

SLOVENSKI STANDARD

SIST EN ISO/ASTM 52942:2020

01-november-2020

Aditivna proizvodnja - Kvalifikacijska načela - Usposobljenost upravljavcev strojev in opreme za lasersko fuzijo plasti kovinskih prašnih delcev za uporabo v aeronavtiki (ISO/ASTM 52942:2020)

Additive manufacturing - Qualification principles - Qualifying machine operators of laser metal powder bed fusion machines and equipment used in aerospace applications (ISO/ASTM 52942:2020)

Additive Fertigung - Grundsätze der Qualifizierung - Standard Richtlinie zur Prüfung von Anlagenbedienern für pulverbettbasierte Laserstrahlanlagen zur additiven Fertigung für Luft- und Raumfahrtanwendungen (ISO/ASTM 52942:2020)

Fabrication additive - Principes de qualification - Qualification des opérateurs machine des machines à fusion laser sur lit de poudre et équipements utilisés dans les applications aérospatiales (ISO/ASTM 52942:2020)

Ta slovenski standard je istoveten z: EN ISO/ASTM 52942:2020

ICS:

03.100.30	Vodenje ljudi	Management of human resources
25.030	3D-tiskanje	Additive manufacturing
49.020	Letala in vesoljska vozila na splošno	Aircraft and space vehicles in general

SIST EN ISO/ASTM 52942:2020 en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO/ASTM 52942:2020](https://standards.iteh.ai/catalog/standards/sist/f9a8daec-6c1d-46c4-9630-8ca82e106264/sist-en-iso-astm-52942-2020)

<https://standards.iteh.ai/catalog/standards/sist/f9a8daec-6c1d-46c4-9630-8ca82e106264/sist-en-iso-astm-52942-2020>

EUROPEAN STANDARD

EN ISO/ASTM 52942

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2020

ICS 03.100.30; 25.030

English Version

Additive manufacturing - Qualification principles -
Qualifying machine operators of laser metal powder bed
fusion machines and equipment used in aerospace
applications (ISO/ASTM 52942:2020)

Fabrication additive - Principes de qualification -
Qualification des opérateurs machine des machines à
fusion laser sur lit de poudre et équipements utilisés
dans les applications aérospatiales (ISO/ASTM
52942:2020)

Additive Fertigung - Grundsätze der Qualifizierung -
Standard Richtlinie zur Prüfung von Anlagenbedienern
für pulverbettbasierte Laserstrahlanlagen zur
additiven Fertigung für Luft- und
Raumfahrtanwendungen (ISO/ASTM 52942:2020)

This European Standard was approved by CEN on 24 August 2020.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	3

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO/ASTM 52942:2020](https://standards.iteh.ai/catalog/standards/sist/f9a8daec-6c1d-46c4-9630-8ca82e106264/sist-en-iso-astm-52942-2020)
<https://standards.iteh.ai/catalog/standards/sist/f9a8daec-6c1d-46c4-9630-8ca82e106264/sist-en-iso-astm-52942-2020>

European foreword

This document (EN ISO/ASTM 52942:2020) 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 March 2021, and conflicting national standards shall be withdrawn at the latest by March 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

iTeh STANDARD PREVIEW

The text of ISO/ASTM 52942:2020 has been approved by CEN as EN ISO/ASTM 52942:2020 without any modification.

[SIST EN ISO/ASTM 52942:2020](https://standards.itih.ai/catalog/standards/sist/f9a8daec-6c1d-46c4-9630-8ca82e106264/sist-en-iso-astm-52942-2020)

<https://standards.itih.ai/catalog/standards/sist/f9a8daec-6c1d-46c4-9630-8ca82e106264/sist-en-iso-astm-52942-2020>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO/ASTM 52942:2020](#)

<https://standards.iteh.ai/catalog/standards/sist/f9a8daec-6c1d-46c4-9630-8ca82e106264/sist-en-iso-astm-52942-2020>

INTERNATIONAL
STANDARD

ISO/ASTM
52942

First edition
2020-08

**Additive manufacturing —
Qualification principles — Qualifying
machine operators of laser metal
powder bed fusion machines and
equipment used in aerospace
applications**

iTeh STANDARD PREVIEW

(standards.iteh.ai)

*Fabrication additive — Principes de qualification — Qualification des
opérateurs machine des machines à fusion laser sur lit de poudre et
équipements utilisés dans les applications aérospatiales*

[SIST EN ISO/ASTM 52942:2020](https://standards.iteh.ai/catalog/standards/sist/f9a8daec-6c1d-46c4-9630-8ca82e106264/sist-en-iso-astm-52942-2020)

<https://standards.iteh.ai/catalog/standards/sist/f9a8daec-6c1d-46c4-9630-8ca82e106264/sist-en-iso-astm-52942-2020>



Reference number
ISO/ASTM 52942:2020(E)

© ISO/ASTM International 2020

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN ISO/ASTM 52942:2020](https://standards.iteh.ai/catalog/standards/sist/f9a8daec-6c1d-46c4-9630-8ca82e106264/sist-en-iso-astm-52942-2020)

<https://standards.iteh.ai/catalog/standards/sist/f9a8daec-6c1d-46c4-9630-8ca82e106264/sist-en-iso-astm-52942-2020>



COPYRIGHT PROTECTED DOCUMENT

© ISO/ASTM International 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester. In the United States, such requests should be sent to ASTM International.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11

Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

ASTM International
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959, USA
Phone: +610 832 9634
Fax: +610 832 9635
Email: khooper@astm.org
Website: www.astm.org

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Qualification	2
4.1 General.....	2
4.2 Essential variables and-range of qualification	2
4.2.1 General.....	2
4.2.2 Powder material group	2
4.2.3 Machine model	3
4.3 Evidence of visual acuity.....	3
4.4 Theoretical test.....	3
4.5 Practical test.....	3
5 Qualification test certificate	4
6 Validity of testing	4
6.1 General.....	4
6.2 Period of validity	4
6.3 Requalification test.....	4
6.4 Supplementary test.....	5
Annex A (normative) Content of the theoretical assessment	6
Annex B (normative) Content of the practical assessment	7
Annex C (informative) Example of qualification test certificate for operators of laser metal powder bed fusion machines	9
Annex D (informative) Example of an additive manufacturing procedure specification (APS)	11
Bibliography	13

ISO/ASTM 52942:2020(E)

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 and in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 438, *Additive manufacturing*, in accordance with the agreement on technical cooperation between ISO and CEN (Vienna Agreement)..

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 www.iso.org/members.html.

Additive manufacturing — Qualification principles — Qualifying machine operators of laser metal powder bed fusion machines and equipment used in aerospace applications

1 Scope

This document specifies requirements for the qualification of operators of laser metal powder bed fusion machines and equipment for additive manufacturing in aerospace applications.

This document is applicable if the operator qualification testing is required by contract or by application standards in the field of aerospace.

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

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

ISO 18490, *Non-destructive testing — Evaluation of vision acuity of NDT personnel*

EN 4179, *Aerospace series — Qualification and approval of personnel for non-destructive testing*

NAS 410, *NAS CERTIFICATION & QUALIFICATION OF NONDESTRUCTIVE TEST PERSONNEL*

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

examiner

person who has been appointed to verify conformance to the applicable standard

Note 1 to entry: In certain cases, an external independent examiner can be required.

[SOURCE: ISO 14732:2013, 3.12]

3.2

examining body

organization that has been appointed to verify conformance to the applicable standard

Note 1 to entry: In certain cases, an external independent examining body can be required.