive manufacturing of polymers — Qualification principles —

Part 1: General principles and preparation of test specimens for PBF-LB

1 Scope

This document specifies the general principles to be followed when test specimens of thermoplastic materials are prepared by laser-based powder bed fusion (PBF-LB/P), which is commonly known as laser sintering. The (PBF-LB/P) process is used to prepare test specimens layer upon layer in which thermal energy selectively fuses regions of a powder bed. This document provides a basis for establishing reproducible and reportable sintering conditions. Its purpose is to promote uniformity in describing the main process parameters, build orientation of the sintering process and also to establish uniform practice in reporting sintering conditions.

This document does not specify the test procedure itself.

2 Normative references

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 3167, *Plastics — Multipurpose test specimens*

ISO 20753, *Plastics — Test specimens*

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

ISO/ASTM 52921, *Standard terminology for additive manufacturing — Coordinate systems and test methodologies*

ISO/ASTM 52925, *Additive manufacturing of polymers — Feedstock materials — Qualification of materials for laser-based powder bed fusion of parts*