



SLOVENSKI STANDARD
oSIST prEN ISO/ASTM 52907:2018
01-junij-2018

Aditivna proizvodnja - Tehnične specifikacije za kovinske praške (ISO/ASTM DIS 52907:2018)

Additive manufacturing - Technical specifications on metal powders (ISO/ASTM DIS 52907:2018)

Additive Fertigung - Technische Spezifikationen für Metallpulver (ISO/ASTM DIS 52907:2018)

Fabrication additive - Spécifications techniques sur les poudres métalliques (ISO/ASTM DIS 52907:2018)

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Additive manufacturing — Technical specifications on metal powders

Fabrication additive — Spécifications techniques sur les poudres métalliques

ICS: 25.030

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ISO/ASTM/DIS 52907:2018(E)

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 on 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 the following URL: www.iso.org/iso/foreword.html.

ISO/ASTM 52907 was prepared by Technical Committee ISO/TC 261, *Additive manufacturing*, Joint Group JG 67, *Additive Manufacturing — General Principles — Functionally Graded Additive Manufacturing* and by Technical Committee CEN/TC 438, *Additive manufacturing* in collaboration.

Introduction

The document aims to simplify the relation between the supplier and the customer for the supply of metal powder for additive manufacturing purpose whatever the process involved.

The document doesn't aim to develop new standards, but provide a list of existing standards dedicated to metallic powder that are suitable for additive manufacturing.

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Additive manufacturing — Technical specifications on metal powder

1 Scope

This International Standard deals with technical specifications for metallic powders intended to be used in additive manufacturing and covers the following aspects:

- Documentation and traceability
- Sampling
- Particle size distribution
- Chemical composition
- Characteristic densities
- Morphology
- Flowability
- Contamination
- Packaging and storage

This International Standard does not deal with safety aspects.

In addition, this International Standard gives specific requirements for used metallic powders in additive manufacturing.

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 2591-1, *Test sieving — Part 1: Methods using test sieves of woven cloth and perforated metal plate*

ISO 3252, *Powder metallurgy — vocabulary*

ISO 3923-1, *Metallic powders — Determination of apparent density — Part 1: Funnel method*

ISO 3923-2, *Metallic powders — Determination of apparent density — Part 2: Scott volumeter method*

ISO 3953, *Metallic powders — Determination of tap density*

ISO 3954, *Powders for powder metallurgical purposes — Sampling*

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ISO 4490, *Metallic powders — Determination of flow rate by means of a calibrated funnel (Hall flowmeter)*

ISO 4497, *Metallic powders — Determination of particle size by dry sieving*

ISO 12154, *Determination of density by volumetric displacement — Skeleton density by gas pycnometry*

ISO 13517, *Metallic powders — Determination of flowrate by means of a calibrated funnel (Gustavsson flowmeter)*

ISO 13320, *Particle size analysis — Laser diffraction methods*

ISO 13322-1, *Particle size analysis — Image analysis methods — Part 1: Static image analysis methods*

ISO 13322-2, *Particle size analysis — Image analysis methods — Part 2: Dynamic image analysis methods*

ISO 22412, *Particle size analysis — Dynamic light scattering (DLS)*

ISO/ASTM 52900, *Additive manufacturing — General principles — Terminology*

ISO/CEI 17050-1, *Conformity assessment — Supplier's declaration of conformity — Part 1: General requirements*

ASTM B212, *Standard Test Method for Apparent Density of Free-Flowing Metal Powders Using the Hall Flowmeter Funnel*

ASTM B213, *Standard Test Methods for Flow Rate of Metal Powders Using the Hall Flowmeter Funnel*

ASTM B214, *Standard Test Method for Sieve Analysis of Metal Powders*

ASTM B215, *Standard Practices for Sampling Metal Powders*

ASTM B243, *Standard Terminology of Powder Metallurgy*

ASTM B329, *Standard Test Method for Apparent Density of Metal Powders and Compounds Using the Scott Volumeter*

ASTM B417, *Standard Test Method for Apparent Density of Non-Free-Flowing Metal Powders Using the Carney Funnel*

ASTM B527, *Standard Test Method for Tap Density of Metal Powders and Compounds*

ASTM B822, *Standard Test Method for Particle Size Distribution of Metal Powders and Related Compounds by Light Scattering*

ASTM B923, *Standard Test Method for Metal Powder Skeletal Density by Helium or Nitrogen Pycnometry*

ASTM B964, *Standard Test Methods for Flow Rate of Metal Powders Using the Carney Funnel*

EN 1274, *Thermal spraying — Powders. Composition — Technical supply conditions*

EN 10204, *Metallic products — Types of inspection documents*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3252, ISO/ASTM 52900 and ASTM B243 and the following apply.

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

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

3.1

additive system

additive manufacturing system

additive manufacturing equipment

machine and auxiliary equipment used for additive manufacturing

[SOURCE: ISO/ASTM 52900, 2.1.3]

3.2

feedstock

bulk raw material supplied to the additive manufacturing building process

[SOURCE: ISO/ASTM 52900, 2.5.2]

3.3

powder bed

part bed

build area in an *additive manufacturing system* (3.1) in which *feedstock* (3.2) is deposited and selectively fused by means of a heat source or bounded by means of an adhesive to build up parts

[SOURCE: ISO/ASTM 52900, 2.5.8]

3.4

powder lot

quantity of powder produced under traceable, controlled conditions, from a single powder

Note 1 to entry: The size of a powder lot is defined by the powder supplier. It is common that the powder supplier distributes a portion of a powder lot to multiple AM system users.

Note 2 to entry: Source documentation of the powder lot is normally required for most AM product applications. Source documentation is also referred to as a "certificate of conformance", "factory certificate" or "certificate of analysis".

[SOURCE: ISO/ASTM 52900, 2.5.10]

3.5

used powder

powder that has been supplied as *feedstock* (3.2) to an AM machine during at least one previous build cycle

[SOURCE: ISO/ASTM 52900, 2.5.11]