INTERNATIONAL STANDARD

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Additive manufacturing — General principles —

Part 3: Main characteristics and corresponding test methods

Fabrication additive — Principes généraux —

Partie 3: Principales caractéristiques et méthodes d'essai correspondantes

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 261, *Additive manufacturing*.

ISO 17296 consists of the following parts, under the general title *Additive manufacturing — General principles*:

— *Part 1: Terminology*

— *Part 2: Overview of process categories and feedstock*

— *Part 3: Main characteristics and corresponding test methods*

— *Part 4: Overview of data processing*

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Introduction

Additive manufacturing is a process of joining bulk raw materials to make parts from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing and formative methodologies. It is an inherent part of the parts development or production process. It is used to manufacture prototypes and production parts.

This part of ISO 17296 aims to offer recommendations and advice to machine manufacturers, feedstock suppliers, machine users, part providers, and customers, to improve communication between these stakeholders concerning test methods.

This International Standard has been developed within a set of consistent documents from terminology to test methods and data exchange.

The manufacturing of parts by additive manufacturing processes is subject to numerous variables. The processes described in ISO 17296-2 can be used to manufacture parts that meet technological requirements only if these factors are controlled, optimized and, if necessary, customized for each order. When assessing parts quality, comparison with the specific requirements is one of the most important aspects.

Additive manufacturing processes require the selective application of thermo-physical and/or chemical mechanisms to generate the part. Thus it is possible to produce parts with different characteristics, depending on the method used and the process parameters. However, complete testing of all parts characteristics is neither cost-effective nor technologically feasible. Therefore, when formulating parts specifications, the nature and scope of testing is an important issue.

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Additive manufacturing — General principles —

Part 3:
Main characteristics and corresponding test methods

1 Scope

This part of ISO 17296 covers the principal requirements applied to testing of parts manufactured by additive manufacturing processes.

This part of ISO 17296

— specifies main quality characteristics of parts,

— specifies appropriate test procedures, and

— recommends the scope and content of test and supply agreements.

This part of ISO 17296 is aimed at machine manufacturers, feedstock suppliers, machine users, part providers, and customers to facilitate the communication on main quality characteristics. It applies wherever additive manufacturing processes are used.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 17296-1[1)], *Additive manufacturing — General — Part 1: Terminology*

ISO/ASTM 52915, *Standard specification for additive manufacturing file format (AMF) Version 1.1*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 17296-1 and the following apply.

3.1
machine manufacturer
manufacturer of additive manufacturing equipment including machine

[SOURCE: ISO 17296-1[1)]]

3.2
feedstock supplier
provider of bulk raw material/consumable to be processed in additive manufacturing equipment

[SOURCE: ISO 17296-1[1)]]

1) To be published.

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