

# ISO/ASTM 52920:2023-06 (E)

## Additive manufacturing - Qualification principles - Requirements for industrial additive manufacturing processes and production sites

<b>Contents</b>	<b>Page</b>
<b>Foreword</b> .....	<b>v</b>
<b>Introduction</b> .....	<b>vi</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Overview of AM related processes</b> .....	<b>2</b>
<b>5 Infrastructure of the part manufacturer</b> .....	<b>3</b>
5.1 Environmental, health and safety (EHS).....	3
5.2 Waste disposal.....	3
5.3 AM system installation.....	3
5.4 Ancillary equipment.....	4
5.5 Feedstock storage.....	4
5.6 IT infrastructure.....	4
5.7 Foreign object debris (FOD).....	4
5.8 Provision of the process resources.....	4
5.9 Manufacturing management system.....	5
5.10 Maintenance/calibration system.....	5
<b>6 Manufacturability assessment and review</b> .....	<b>5</b>
6.1 General.....	5
6.2 Design assessment and review.....	5
6.3 Manufacturing assessment and review.....	6
6.3.1 Additive manufacturing process.....	6
6.3.2 Process finalization.....	6
6.3.3 Post processing.....	6
<b>7 Qualification of the additive system operations</b> .....	<b>6</b>
7.1 General.....	6
7.2 Scope of qualification.....	7
7.3 Validation planning.....	7
7.3.1 Process mapping.....	7
7.3.2 Risk assessment.....	7
7.3.3 Master validation plan.....	8
7.4 Qualification [installation, operation, and performance (IQ/OQ/PQ)].....	8
7.5 Manufacturing plan specification.....	9
7.6 Documentation and tracing of the process steps.....	10
7.6.1 General.....	10
7.6.2 Manufacturing plan.....	10
7.6.3 IQ documents.....	10
7.6.4 OQ/PQ documents for the complete process.....	11
7.7 Relevant process steps within the additive system operations.....	11
7.7.1 Overview of additive system operations.....	11
7.7.2 Requirements for pre-process: data preparation.....	11
7.7.3 Requirements for feedstock management.....	13
7.7.4 Requirements for pre-process: system set-up.....	15
7.7.5 Requirements for additive manufacturing: build cycle.....	16
7.7.6 Requirements for AM-process: process finalization.....	17

<b>8</b>	<b>Quality assurance</b> .....	<b>19</b>
8.1	General.....	19
8.2	Personnel requirements.....	19
8.3	Non-conformities .....	20
	8.3.1 General .....	20
	8.3.2 Acceptance criteria.....	20
	8.3.3 Handling of non-conformities.....	20
8.4	Continuous improvement process.....	21
8.5	Quality controls .....	21
	8.5.1 General .....	21
	8.5.2 Production run approval.....	22
	8.5.3 Part approval.....	23
	<b>Annex A (informative) Requirements for Post-processing and part approval</b> .....	<b>24</b>
	<b>Annex B (informative) Supplementary information</b> .....	<b>26</b>
	<b>Bibliography</b> .....	<b>34</b>