Evolution of standardisation project on classification of part properties

18 August 2022, 14:34

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The draft ISO/ASTM DIS 52925 'Additive manufacturing - Qualification principles - Classification of part properties' has changed from status DIS ('Draft International Standard'- draft for enquiry, subject to public input) to FDIS ('Final Draft International Standard' - draft for final approval vote). This draft provides guidance and recommendations for the qualification of polyamide 12 (PA12) materials, and to some extent polyamide 11 (PA11), intended for powder bed fusion (SLS).

The document describes the following strategies to determine powder quality and suitability for powder bed fusion:

In-house sampling:

- Characterisation of virgin powder and powder blends
- Characterisation of used powder

Supplier's test report, which should contain information on:

- Particle size distribution: influences the spreadability of the powder and the final surface quality of the part
- Residual monomer content: should be minimal to avoid release of gases from the powder
- Supplementary data:
  - Materials Safety Data Sheet (MSDS)
  - Product information (optional) on stabilisers, flow agents, fillers, flame retardants and other additives

Factors influencing processability (further in-house analyses) :

- Spreadability of the powder
- Relative humidity of the powder
- Particle size distribution

Factors affecting part quality:

- Molecular chain length distribution
- Melting and recrystallisation temperatures
- Viscosity
- Melt volume-flow rate

Annexes (informative):

- Determination of the Hausner ratio (spreadability of a powder)
- Determination of the melt volume-flow rate
- Round robin melt volume-flow rate test

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

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