

ISO/ASTM FDIS 52926-1:2023(E)

ISO/TC 261

Secretariat: DIN

Date: 2023-06-21xx

**Additive manufacturing of metals — Qualification ~~Principles~~principles — Part 1: General qualification of operators**

*Fabrication additive des métaux — Principes de qualification — Partie 1: Qualification générale des opérateurs*

- Style Definition:** Heading 1: Indent: Left: 0 pt, First line: 0 pt, Tab stops: Not at 21.6 pt
- Style Definition:** Heading 2: Font: Bold, Tab stops: Not at 18 pt
- Style Definition:** Heading 3: Font: Bold
- Style Definition:** Heading 4: Font: Bold
- Style Definition:** Heading 5: Font: Bold
- Style Definition:** Heading 6: Font: Bold
- Style Definition:** ANNEX
- Style Definition:** AMEND Terms Heading: Font: Bold
- Style Definition:** AMEND Heading 1 Unnumbered: Font: Bold
- Style Definition:** List Bullet: Indent: Left: 0 pt, Hanging: 18 pt, No bullets or numbering, Tab stops: 18 pt, List tab
- Style Definition:** List Bullet 2: Indent: Left: 14.15 pt, Hanging: 18 pt, No bullets or numbering, Tab stops: 32.15 pt, List tab
- Style Definition:** List Bullet 3: Indent: Left: 28.3 pt, Hanging: 18 pt, No bullets or numbering, Tab stops: 46.3 pt, List tab
- Style Definition:** List Bullet 4: Indent: Left: 42.45 pt, Hanging: 18 pt, No bullets or numbering, Tab stops: 60.45 pt, List tab
- Style Definition:** List Bullet 5: Indent: Left: 56.6 pt, Hanging: 18 pt, No bullets or numbering, Tab stops: 74.6 pt, List tab
- Style Definition:** List Number: Indent: Left: 0 pt, Hanging: 18 pt, No bullets or numbering, Tab stops: 18 pt, List tab
- Style Definition:** List Number 5: Indent: Left: 56.6 pt, Hanging: 18 pt, No bullets or numbering, Tab stops: 74.6 pt, List tab

iTeh Standards  
(<https://standards.itih.ai>)  
Document Preview

ISO/ASTM 52926-1

<https://standards.itih.ai/catalog/standards/sist/de421f8a-5807-402e-b4a0-228da409-astm-52926-1>

© ISO/ASTM International 2023

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	ASTM International
CP 401 • Ch. de Blandonnet 8	100 Barr Harbor Drive, PO Box C700
CH-1214 Vernier, Geneva	West Conshohocken, PA 19428-2959, USA
Phone: +41 22 749 01 11	Phone: +610 832 9634
Fax: +41 22 749 09 47	Fax: +610 832 9635
Email: <a href="mailto:copyright@iso.org">copyright@iso.org</a>	Email: <a href="mailto:khooper@astm.org">khooper@astm.org</a>
Website: <a href="http://www.iso.org">www.iso.org</a>	Website: <a href="http://www.astm.org">www.astm.org</a>

Formatted: Pattern: Clear

Formatted: Pattern: Clear

iTeh Standards  
(<https://standards.itih.ai>)  
Document Preview

ISO/ASTM 52926-1

<https://standards.itih.ai/catalog/standards/sist/de421f8a-5807-402e-b4a0-228da4793a53/iso-astm-52926-1>

**Contents**

<b>Foreword</b> .....	Error! Bookmark not defined.
<b>Introduction</b> .....	Error! Bookmark not defined.
<b>1 Scope</b> .....	Error! Bookmark not defined.
<b>2 Normative references</b> .....	Error! Bookmark not defined.
<b>3 Terms and definitions</b> .....	Error! Bookmark not defined.
<b>4 Operator qualification</b> .....	Error! Bookmark not defined.
4.1 General.....	Error! Bookmark not defined.
4.2 Essential variables and the range of qualification.....	Error! Bookmark not defined.
4.2.1 General.....	Error! Bookmark not defined.
4.2.2 The various AM processes for metal.....	Error! Bookmark not defined.
4.2.3 The various feedstock types and material groups.....	Error! Bookmark not defined.
Table 1 — Range of qualification for parent material.....	Error! Bookmark not defined.
4.2.4 The various types of AM machines.....	Error! Bookmark not defined.
4.3 Assessment principles.....	Error! Bookmark not defined.
<b>5 Qualification test certificate</b> .....	Error! Bookmark not defined.
<b>6 Validity of testing</b> .....	Error! Bookmark not defined.
6.1 General.....	Error! Bookmark not defined.
6.2 Conditions of validity.....	Error! Bookmark not defined.
6.3 Re-qualification test.....	Error! Bookmark not defined.
<b>Annex A (informative) Qualification test certificate of machine operators for metallic parts production</b> .....	Error! Bookmark not defined.
<b>Bibliography</b> .....	Error! Bookmark not defined.
<b>Foreword</b> .....	v
<b>Introduction</b> .....	vi
<b>1 Scope</b> .....	1
<b>2 Normative references</b> .....	1
<b>3 Terms and definitions</b> .....	1
<b>4 Operator qualification</b> .....	2
4.1 General.....	2
4.2 Essential variables and the range of qualification.....	2
4.2.1 General.....	2
4.2.2 The various AM processes for metal.....	2
4.2.3 The various feedstock types and material groups.....	3
4.2.4 The various types of AM machines.....	3
4.3 Assessment principles.....	4
<b>5 Qualification test certificate</b> .....	4
<b>6 Validity of testing</b> .....	5
6.1 General.....	5
6.2 Conditions of validity.....	5

ISO/ASTM FDIS 52926-1:2023(E)

<b>6.3 Re-qualification test .....</b>	<b>5</b>
<b>Annex A (informative) Qualification test certificate of machine operators for metallic parts production .....</b>	<b>7</b>
<b>Bibliography .....</b>	<b>8</b>

iTeh Standards  
(<https://standards.itih.ai>)  
Document Preview

[ISO/ASTM 52926-1](https://standards.itih.ai/catalog/standards/sist/de421f8a-5807-402e-b4a0-228da4793a53/iso-astm-52926-1)

<https://standards.itih.ai/catalog/standards/sist/de421f8a-5807-402e-b4a0-228da4793a53/iso-astm-52926-1>

## 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~~document 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](http://www.iso.org/directives)~~www.iso.org/directives~~).

~~Attention is drawn~~ISO draws attention to the possibility that ~~some of the elements~~implementation of this document may ~~be involve~~ the ~~subject~~use of (a) patent(s). ISO takes no position concerning the ~~evidence, validity or applicability of any claimed patent rights, in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). 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](http://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](http://www.iso.org/iso/foreword.html)~~www.iso.org/foreword.html~~.

This document was prepared by Technical Committee ISO/TC 261, *Additive manufacturing*, Joint Group JG 74, *Personnel Qualifications* in cooperation with ASTM Committee F42, *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, 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).

A list of all parts of the ISO/ASTM 52926 group standard can be found on the ISO website.

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](http://www.iso.org/members.html)~~www.iso.org/members.html~~.

Formatted: Adjust space between Latin and Asian text, Adjust space between Asian text and numbers

Formatted: English (United States)

Formatted: Pattern: Clear

Formatted: Pattern: Clear

## Introduction

For many companies, additive manufacturing represents an alternative to more conventional manufacturing processes such as casting, forging and milling. The trend towards complex components, decentralised production and customer specific products allows an economically feasible use for more and more areas. This also applies to many series applications, which comprise completely different demands on the efficiency of the processes. In particular, components used in different fields (e.g., automotive industry, mechanical engineering, railway sector, aerospace, process and industrial plants, medical technology, etc.) are subject to high demands in terms of quality and safety. This creates a need for norms and standards that provide a transparent baseline for the production of components for a great variety of application areas.

The manufacturing of products used for applications subjected to specific requirements, relies on that the products' compliance to these requirements can be assured. Additive manufacturing is no exception to this. To this end, the production chain and environment should be designed in such a way that the process quality and the resulting product quality are always consistent and reproducible. To assure this consistency and reproducibility, it is of utmost importance to ensure that the involved workforce is adequately qualified for all stages in the production.

Since this document is designed not to be cross-technology, the different processes are indicated in the relevant four parts of the standard.

This document offers a common approach for the qualification of professionals in AM. If the requirements of ISO/ASTM 52926 series are fulfilled, the scope of an audit can be greatly reduced.

iteh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[ISO/ASTM 52926-1](#)

<https://standards.iteh.ai/catalog/standards/sist/de421f8a-5807-402e-b4a0-228da4793a53/iso-astm-52926-1>

- Formatted: Pattern: Clear
- Formatted: Pattern: Clear
- Formatted: Pattern: Clear