Evolution of standardisation project on classification of part properties for additive manufacturing of polymer parts

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The draft ISO/ASTM CD 52924 'Additive manufacturing - Qualification principles - Classification of part properties for additive manufacturing of polymer parts' has changed from status CD ('Committee Draft' - draft for enquiry, subject to members input) to DIS ('Draft International Standard' - draft for enquiry, subject to public input). The purpose of this draft is to improve communication between customer and manufacturing services in relation to the quality of polymer parts.

Properties of additive manufactured polymer parts depend on the used material, machine system and process control. A list of properties, test samples and specific tests is provided to enable the user to define the required part specifications for manufacturing.

This draft applies to thermoplastic polymer additive manufacturing using powder bed fusion (SLS) or material extrusion (FFF / FPF).

The document describes the following:

Classification system:

- Definition of classes of part properties based on mechanical tensile properties, density and dimensional accuracy of manufactured parts
- Overview of classes and characteristic values for polymers typically used in SLS or FFF

Determination of the characteristic values for the classification system:

- Test samples for:
  - Tensile properties
  - Dimensional accuracy
  - Density
- Manufacturing conditions:
  - Orientation and grid arrangement
  - Distribution in the build space
- Determination of the mechanical properties:
  - Conditioning during the additive manufacturing
  - Test speed
- Determination of the dimensional accuracy
- Determination of the relative part density

Quality control:

- Initial classification of the part properties
- Regular checking of the part property classification
- Renewed determination of the classification in case of replacement of relevant machine components

Annex:

- Form for part property classification

If you require any further information, do not hesitate to contact our Additive Manufacturing team!

Authors



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