

Quality Specification

GE Additive



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1 SCOPE AND BACKGROUND

This document should be used in conjunction with the GE Additive Terms and Conditions when fulfilling an order which requires AS9100 certification as part of a Print Services build. These requirements are written with the intention of:

- Clarifying the needs of GE Additive in supporting its own customers
- Assisting in the flow of requirements to Suppliers as part of GE Additive's AS9100 Quality Management System

The Purchase Order will identify when these requirements must be met.

2 APPLICABLE DOCUMENTS

2.1 International Standards

AS9100 Quality Management Systems - Requirements for Aviation, Space, and Defense Organizations

ISO 9001 Quality Management Systems Requirements

ISO 17025 Quality Management Requirements for Testing and Calibration Laboratories Set

Nadcap National Aerospace and Defense Contractors Accreditation Program

3 REQUIREMENTS

3.1 Quality Management Systems Requirements

3.1.1 Metal powder suppliers shall be currently registered to AS9100 (or equivalent).

3.1.2 Service suppliers (Hot Isostatic Pressing, Electrical Discharge Machining) shall be currently registered to ISO 9001 (or equivalent).

3.1.3 Measurement and Test Equipment suppliers shall be currently registered to ISO 9001 (or equivalent).

3.1.4 Measurement and Test Equipment suppliers shall possess appropriate NIST traceable (or similar) calibration certificate(s).

3.1.5 Suppliers that perform mechanical, metallurgical and/or chemical testing shall be currently registered to Nadcap and/or ISO 17025 (or equivalent).

Note: GE Additive reserves the right to waive Quality Management System requirements based on perceived risk, previous vendor performance, industry intelligence/events, customer flow down or other reasons.

3.2 Audits

The Supplier shall allow GE Additive (including GE Additive's customer and/or regulatory authorities) access to the Supplier's site where the execution of the work defined in the Purchase Order is performed.

3.3 Sub-tier Management

- 3.3.1 If the Supplier chooses to make use of a sub-tier supplier, the Supplier shall flow the applicable requirements from this specification to their direct and sub-tier external providers.
- 3.3.2 If the Supplier chooses to make use of a sub-tier supplier, the Supplier shall apply appropriate controls to their direct and sub-tier external providers, to ensure that requirements are met.

3.4 Product Acceptance

- 3.4.1 The Supplier shall measure all Critical to Quality (CTQ) parameters defined by GE Additive
- 3.4.2 The Supplier shall provide a report of the measured CTQ parameters defined by GE Additive.
- 3.4.3 The Supplier shall provide a Certificate of Conformance with each shipment of goods/materials (as applicable).
- 3.4.4 When possible, the Supplier shall use statistical techniques (i.e. Cpk, run charts, etc...) to measure performance against the CTQs.
- 3.4.5 The Supplier shall notify GE Additive about any nonconformances to requirements that cannot be reworked.
- 3.4.6 The Supplier shall obtain approval from GE Additive prior to dispositioning any nonconformances.

3.5 Counterfeit Prevention

- 3.5.1 The Supplier shall screen for counterfeit parts.
- 3.5.2 The Supplier shall notify GE Additive of any counterfeit parts detected.

3.6 Record Disposition

The Supplier shall return to GE Additive all copies of the records, defined in the GE Additive Terms and Conditions, within 30 days of GE Additive's request.

4 General FOD Guidelines

4.1. Any work that includes material removal shall be performed in a deliberate, methodical fashion to ensure that all Foreign Objects or hard particles are properly controlled. Application of Clean-As-You-Go is recommended; and visual review of parts is required prior to operation completion/signoff.

4.2. When ports and openings on components and/or sub-assemblies could allow foreign material to become entrapped, ports and openings should be covered.

4.2.1. Parts could be bagged, boxed or otherwise protected (including taping over ports - use non-silicon adhesive backed tape only in those cases where protective closures are not available. Use this tape at ambient temperatures and remove it along with all tape residue before subjecting the component to elevated temperatures).

5 General Material Handling Guidelines

5.1. Handle hardware/components during transit, storage, processing, inspection, testing, and packaging in a manner which will prevent damage.

5.2. Do not store parts directly on the floor.

5.3. Ensure all pallets, containers, carts, racks, and baskets are undamaged and free of trash, debris, metal shavings, chips, and abrasive/corrosive residues.

5.4. If more than one item is packaged in a single container, separately wrap each item in a manner that will prevent damage caused by physical contact.

5.5. Containers

5.5.1. Whenever possible, secure covers on containers during transit.

5.5.2. Ensure stacked containers do not collapse the lower container and/or cover.

5.5.3. Secure stacked containers in such a way as to prevent tipping over during transit.

5.5.4. Do not stack any other item on top of containers with parts projecting above sidewalls.

5.5.5. Position stacked containers in a safe/stable manner and free of debris.

APPENDIX A

Measures of Performance

GE Additive will measure the Supplier's On-Time Delivery (OTD) performance as well as the amount of nonconformances as calculated below. Suppliers will be assigned a rating based on their OTD% and Nonconformance %. This rating impacts the Suppliers rating on GE Additive's Approved Vendor List. An OTD% or Nonconformance % of 89-80% will result in GE Additive requesting the Supplier to make improvements. An OTD% or Conformance % of <80% will result in GE Additive requiring the Supplier to make improvements. If improvements are not completed on time (as defined in the improvement plan) the Supplier will earn a rating of Not Approved on the GE Additive AVL.

$$\text{OTD \%} = \frac{\# \text{ On-Time Deliveries} * 100}{\text{Total Deliveries}}$$

$$\text{Conformance \%} = \frac{(\text{Total Deliveries} - \# \text{ Nonconformances}) * 100}{\text{Total Deliveries}}$$

REVISION HISTORY

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1	2020-11-19	D. Frydryk; K. Grider; M. James; P. Mosher	A. Sprague
2	2023-08-08	MK20230808	T. Schank