



BSI Standards Publication

Additive manufacturing for aerospace — Process characteristics and performance

Part 2: Directed energy deposition using wire and arc

National foreword

This British Standard is the UK implementation of EN ISO/ASTM 52943-2:2024. It is identical to ISO/ASTM 52943-2:2024.

The UK participation in its preparation was entrusted to Technical Committee AMT/8, Additive manufacturing.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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characteristics and performance - Part 2: Directed energy
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Fabrication additive pour l'aérospatiale -
Caractéristiques et performances du procédé - Partie 2:
Dépôt de matière sous énergie concentrée utilisant du
fil et un arc (ISO/ASTM 52943-2:2024)

Additive Fertigung für Luft- und Raumfahrt -
Prozessmerkmale und Leistungsvermögen - Teil 2:
Materialauftrag mit gerichteter Energieeinbringung
unter Verwendung von Draht und Lichtbogen
(ISO/ASTM 52943-2:2024)

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN ISO/ASTM 52943-2:2024) 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of an identical text or by endorsement, at the latest by October 2024, and conflicting national standards shall be withdrawn at the latest by October 2024.

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.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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Endorsement notice

The text of ISO/ASTM 52943-2:2024 has been approved by CEN as EN ISO/ASTM 52943-2:2024 without any modification.

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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 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).

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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 Technical Committee ISO/TC 261, *Additive manufacturing*, 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, 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).

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Additive manufacturing for aerospace — Process characteristics and performance —

Part 2: Directed energy deposition using wire and arc

1 Scope

This document specifies requirements for the additive manufacturing of metallic parts with directed energy deposition (DED) in the aerospace industry.

Within the application scope of this document, wire is used as feedstock, and arc processes (gas-shielded metal arc processes (MIG/MAG/GMAW), tungsten inert gas processes (TIG/GTAW), plasma arc processes (PAW)) are used as the main energy source.

This document is to be used in conjunction with the engineering documents, if required by the engineering authority.

This document does not address health and safety issues.

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 14175, *Welding consumables — Gases and gas mixtures for fusion welding and allied processes*

ISO/ASTM 52900, *Additive manufacturing — General principles — Fundamentals and vocabulary*

ISO/ASTM 52926-5, *Additive manufacturing of metals — Qualification principles — Part 5: Qualification of operators for DED-Arc*

3 Terms and definitions

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

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

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

3.1 preliminary additive procedure specification pAPS

document containing the required variables of the additive manufacturing process which has to be qualified

Note 1 to entry: The pAPS contains process specific parameters and will form a section of the manufacturing plan.