

Standard terminology for additive manufacturing -  
Coordinate systems and test methodologies (ISO/ASTM  
52921:2013)

## EESTI STANDARDI EESSÕNA

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English Version

Standard terminology for additive manufacturing -  
Coordinate systems and test methodologies (ISO/ASTM  
52921:2013)

Terminologie normalisée pour la fabrication additive -  
Systèmes de coordonnées et méthodes d'essai  
(ISO/ASTM 52921:2013)

Normbegrifflichkeiten für die Additive Fertigung -  
Koordinatensysteme und Prüfmethodologien  
(ISO/ASTM 52921:2013)

This European Standard was approved by CEN on 29 August 2016.

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## European foreword

The text of ISO/ASTM 52921:2013 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 52921:2016 by 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of an identical text or by endorsement, at the latest by March 2017, and conflicting national standards shall be withdrawn at the latest by March 2017.

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### Endorsement notice

The text of ISO/ASTM 52921:2013 has been approved by CEN as EN ISO/ASTM 52921:2016 without any modification.

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# Standard Terminology for Additive Manufacturing—Coordinate Systems and Test Methodologies<sup>1</sup>

This standard is issued under the fixed designation ISO/ASTM 52921; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision.

## 1. Scope

1.1 This terminology includes terms, definitions of terms, descriptions of terms, nomenclature, and acronyms associated with coordinate systems and testing methodologies for additive manufacturing (AM) technologies in an effort to standardize terminology used by AM users, producers, researchers, educators, press/media, and others, particularly when reporting results from testing of parts made on AM systems. Terms included cover definitions for machines/systems and their coordinate systems plus the location and orientation of parts. It is intended, where possible, to be compliant with ISO 841 and to clarify the specific adaptation of those principles to additive manufacturing.

NOTE 1—The applicability of this standard to cladding has to be evaluated. Discussions are under progress.

NOTE 2—Non-cartesian systems are not covered by this standard.

1.2 *This standard 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 practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

**D638** Test Method for Tensile Properties of Plastics

**E8/E8M** Test Methods for Tension Testing of Metallic Materials

<sup>1</sup> This terminology is under the jurisdiction of ASTM Committee **F42** on Additive Manufacturing Technologies and is the direct responsibility of Subcommittee **F42.01** on Test Methods, and is also under the jurisdiction of ISO/TC 261.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

**F2792** Terminology for Additive Manufacturing Technologies<sup>3</sup>

2.2 *ISO Standard:*<sup>3</sup>

**ISO 841** Industrial Automation Systems and Integration—Numerical Control of Machines—Coordinate System and Motion Nomenclature

**ISO 527** (all parts), Plastics — Determination of tensile properties

**ISO 6892-1** Metallic materials — Tensile testing – Part 1: Method of test at room temperature

## 3. Significance and Use

3.1 Although many additive manufacturing systems are based heavily upon the principles of Computer Numerical Control (CNC), the coordinate systems and nomenclature specific to CNC are not sufficient to be applicable across the full spectrum of additive manufacturing equipment. This terminology expands upon the principles of ISO 841 and applies them specifically to additive manufacturing. Although this terminology is intended to complement ISO 841, if there should arise any conflict, this terminology shall have priority for additive manufacturing applications. For any issues not covered in this terminology, the principles in ISO 841 may be applied.

3.2 Furthermore, this terminology does not prescribe the use of any specific existing testing methodologies or standards that practitioners of AM may wish to employ for testing purposes; however, it is expected that practitioners will employ appropriate existing methodologies and standards to test parts made by AM.

## 4. Terminology

4.1 *Definitions*—Definitions shall be in accordance with Terminology **F2792** and the following:

<sup>3</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.