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Additive manufacturing - Material extrusion-based additive manufacturing of plastic materials - Part 1: Feedstock materials (ISO/ASTM 52903-1:2020)

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**Additive manufacturing - Material extrusion-based
additive manufacturing of plastic materials - Part 1:
Feedstock materials (ISO/ASTM 52903-1:2020)**

Fabrication additive - Fabrication additive de
matériaux plastiques à base d'extrusion de matière -
Partie 1: Matières premières (ISO/ASTM 52903-
1:2020)

Additive Fertigung - Materialextrusion-basierte
additive Fertigung von Kunststoffen - Teil 1:
Ausgangsmaterialien (ISO/ASTM 52903-1:2020)

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European foreword

The text of ISO/ASTM 52903-1:2020 has been prepared by Technical Committee ISO/TC 261 "Additive manufacturing" of the International Organization for Standardization (ISO) and has been taken over as EN ISO/ASTM 52903-1:2021 by Technical Committee CEN/TC 438 "Additive Manufacturing" the secretariat of which is held by AFNOR.

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**Additive manufacturing —
Material extrusion-based additive
manufacturing of plastic materials —**

**Part 1:
Feedstock materials**

*Fabrication additive — Fabrication additive de matériaux plastiques
à base d'extrusion de matière —*

Partie 1: Matières premières



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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*, in cooperation with ASTM F 42, *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.

A list of all parts in the ISO/ASTM 52903 series can be found on the ISO website.

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.

Additive manufacturing — Material extrusion-based additive manufacturing of plastic materials —

Part 1: Feedstock materials

1 Scope

This document describes a method for defining requirements for plastic materials used in extrusion-based additive manufacturing (AM) processes. Materials include unfilled, filled, and reinforced plastic materials suitable for processing into parts. These materials can also contain special additives (e.g. flame retardants, stabilizers, etc.). Processes include all material extrusion-based AM processes.

This document is intended for use by manufacturers of materials, feedstocks, plastic parts or any combination of the three using material extrusion-based AM.

NOTE In some cases, material manufacturers can also be feedstock manufacturers. In other cases, a material manufacturer can supply materials (example: pellets) to a feedstock manufacturer (example: converter of pellets into filaments).

This document does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health, and environmental practices and determine the applicability of regulatory limitations prior to use.

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/ASTM 52900, *Additive Manufacturing — General Principles — Fundamentals and vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/ASTM 52900 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

filament

feedstock characterized by extreme length relative to its uniform cross section

3.2

pellets

small mass of preformed feedstock material, having relative uniform dimensions in any given batch

Note 1 to entry: Pellets of smaller size can sometimes be referred to as micro-pellets.