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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

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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.

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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.