

Irish Standard I.S. EN ISO/ASTM 52941:2020

Additive manufacturing - System performance and reliability - Acceptance tests for laser metal powder-bed fusion machines for metallic materials for aerospace application (ISO/ASTM 52941:2020)

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National Foreword

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English Version

Additive manufacturing - System performance and reliability - Acceptance tests for laser metal powder-bed fusion machines for metallic materials for aerospace application (ISO/ASTM 52941:2020)

Fabrication additive - Performance et fiabilité du système - Essais de réception pour machines de fusion laser sur lit de poudre pour les matériaux métalliques pour l'application aérospatiale (ISO/ASTM 52941:2020) Additive Fertigung - Systemleistung und Betriebssicherheit - Abnahmeprüfung von pulverbettbasierten Laserstrahlanlagen für metallische Werkstoffe für Luft- und Raumfahrtanwendungen (ISO/ASTM 52941:2020)

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EN ISO/ASTM 52941:2020 (E)

Contents	Page
European foreword	

European foreword

This document (EN ISO/ASTM 52941:2020) has been prepared by Technical Committee ISO/TC 261 "Additive manufacturing" in collaboration with 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of an identical text or by endorsement, at the latest by May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

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Additive manufacturing — System performance and reliability — Acceptance tests for laser metal powder-bed fusion machines for metallic materials for aerospace application

Fabrication additive — Performance et fiabilité du système — Essais de réception pour machines de fusion laser sur lit de poudre pour les matériaux métalliques pour l'application aérospatiale





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Contents

Page	
1 uge	

Fore	word		iv	
1	Scop	e		
2	Norr	native references	1	
3	Tern	ns and definitions	1	
4	Equi	pment	2	
5	Envi	- ronmental and operational conditions	2	
6	Oual	ification testing	2	
U	6.1	6.1 General		
	6.2	Laser beam tests	2	
	0.2	6.2.1 Testing the laser power for continuous wave lasers		
		6.2.2 Testing the laser power stability for continuous wave lasers	3	
		6.2.3 Testing of pulsed wave lasers		
		6.2.4 Evaluation of the laser beam characteristics		
		6.2.5 Evaluation of the minimum laser beam waist position in different working		
		plane locations		
		6.2.6 Evaluation of the thermal stability of the minimum beam waist position		
		6.2.7 Testing the laser beam position		
		6.2.8 Trajectory accuracy		
		6.2.9 Scanning speed	4	
		6.2.10 Requirements for equipment with multiple laser beam sources		
	6.3	Mechanical function test		
		6.3.1 General		
		6.3.2 Build platform positioning		
		6.3.3 Feeding platform positioning		
		6.3.4 Other powder feed processing mechanics		
		6.3.5 Movement of the powder spreading device	5	
	6.4	Heating system	5	
	6.5	Atmosphere inside the working space	5	
	6.6	Data recording		
	6.7	Safety systems	6	
	6.8	Ontional tests	6	
	0.0	6.8.1 Demonstrators and test artifacts	6	
		682 Build area assessment	6	
		6.8.3 Gas flow test by hot wire anemometer	7	
	6.9	Requalification		
7	Test	report		
Ann	ex A (in	formative) Example of a test report	10	
Ann	ex B (in	formative) Geometric pattern for the trajectory accuracy test	11	
Bibl	iogrant	N	12	
	P	· · · · · · · · · · · · · · · · · · ·		

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ISO/ASTM 52941:2020(E)

Foreword

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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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by ISO/TC 261, *Additive manufacturing*, in cooperation with ASTM F 42, *Additive Manufacturing Technologies*, on the basis of a partnership agreement between ISO and ASTM International with the aim to create a common set of ISO/ASTM standards on additive manufacturing.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at <u>www.iso.org/members.html</u>.

Additive manufacturing — System performance and reliability — Acceptance tests for laser metal powderbed fusion machines for metallic materials for aerospace application

1 Scope

This document specifies requirements and test methods for the qualification and re-qualification of laser beam machines for metal powder bed fusion additive manufacturing for aerospace applications.

It can also be used to verify machine features during periodic inspections or following maintenance and repair activities.

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 11146 (all parts), Lasers and laser-related equipment — Test methods for laser beam widths, divergence angles and beam propagation ratios

ISO 11554, Optics and photonics — Lasers and laser-related equipment — Test methods for laser beam power, energy and temporal characteristics

ISO/ASTM 52900, Additive manufacturing — General principles — Part 1: Fundamentals and vocabulary

ISO/ASTM 52921, Standard terminology for additive manufacturing — Coordinate systems and test methodologies

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/ASTM 52900, ISO/ASTM 52921 and the following apply.

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

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

3.1

scanning speed

relative linear speed of the laser beam movement in the plane of the build platform (working plane)

3.2

warm-up time

time from switching on the machine until the build cycle can be started, as specified by the machine manufacturer

3.3

feeding platform

platform that moves incrementally to supply powder to the *powder spreading device* (3.4)



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